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Tipulomorpha (Diptera) of the Middle Eocene deposits from Pesciara di Bolca near Verona (Italy)

[With 6 text-figs.]

Tipulomorpha (Diptera) ze środkowoeoceńskich osadów z Pesciara di Bolca koło Werony (Włochy)

Abstract. The paper deals with the Middle Eocene flies of the infraorder *Tipulomorpha* from Pesciara di Bolca near Verona, northern Italy. The collection including 40 identified insects (4 *Tipulidae* and 3 *Limoniidae*) is housed at Museo Civico di Storia Naturale in Verona. The fossil species *Gnophomyia gentilinii* n. sp. (*Limoniidae*) is described and illustrated

I. INTRODUCTION

The first information on fossil fauna (fish) from Pesciara di Bolca was published as early as in 1555 by MATTIOLI. Since then the locality was explored successively and in 1709 SCHEUCHZER published two first figures of fossil insects, one of them being probably the female specimen of *Tipulidae* family (as can be deduced from the drawing — the original specimen was not studied by us). The late Italian authors described it as *Odonata* (MASSALONGO, 1856; OMBONI, 1886).

The deposits from Pesciara di Bolca are mainly of sea origin, so the fish fossils are the most numerous. Insects impressions on rock are not frequent and are generally in poor condition. The collection comprises 40 specimens: ?*Thysanura* (1), *Odonata* (9), *Diptera* (11), *Trichoptera* (1), *Coleoptera* (2), *Orthoptera* (3), *Heteroptera* (2) and *Hymenoptera* (3). The remaining fossils are the insect remnants of uncertain taxonomic position.

The age of the locality is radiometrically estimated on about 52 mln years (Ma) (SORBINI, 1972), so the fauna can be compared to the fauna from earliest Baltic amber (the oldest specimens from Baltic amber from Jutland are about 55 Ma old) (LARSSON, 1978).

II. SYSTEMATIC PART

European fossil *Tipulomorpha* from Eocene are most numerous represented in Baltic amber (ALEXANDER, 1931; KRZEMIŃSKI, 1985) that was being produced from Lower Eocene (about 55 Ma) till Upper Eocene (about 37 Ma) (LARSSON, 1978). *Tipulomorpha* have also been found in Eocene sedimentary deposits in Denmark (HENRIKSEN, 1922; LARSSON, 1975, 1978) and Germany (LUTZ, 1987).

Family *Tipulidae*

In the collection there are four specimens undoubtedly belonging to the family *Tipulidae*. Unfortunately, the poor condition prevents their determination.

Material examined: Specimens No. B8, B9, B14, IG 23618.

Family *Limoniidae*

Three specimens of this family were found in the collection. Specimen No 145310 (145311) is badly preserved and thus indeterminable. Two remaining specimens are included in the genera *Gonomyia* MEIGEN and *Gnophomyia* OSTEN-SACKEN.

Genus *Gonomyia* MEIGEN*Gonomyia* (sensu lato) sp.

The specimen is in bad condition. The head with pedicel, scape and four flagellomeres (Fig. 1) are poorly preserved. Wings, thorax and part of abdomen well visible.

Wing 5 mm long. Venation only partially preserved (Fig. 2).

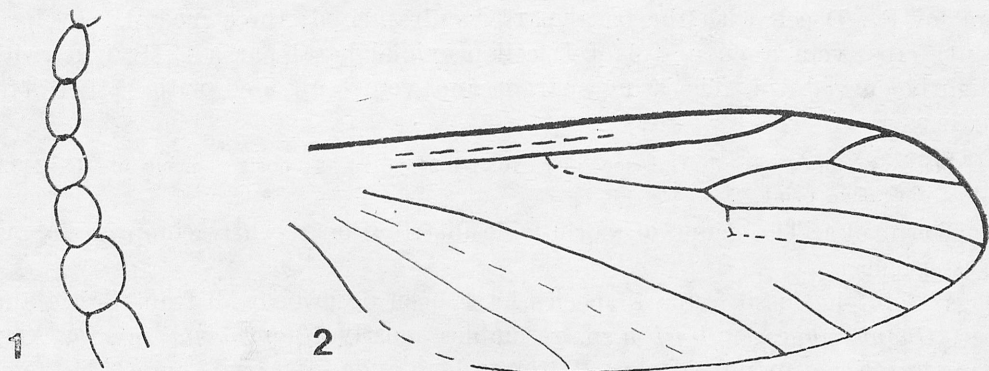
Material examined: Specimen No. IG 91165.

Remarks: The fragments resemble *Gonomyia* (*Gonomyia*) *oligocenica* ALEXANDER from Baltic amber (ALEXANDER, 1931). This is the oldest record of the genus known up to date.

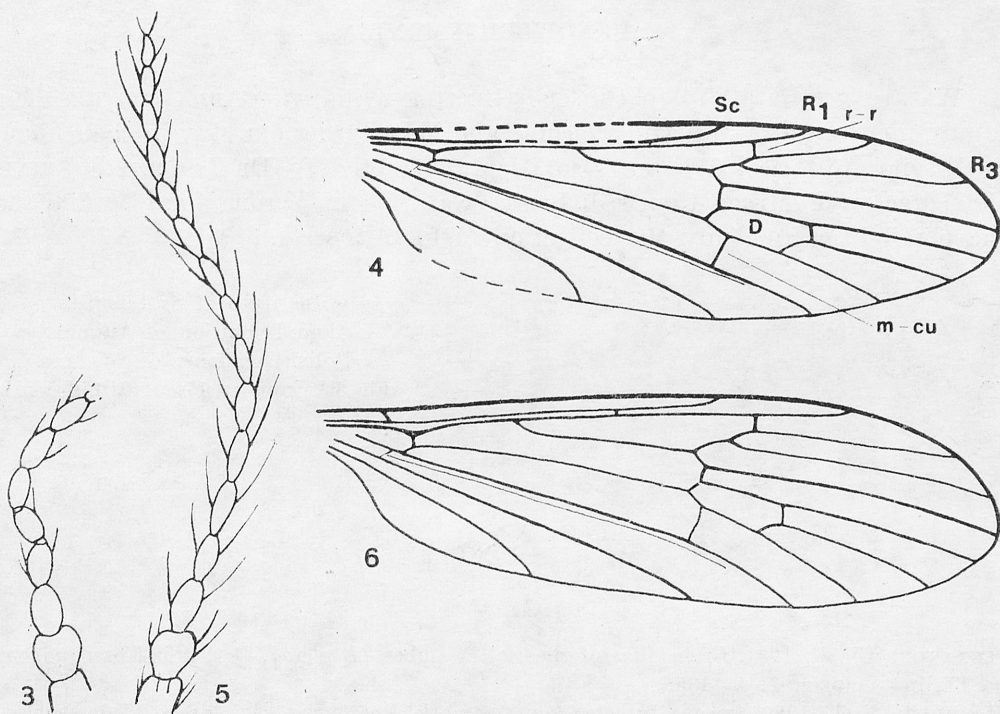
Genus *Gnophomyia* OSTEN-SACKEN*Gnophomyia gentilinii* n. sp.

Diagnosis: The species is characterized by the short R_1 and R_2 veins and deep incision of the D cell basal part.

The specimen is in fair condition, especially the wings are well visible. The hypopygium, palpi and several last flagellomeres are lacking.



Figs. 1—2. *Gonomyia* (sensu lato) sp. — specimen No. IG 91165 1 — fragment of antenna, 2 — wing



Figs. 3—6. *Gnophomyia gentilinii* n.sp. (3 fragment of antenna, 4 — wing) and *Gnophomyia inferna* ALEXANDER (5 — antenna, 6 — wing)

Description: Head with short rostrum. Antennae (Fig. 3) — the scape oval, long; pedicel nearly round, conspicuously wider than the scape; first flagellomere barrel-like, the following rather oval, with bristles partially preserved, not longer than the flagellomeres that bear them.

Wing (Fig. 4) 5,5 mm long. Vein Sc with the middle part poorly visible, reaching somewhat beyond the fork of Rs; R_{2+3} very short; cross-vein sc-r not visible; R_1 reaching beyond the middle of R_2 ; cross-vein r-r far before the

end of R_1 ; D cell with the basal part deeply incised; three medial veins present; cross-vein m-cu in 1/3 of D cell proximal basal part; A_2 straight, with slightly curved tip. The wing margin and veins provided with rather long setae.

Material examined: One specimen No. IG 24525 (+) — positive print and IG 24524 (—) — negative print.

Remarks. The genus of world-wide distribution recently comprises about 130 species.

Within the fossil fauna 5 species have been described, all from Baltic amber. *Gnophomyia gentilini* n.sp. resembles mostly *Gnophomyia inferna* ALEXANDER (Figs. 4 and 6) from Baltic amber, and differs in having the veins R_1 and R_2 very short.

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STRESZCZENIE

W Museo Civico di Storia Naturale w Weronie (Włochy) znajduje się kolekcja kopalnych owadów ze stanowiska Pesciara di Bolca koło Werony. Są to odciski owadów w osadach morskich datowanych na 55 mln lat (środkowy eocen). Praca zawiera opisy okazów muchówek z grupy *Tipulomorpha* tej kolekcji. Podano opis nowego gatunku *Gnophomyia gentilinii* n.sp. (*Diptera*, *Limoniidae*) i porównano go z innymi gatunkami tego rodzaju, znanymi z bursztynu bałtyckiego, a pochodzącymi z tego samego okresu.

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