

# Two new species of biting midges from France and Algeria (Diptera: Ceratopogonidae)

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**Abstract.** Two new species of biting midges are described and illustrated from West Palaearctic. They are: *Forcipomyia* (*F.*) *pyrenaica* sp. nov. from France (Pyrenees-Orientales) and *Monohelea mediterranea* sp. nov. from France (Pyrenees-Orientales) and North Algeria (Atlas Mts).

**Key words.** *Forcipomyia pyrenaica* sp. nov., *Monohelea mediterranea* sp. nov., West Palaearctic, Europe, North Africa.

## Introduction

Biting midges are relatively well studied family of nematoceros flies. From Europe, after more than 2 centuries of studies, almost 600 valid species of biting midges have been reported. France with 241 species is among the best studied countries in Europe. More species – 256 are recorded only from Germany, however with many doubtful species (Szadziwski and Dominiak 2016).

The purpose of this paper is to describe two new species of biting, both based on males, in the genus *Forcipomyia* Meigen, 1818 from France and *Monohelea* Kieffer, 1917 from France and Algeria.

## Material and methods

The male specimens described in this paper are slide mounted and deposited in the collection of the Museum of Amber Inclusions, University of Gdańsk, Poland. All photographs were taken using a LAS Montage multifocus attached to a Leica DM6000.

## Descriptions

Subfamily Forcipomyiinae Lenz, 1934

Genus *Forcipomyia* Meigen, 1818

Subgenus *Forcipomyia* Meigen, 1818

***Forcipomyia (F.) pyrenaica* sp. nov.**

**Diagnosis.** The new species can be easily distinguished by very low tarsal ratio of hind leg 0.45, palpomere 3 enlarged on proximal 1/3, parameres separated, stout on proximal 2/3 and filamentous on distal 1/3, aedeagus with triangular median projection and distinct lateral shoulders. Female unknown.

**Description.** Male (n=1). Body dark brown with pale parts of legs and abdomen (Fig. ). Head dark brown. Eyes bare, touching at distance of 6 ommatidia. Frons with distinct tubercle bearing stout, black spine-like seta in submedian position (Fig. ). Flagellum with 13 flagellomeres (Fig. ), length 1.10 mm, AR 1.11, distal flagellomeres 10–13 elongated, plume on flagellomeres 2–10 well developed, flagellomere 10 about 2.45 times longer than flagellomere 11. Palpus 5-segmented (Fig. ); palpomere 3 with distinct sensory pit on enlarged basal 1/3, length 0.14 mm, PR 4.0; palpomere 4 about 1.4 times longer than palpomere 5.

Thorax including scutellum dark brown (Fig. ). Wing with two darker patches at anterior margin, on first radial cell and on radial fork (Fig. ); length 1.55 mm, CR 0.45; first radial cell slit-like, second one small; wing membrane with scale-like slender macrotrichia. Legs pale brownish, femur of hind leg brown (Fig. ), tarsomere 4 of all legs distinctly longer than tarsomere 5, claws long, empodium well developed, TR (1) 0.63, TR(2) 0.36, TR(3) 0.45.

Abdomen dark brown with pale caudal margins of tergites (Fig. ). Genitalia dark brown with pale gonostyli (Fig. ). Caudal margin of sternite 9 slightly convex with broad and shallow median incision. Gonocoxite without modified setae, gonostylus almost straight. Aedeagus shield-shaped well sclerotized with well developed long triangular median projection and distinct lateral shoulders (Fig. ). Parameres separated, stout, rod-like on proximal 2/3 and narrow, filamentous on distal 1/3.

Female unknown.

**Material examined.** *Forcipomyia (F.) pyrenaica* sp. nov., holotype male, France, Pyrenees-Orientales, RNN foret de la Massane, Malaise trap, about 600 m.a.s.l., 9.09.2008, P. Withers. The holotype is deposited in the Museum of Amber Inclusions, University of Gdańsk (Poland), in the Collection of Extant Insects.

**Etymology.** The specific name refers to the Pyrenees mountains (Latin Pyrenaei) where the species was found.

**Discussion.** The new species is a typical member of the subgenus *Forcipomyia* s. str. (Alwin and Szadziewski 2013). The subgenus including almost 323 extant species is distributed

worldwide (Borkent and Dominiak, in press). The low hind tarsal ratio (less than 0.5) is known among a few species of *Forcipomyia* s. str. outside of Europe. European species of the subgenus have higher hind TR, usually about 0.8–1.2 (Goetghebuer 1934, Remm 1962, 1980, Szadziwski 1983, Navai and Szadziwski 2016). The holotype male has frons with a distinct tubercle bearing single seta. This is an asymmetrical structure though, not observed in any other species of biting midges, and we suspect it might be an aberration.

Subfamily Ceratopogoninae Newman, 1834

Genus *Monohelea* Kieffer, 1917

***Monohelea mediterranea* sp. nov.**

**Diagnosis.** The species is distinct in having second radial cell without dark spot, dark spot below first radial cell rectangular uniformly colored, without pale spot or spots, legs with brown and pale rings and stripes, gonocoxite in male genitalia without ventral tubercle and apex of paramere T-shaped. Female unknown.

**Description.** Male (n=2). Body yellowish brown (Fig. ). Eyes bare, broadly separated by vertex and frons. Flagellum with well developed plume, length 0.80–0.83 mm, AR 0.93–0.93. Palpus 5-segmented; third palpal segment with small sensory pit, length 48–53  $\mu$ m, PR 2.11–2.30.

Thorax brownish with indistinct ornamentation in slide mounted specimen, paratergite narrow, scutellum yellowish with 4 marginal bristles. Wing length 1.22–1.30 mm, CR 0.70–0.71.

Both first radial cells well developed, macrotrichia restricted to few at wing tip. Wing pattern as in Fig. ; second radial cell without dark spot; dark spot below first radial cell rectangular, uniformly colored, without pale spots. Legs brownish, femora without spines, fore and hind legs somewhat thickened, mid legs slender; coxae brown; trochanter of fore leg yellow, of mid and hind legs brown; femur of hind leg yellowish with distinctly brown proximal portion, narrow brown ring at middle and ventral subapical dark spot; fore and mid femora with similar color pattern, however paler and indistinct; hind tibia with distinct brown ring at mid length and apex, fore and mid tibiae paler, with less developed brownish patterns; tarsomere 1 of hind leg strongly bent at base, with one row of palisade setae and strong subbasal spine; tarsomere 1 of fore leg straight, with 1 subapical and 1 apical spine; tarsomere 1 of mid leg straight, with 2 subbasal and 2 apical spines; tibial spur of hind leg short, tibial comb composed of 9 spines; tarsomeres 4 cylindrical; claws small, equal; TR(1) 1.85–1.92, TR(2) 2.00–2.17, TR(3) 1.67–1.71.

Genitalia brown (Fig. ). Gonocoxite stout, mesal margin without lobe or tubercle.

Gonostylus with slightly curved, pointed dark tip. Aedeagus with sclerotized basal loop, a pair

of pointed, oblique lateral sclerites. Parameres separated, with wing-like basal apodeme and T-shaped apex (Fig. ).

Female. Unknown.

**Material examined.** Holotype male, North Algeria, Sahara, 30 km north of Biskra, 27 April 1981, collected by entomological net, R. Szadziewski; paratype male, France, Pyrenees-Orientales, RNN foret de la Massane, Malaise trap, 15.07.2009, P. Withers. The holotype and paratype are deposited in the Collection of Extant Insects at the Museum of Amber Inclusions, University of Gdańsk.

**Etymology.** The specific name refers to the Mediterranean region where the species was found.

**Discussion.** The new species is very similar to *Monohelea andersoni* Wirth et Grogan, 1981 from North America (Wirth and Grogan 1981). The latter species however, is smaller with wing length 0.9 mm, has darker legs, the aedeagus is longer and apices of parameres abruptly expanded in a caplike lobe bent ventrally. The aedeagus and parameres of *M. mediterranea* sp. nov. are also somewhat similar to those of *M. pallida* Clastrier et Delécolle, 1990 from tropical Africa (Clastrier and Delécolle 1990). However, the latter species has pale legs and second radial cell with dark spot.

*Monohelea* including 94 recent species is a worldwide distributed genus (Borkent and Dominiak, in press). In western Palaearctic three species are known. In addition to the new species described above they are *M. estonica* Remm, 1965 (North and Central Europe) and *M. hissarica* Remm, 1980 (Tajikstan in Central Asia, known from female only). The latter two species have dark spot in the second radial cell which in *M. mediterranea* sp. nov. is totally pale (Fig. ). The European *Monohelea estonica* Remm reported from Russia, Estonia, Poland, Czechia, N. France (Dominiak and Michalczyk 2009) differs also in having gonocoxites with a tubercle on mesal margin and simple pointed apices of parameres (Remm 1965, Delécolle and Rieb 1995).

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#### Explanation of figures

Figure 1. *Forcipomyia (F.) pyrenaica* sp. nov., male. A – total habitus, without head, B – vertex, eye separation and frons, C – frons with spine-like seta, D – flagellum, E – palpus, F – wing, G – genitalia, ventral aspect, H – aedeagus, I – parameres.

Figure 2. *Monohelea mediterranea* sp. nov., male. A – total habitus, holotype without genitalia, B – head, dorsal aspect, paratype, C – wing, paratype, D – genitalia, ventral view of paratype, E – genitalia, ventral aspect of holotype, F – aedeagus of holotype, G – parameres of paratype.