

**Immature stages of *Macropeza albitarsis* MEIGEN
(Diptera: Ceratopogonidae)**

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ABSTRACT. Larvae and pupae of *Macropeza albitarsis* MEIGEN, 1818 are described and illustrated for the first time. Aquatic larvae with a paddle-like anal segment armed with dorsal and ventral broom hairs are good swimmers. Within the family, larvae of the genus *Macropeza* MEIGEN, 1818 are unique in having broom hairs on the anal segment and a pair of multiple setae p on the head.

KEY WORDS: Diptera, Ceratopogonidae, aquatic, *Macropeza*, Poland, larva, pupa.

INTRODUCTION

Some years ago the senior author was asked for identification of biting midges larvae (Ceratopogonidae) which had been collected by hydrobiologists of the University of Łódź during their work on the project STAR. Among the material collected at the margins of small rivers Korytnica and Piława in Pomerania (NW Poland) unknown predatory larvae of the tribe Sphaeromiini with broom like setae on the paddle-like anal segment were present. Similar larvae were described earlier from Central Asia by GLUKHOVA (1979) and determined as *Jenkinshalea* sp., with a question mark. The genus *Jenkinshalea* MACFIE, 1934, however, is absent in Europe. Pupae and adults were necessary to find the correct taxonomic position of the larvae. The junior author spent hours and days in June and July 2004-2007 on the river Piława collecting larvae which were subsequently reared in the labora-

tory. Finally, this year she achieved the success of rearing pupae and adults. An examination of adults allowed the identification of these strange larvae as *Macropeza albitarsis*.

Macropeza MEIGEN is a small genus of the tribe Sphaeromiini (subfamily Ceratopogoninae) which includes strange, biting midges with elongated hind legs. Females are predators on other small insects, mostly dipterans of the family Chironomidae. Males do not take protein food. Immature stages of *Macropeza* are reported for one species from Africa, however, roughly described, without diagnostic features (DE MEILLON & WIRTH 1991).

In the fauna of the world, 23 species of the genus are known, from Africa (18), India (1), Europe (2) and North America (2) (BORKENT & WIRTH 1997). In Western Palearctic *Macropeza albitarsis* MEIGEN, 1818 (Central and North Europe), *M. navasi* (SÉGUI, 1934) (Spain) and *M. nuda* (BECKER, 1903) (Egypt) are known (SZADZIEWSKI 1984, REMM 1988).

The purpose of the present paper is to describe unknown aquatic larvae and pupae of *Macropeza albitarsis*.

MATERIALS AND METHODS

Larvae and pupae were collected at the margin of small rivers in the Pomerania lake-land (NW Poland). **Korytnica** river, Nowa Korytnica nr Drawno, UTM-WU69, 19 May 2003, 8 larvae LASKOWSKI leg. (project STAR). **Piława** river, Szwecja nr Wąlcz, UTM-XV01, 16 May 2003, 2 larvae, LASKOWSKI leg. (project STAR); 22 June 2004, 1 larva from muddy bottom, reared in laboratory, pupated on 26 June, male pupa, P. DOMINIAK leg.; 5 July 2007, among plants at river margin 3 pupae, emerged 1 male and 2 females on 8-10 July 2007, P. DOMINIAK leg.

Larvae and pupae were reared in the laboratory as recommended by GLUKHOVA (1979) and mounted on slides in a mixture of phenol-Canada balsam. The terminology and abbreviations used in descriptions follow those described by SZADZIEWSKI et al. (1997).

DESCRIPTION

Genus *Macropeza* MEIGEN, 1818

Macropeza MEIGEN, 1818: 87. Type-species: *Macropeza albitarsis* MEIGEN, 1818, by monotypy.
Macroptilum BECKER, 1903: 76. Type-species: *Macroptilum nudum* BECKER, 1903, by monotypy.
Macropeza: DE MEILLON & WIRTH 1991: 126 (diagnosis, notes on immature stages and biology).
Jenkishelea sp.: GLUKHOVA 1979: 92 (misidentified, larva IV instar, Kazakhstan).

Diagnosis

Within the family, larvae of the genus are unique in having broom hairs on the anal segment and a pair of multiple setae p on the head. In pupae terminal segment with greatly divergent (180°) apicolateral processes.

In the key to genera of North Europe (SZADZIEWSKI et al. 1997) larvae of *Macropeza* fall to couple 11 together with *Probezzia* KIEFFER and pupae to couple 7. In these couples they can be distinguished using the unique characters mentioned above.

Macropeza albitarsis MEIGEN, 1818

Macropeza albitarsis MEIGEN, 1818: 87 (female, Europe).

Ceratopogon valvatus WINNERTZ, 1852: 72 (male, Germany).

Description

Larva (fourth instar, Figs 1a, 2a-c, 3).

Body slender (Fig. 1a), length to 7.5 mm. Head elongate and tapering, pale brown: length 0.332-0.380 mm, width 0.140-0.160 mm, HP 2.37-2.44. Collar with indistinct evenly rounded ventral extension (Fig. 2b). Distribution of setae and sensory pits of the head as in Figs 2a-c; five pairs of multiple setae present: s, u, hind o, hind x, and hind p. Labrum strongly elongated, almost square shaped. Mandible slender, hook-like. Epicranial suture (ES) long, reaching level of seta q (Figs 2a-c). Anal segment flattened laterally and tapering caudally; bearing on dorsal and ventral surfaces three broom-like setae (Fig. 3).

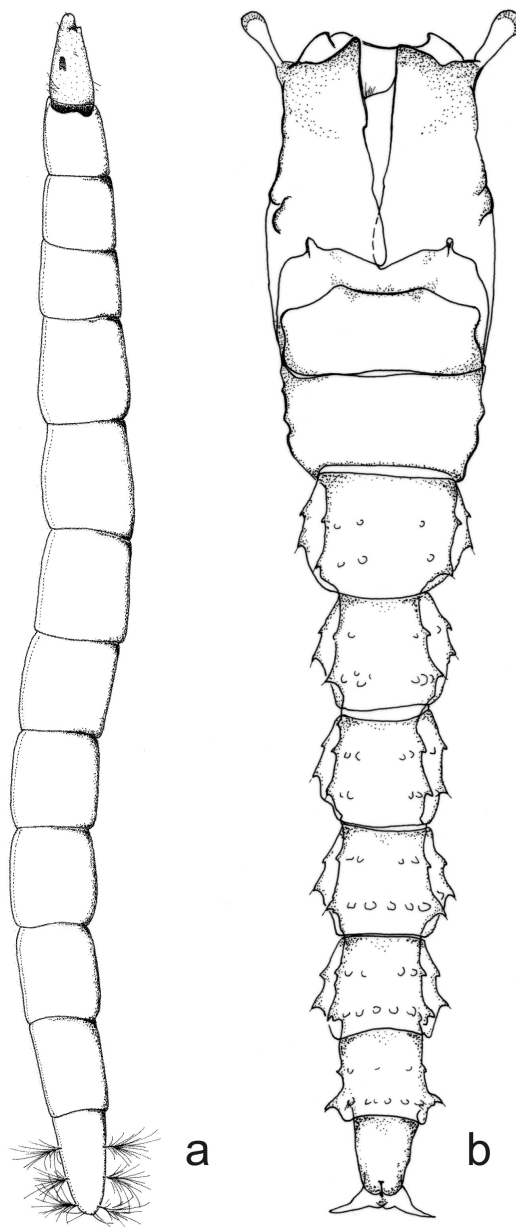
Pupa (Figs 1b, 4a-d).

Total length of female pupa 4.6 mm, male pupa 3.8-3.9 mm. Operculum 1.3 times broader than long; surface covered with small, rounded tubercles; central portion with a pair of raised areas, each with a pair of tubercles, the anterior pair bearing a single seta (Fig. 4b). Respiratory horn relatively short and broad, 2.9 times longer than broad, surface smooth, apex with 15 spiracles in one row (Fig. 4a). Caudomedian expansion of mesothorax indistinct, evenly rounded. Metathorax slender, slightly emarginated (Fig. 1b). Abdominal sternites without disclike glandular areas. Apicolateral processes of terminal segment long, sharply pointed; greatly divergent (180°) in female and male (Figs 4c,d).

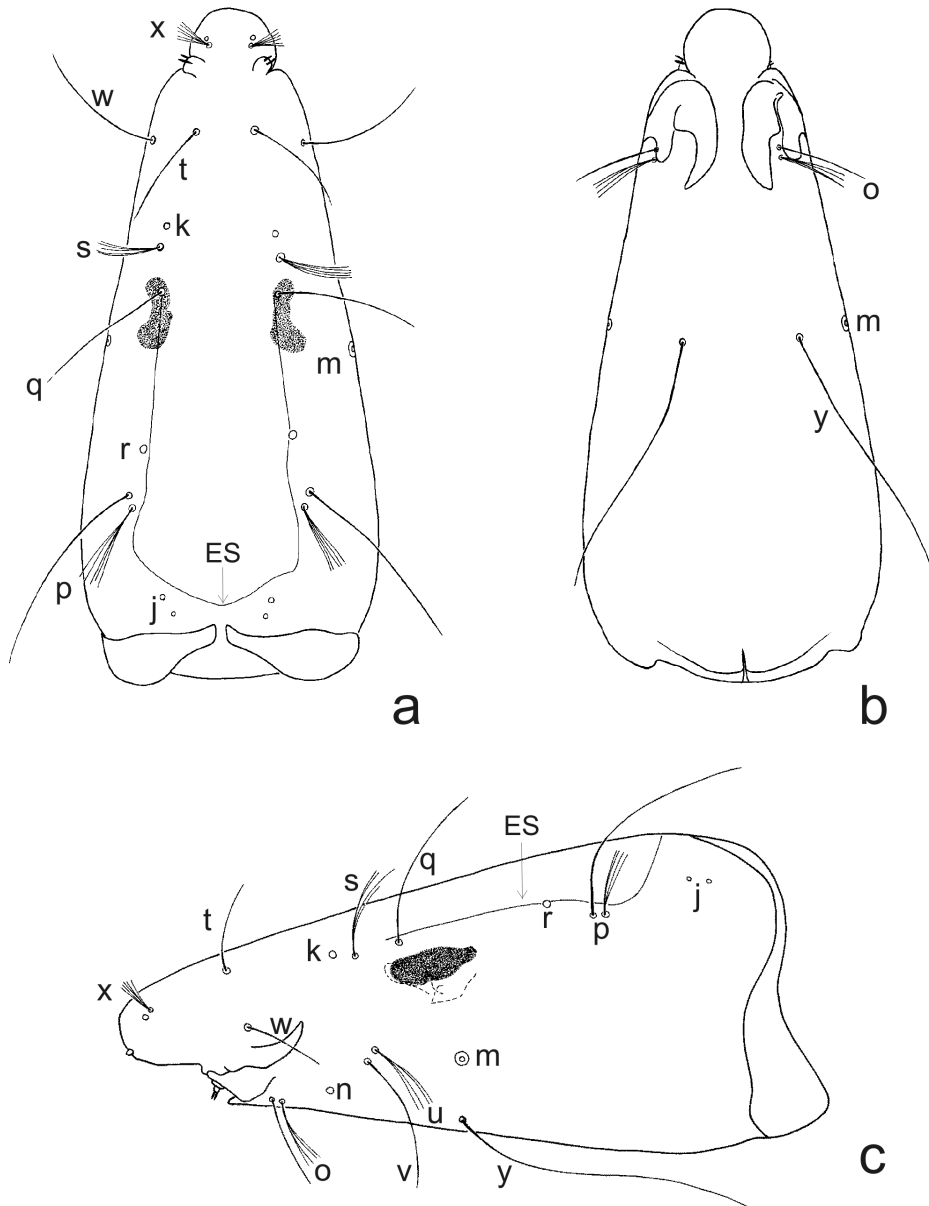
Distribution, biology

Macropeza albitarsis is known from many countries of Central and North Europe: Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Lithuania, Poland, Slovakia, Sweden, The Netherlands, Ukraine. Immature stages live in small rivers.

In Poland the species is reported from the lakelands of Pomerania, NW Poland, (Słupsk, 27 July 1937, 1 male, KARL coll.; present records) and submountains of SE Poland (Łuszczyce nr Przemyśl, Wiar river, 4 June 1993, 3 males, J. KRZYWIŃSKI leg.; Rożubowiec nr Przemyśl, 14 July 1989, at river, 1 female, A. PALACZYK leg.).



Figs 1a-b. *Macropeza albitarsis* MEIGEN, 1818: a - lateral aspect of larva, b - dorsal aspect of male pupa.



Figs 2a-c. *Macropeza albitarsis* MEIGEN, 1818, larva: a - dorsal aspect of head, b - ventral aspect of head, c - lateral aspect of head.

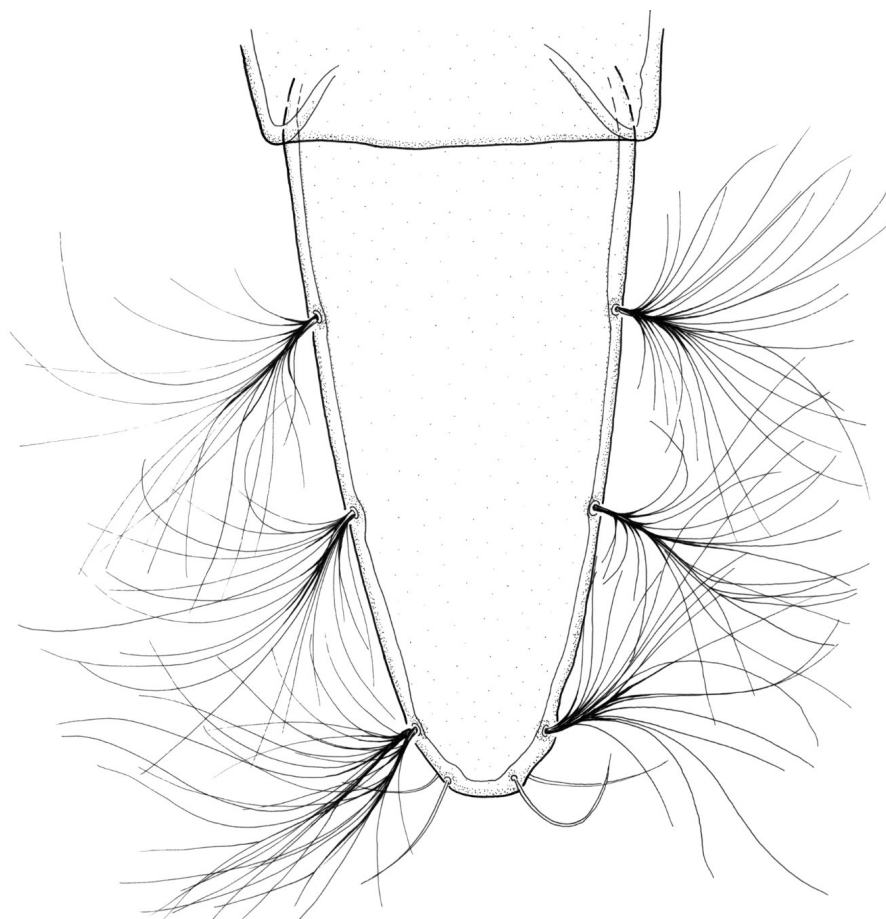
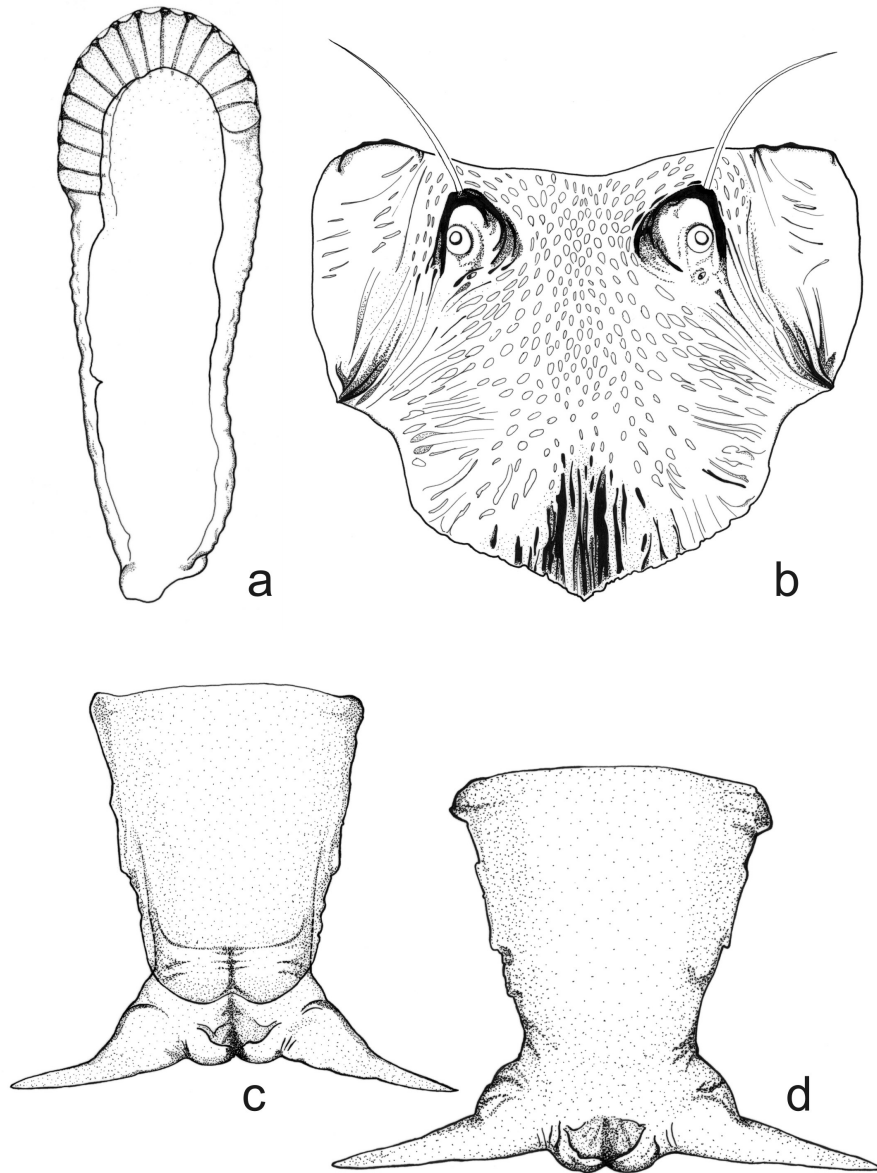


Fig. 3. *Macropeza albitarsis* MEIGEN, 1818, lateral aspect of anal segment of larva.

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Figs 4a-d. *Macropeza albitarsis* MEIGEN, 1818, pupa: a - respiratory horn, b - operculum, c - ventral aspect of male terminal segment, d - ventral aspect of female terminal segment.

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