A New Fossil Crane Fly from the Early Pannonian of the Styrian Basin
(Diptera: Tipulidae)

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ABSTRACT: A new species of Miocene crane fly, Tipula palaearctica, new species, is described and figured from a well preserved forewing. The specimen derives from the Paldau Formation (Early Pannonian, ca. 11.3 Ma) and is the first new species of Tipula described from the Miocene of Europe since the mid-1800's.


KEY WORDS: Tipula, Neogene, Miocene, Austria, Europe, crane fly, taxonomy

Crane flies (family Tipulidae) represent the basalmost and most species-diverse lineage of Diptera (true flies), adults of which are slender and elongate with gangly long legs. Larvae are saprophagous and generally live in wet soil or mud, and are distinguishable among other flies for their sclerotized and retractable head capsule. Tipulidae are split in some classificatory schemes into three separate families — Limoniidae, Cylindrotomidae, and Tipulidae s.str. The family is well documented in the fossil record, particularly the genus Tipula which has over 75 species described from the Tertiary of North America and Eurasia (e.g., Evenhuis, 1994; Krzeminski, 2000; Byers, 2011). While many species have been documented, the Tertiary fauna of Europe has not been the focus of recent investigation and, indeed, the last Miocene Tipula to be described from Europe were those species proposed by Unger (1841) and Heer (1849).

Herein we provide a report on a new fossil crane fly recovered from the Paldau Formation in the Styrian Basin (Fig. 1). The general insect fauna recovered to date from the Paldau site has been reviewed by Engel and Gross (2008a), with the most remarkable species documented thus far that of a giant primitive termite (Engel and Gross, 2008b, 2009), likely of the family Archotermopsidae (sensu Engel et al., 2009). The specimen described herein is the same as that referred to by Engel and Gross (2008a: 56, fig. 4b). The geological setting is thoroughly described by Engel and Gross (2008a).

The specimen (Inv. No. LMJ 204.151) is that of an essentially complete crane fly forewing (Tipulomorpha: Tipulidae) represented by part and counterpart, although the counterpart is missing the apical half of the wing. The wing has undergone some deformation during preservation such that the apical fourth is slightly crumpled and folded transversely, setting the apicalmost portion off at an oblique angle relative to the remainder of the wing. The venation is detailed in figure 1, with the apical

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portion straightened so as to resemble as it would have been in life, although owing
to the damage as preserved the space between veins M3 and CuA1 is missing. For the
description of this new species we follow the venational nomenclature suggested by
McAlpine (1981) and Alexander and Byers (1981), recognizing that CuA1 may be in
fact M4.

Systematic Paleontology

Genus *Tipula* Linnaeus

*Tipula paleopannonia* Engel and Gross, new species

(Fig. 1)

**DIAGNOSIS:** Forewing with Sc merging with R opposite about two-thirds length
stem of R1+2 (R3); R3 nearly twice as long as R1+2 (Fig. 1); abscissa of R1 before
R1+2 very short; discal cell short; M3 touching CuA1 briefly rather than connected by
short crossvein; CuA2 and CuP with distinct apical arch before terminating at
posterior wing margin; A₂ relatively long and straight, about three-quarters length of A₁.

DESCRIPTION: Body not preserved; forewing – total length as preserved 19.7 mm; maximum width 4.9 mm; Sc₁ absent; Sc merging with R₁ opposite about two-thirds length stem of R₁-2 (Rs); R₂,3 stem arched, very short; R₃ exceedingly short, shorter than abscissa of R₁ before R₁-2; R₅ nearly twice as long as R₁-2; abscissa of R₁ before R₁-2 very short; M₁,2 stem divided by m₁,2-m₃, crossvein, apical abscissa M₁,2 shorter than basal abscissa, apical abscissa about three-quarters length basal abscissa; discal cell short, much shorter than M₃; M₃ touching CuA₁ briefly rather than connected by short crossvein; basal abscissa CuA₁ straight, not arched, about two-thirds length of distal abscissa CuA₁; CuA₂ and CuP with distinct apical arch before terminating at posterior wing margin; CuP relatively faint; A₂ relatively long and straight, about three-quarters length of A₁; apparently with some faint maculations around Sc₂, origin of R₂,₃ (Fig. 1), between M and CuA basally and perhaps more faintly apically in the same cell, perhaps faintly around apex of R₃, otherwise wing membrane apparently unmarked.

HOLOTYPE: LMJ 204.151, Late Miocene (Early Pannonian, ca. 11.3 Ma), Padiou, Paldau Formation, Styrian Basin, Austria; deposited in the Landesmuseum Joanneum, Graz.

ETYMOLOGY: The specific epithet is a combination of palatos (Gr., ancient) and Pannonia, the ancient name for a province of the Roman Empire that corresponds with the region from which the fossil originated.

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Literature Cited


