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## Contribution to the Turkish Blephariceridae and Ptychopteridae (Diptera)

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Several species of Blephariceridae and Ptychopteridae are recorded from Anatolia. *Liponeura bithynica* sp. n. (Blephariceridae) from Kütahya is described and illustrated, the identity of the presumed larvae and pupae of *L. euryfrons* BISCHOFF is confirmed. *Ptychoptera albimana* FABRICIUS and *P. contaminata* (LINNAEUS) are new for Anatolia and far outside the previously recorded ranges; the second species may be subspecifically distinct from central European populations.

### INTRODUCTION

Asia Minor has a fairly diverse fauna of net-winged midges of the family Blephariceridae. According to present knowledge, two genera are represented. The most abundant and widespread species is *Blepharicera fasciata* (WESTWOOD), the only west-palaeartic member of this genus. The other Anatolian genus is *Liponeura*, which is endemic of the western palaeartic region and reaches its eastern limits in the Caucasus. Many of the *Liponeura*-species occurring in Anatolia are exceptional in that their larvae do not possess the extremely long antennae which are distinctive of the European species of the genus. With the exception of *Liponeura cinerascens* LOEW, all Turkish-Caucasian species are endemic, none of the other is shared with Europe. Most Anatolian species appear to have a restricted distribution. This may, at least in part, be due to the relatively scanty knowledge which has been summarized by ZWICK (1972).

### MATERIAL

Due to the courtesy of Dr. H. MENDEL (Kempton), I obtained a sample of these interesting flies which represents an undescribed species named below. I use the opportunity to add a number of faunistical records based on material that Dr. NILGÜN KAZANCI (Ankara) very kindly collected for me. This material allowed for the safe identification of a formerly only tentatively identified larva. The material also includes a number of larvae that can presently not be identified. My key to last instar larvae (1972) provides not much help, because several of the named species are unknown in their larval stages. The present larvae cannot readily be assigned to any of the described ones, but, except one, exhibit no striking distinctive characteristics that would justify their description here, as unidentified larval species.

Unless indicated otherwise, the material listed has been collected by N. KAZANCI, in Anatolia, the Asian part of Turkey. Names of provinces are given

in italics. Northern latitude and eastern longitude are indicated where possible; sometimes, only the coordinates of the capital of the respective province are known to me and indicated.

#### SPECIES RECORD

### *Blepharicera fasciata* (WESTWOOD)

#### Material

EUROPEAN TURKEY: *Kirklorelil*: Demirköy (41°49'N/27°45'E), Belanik brook, 300 m, 2.6.83, 2 larvae;

ANATOLIA: *Manisa* (38°36'N/27°26'E): Bosdağlar, 950 m, 3.6.84, 1 larva, 2 pupae; *Adapazari*: Karasu (41°06'N/30°41'E), Serbet pinari, 50 m, 16.7.83, 61 larvae, 20 pupae; *Kastamonu*: Inebolu (41°58'N/33°46'E), Kayran brook, 14.7.83, 33 larvae, 32 pupae; *Amasya* (40°39'N/35°57'E): Borabay (40°50'N/36°11'E)–Lake, 1020 m, 10.7.83, 5 larvae, 39 pupae; *Malatya*: Sürgü (38°01'N/37°59'E), Sultansuyu stream, Takas (picnic place), 1250 m, 23.5.83, 2 larvae; *Gümüşhane*: Gümüşhane (40°27'N/39°27'E)–Şiran (40°30'N/39°09'E)–Road, Karalsik, 1450 m, 3.6.83, 1 larva, 6 pupae; Kelkit, Kilictas, 1300 m, 3.6.83, 5 larvae, 2 pupae; *Tunceli* (39°07'N/39°32'E): Pülümür Çayı (39°31'N/39°56'E), 1100 m, 25.5.83; 1 pupa; *Erzincan*: Kemah (39°37'N/39°04'E), 1000 m, 26.5.83, 4 larvae, 1 pupa; Tercan (39°47'N/40°24'E)–Erzincan Road, 1420 m, 27.5.83, 4 larvae, 1 pupa; *Erzurum* (39°55'N/41°17'E): Iloor, Iltu stream, Gölbaşı bridge, 950 m, 31.5.83, 2 larvae; Narman (40°27'N/41°58'E), Yaniktas, 1600 m, 30.5.83, 16 larvae, 29 pupae; Erzurum-Çat (39°40'N/41°00'E) Road, Tasligüney, 2100 m, 28.5.83, 19 larvae; Erzurum-Narman Road, Pasinler (40°01'N/41°44'E), Hasankale stream, 1800 m, 30.5.83, 1 larva, 2 pupae; Erzincan (39°44'N/39°29'E)–Erzurum Road, Degirmendere stream, 1150 m, 27.5.83, 7 larvae, 8 pupae; Erzurum-Artvin Road, Coreeh River, Yusufeli, 450 m, 31.5.83, 1 pupa; *Artvin*: Artvin (41°11'N/41°49'E)–Sausat Road, Yanikli, 450 m, 1.6.83, 22 larvae, 15 pupae; Borçka (41°24'N/41°40'E), Deviskel stream, 20 m, 31.5.83, 30 larvae, 4 pupae; Artvin-Norlik, 350 m, 31.5.83, 6 larvae, 14 pupae; Artvin-Erzurum Road 30 km to Artvin, 250 m, 31.5.83, 1 larva, 1 pupa; *Kars*: Karakurt (40°27'N/39°29'E), 1350 m, 2.6.83, 1 pupa.

The present material is an addition of several new localities of this abundant species, including a record from the European part of the country where it had not been found previously. Records from the southwest of Anatolia are still not available, but occurrence of the species there is likely.

### *Liponeura bithynica* sp. n. (Fig. 1)

#### Material

Holotype 1♂, 8♂ paratypes, ANATOLIA, *Kütahya*: N Durabey (39°53'N/29°36'E), H. Rausch leg. Material in my collection, in the Limnologische Flussstation Schlitz.

A relatively large species, wings 9.5–10.0 mm long. Venation normal, no crossvein. General structure typical of the genus. Antennae with 15 segments, those of flagellum subcylindrical, three to four times as long as wide. Eyes simple, widely separate. Rostrum shorter than head high. Legs normal, with a single spur on the metatibia. The calcipala is beset with strong spines. It is particularly well developed on the hind tarsus. The claw is slender, distally gently curved, its inner margin with fine denticles on the fore tarsus, less distinct on the middle tarsus, only finely setose on hind tarsus.

The specimens are brown to greyish, scape, pedicel, base of first flagellar segment and femora (except tips) yellowish. Identification of the new species requires examination of the genitalia.

Hypopygium large, its basal section wide, subparallel. Ventrodistal margin of the hypopygium with a narrow rounded median projection. Outer dististyles gently curved, with a blunt inner projection near the base, a narrow subapical sec-

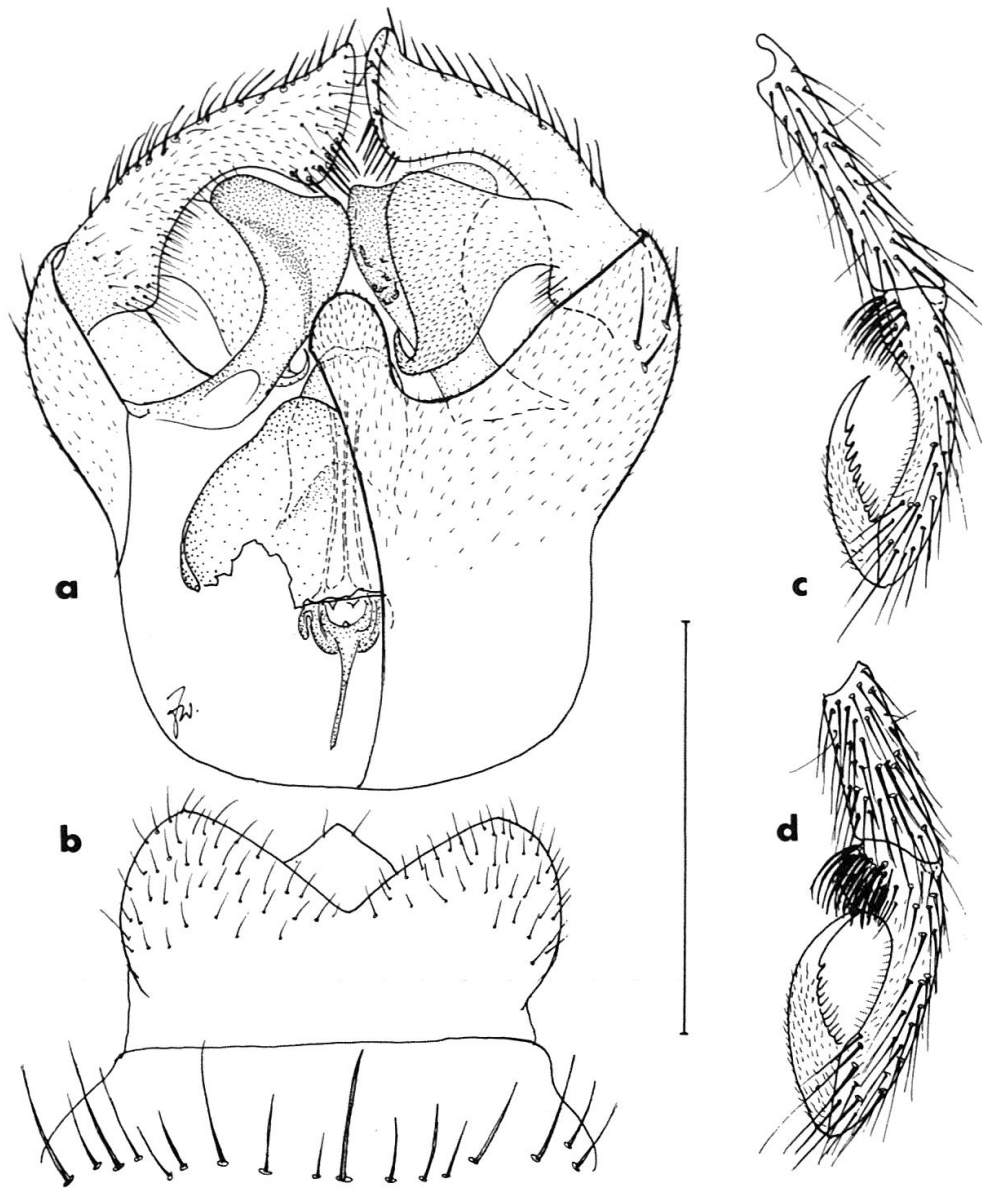


Fig. 1. *Liponeura bithynica* sp. n., male genitalia (a, hypopygium, right side of illustration in ventral, left side in dorsal view after removal of tergites 9 and 10, which are shown in b) and tips of front (c) and hind (d) tarsus. The scale represents 0.5 mm for Fig. a and b, 0.6 mm for c and d.

tion and a slightly enlarged, distally truncate triangular apex. The distal edge of the apex is a little bit extended and curved ventrad. The membranous ventral appendage of the outer dististyle is approximately triangular, with the distal corner very blunt. Its basal edge is extended into a filament, which is curved dorsad, like a little comma. The inner dististyles have a slender base and an approximately triangular apex. The outer edge is more pointed than the inner. By transparency, the inner dististyle appears hollow, with a concave inner limit, in dorsal view. In ventral view, this portion is hidden by the membranous appendage of the outer dististyle, but a few whart-like rugosities near the inner edge of the inner dististyle are then visible.

The inner plate of the hypopygium, the penis cover, the penis filaments and the seminal vesicle are as normal in the genus. The hypopygium is covered by very fine pilosity ventrally, with a few strong setae disto-laterally. The outer dististyle is practically bare ventrally, and covered with fine microtricha dorsally. A series of strong setae along the outer edge, very fine setae are near the base and on the inner projection, also for some distance distally from it along the inner edge. The apex of the dististyle is beset with slender setae near the outer margin, with a group of stiff strong setae near the inner margin. The dorsal plate of the hypopygium has a simple v-shaped notch with rounded outer edges and normal pilosity.

#### *Affinities*

Without knowledge of the female and particularly the pupa and larva, it is difficult to assign the present species to a particular group within *Liponeura*. In individual characters, it has resemblances with many different species. However, the extended ventral distal margin of the hypopygium is a character observed mainly among species of the eastern Mediterranean area. Of the Caucasian-Anatolian species, *L. mannheimsi* is most similar with regard to the inner dististyles and the simple outer dististyle. However, the shape of its ventral appendage distinguishes it easily. The other mainland species are less similar to *L. bithynica* than some island species, i. e., *L. cretica* ZWICK, *L. malickyi* ZWICK from Crete and *L. cypria* ZWICK, from Cyprus. The first two have differently shaped inner dististyles and the ventral appendage of the outer one is also different. *L. cypria* differs by the ventral appendage of the outer dististyle. None of the other species mentioned has a similarly wide basal section of the hypopygium. Identification of *L. bithynica* should therefore never be a problem, and it is doubtful whether the resemblances mentioned are indicative of close relations, or not.

#### *Liponeura heidae* ZWICK, 1972

##### *Material*

ANATOLIA, *Erzurum*: Erzurum-Çat (39°40'N/41°00'E)-Rd. at Tasligurey, 2100 m, 29.5.1983, 1 pupa.

The present record is not very far from the type locality in the Province Malatya, at Sürgü.

#### *Liponeura mannheimsi* ZWICK, 1972

##### *Material*

ANATOLIA, *Bolu* (40°44'N/31°37'E): Yedigöller Natl Pk, 780 m, 16.5.1983, 3 pupae (including paratype male and female) and 6 last instar larvae.

The previous material also came from Bolu province.

#### *Liponeura anatolica* ZWICK, 1972

##### *Material*

ANATOLIA, *Kars*: Karakut (40°10'N/42°36'E), Cifteköprü Bridge, 1459 m, 2.6.1983, 1 mature female pupa.

Previously recorded from the province Artvin.

*Liponeura tarnogradskyi* BISCHOFF, 1930

*Material*

ANATOLIA, *Hakkari*: Sat Dag, Shagalut, SW Yüksekova (37°36'N/44°16'E), 1700 m, 4.–8.8.1982, 2♂♂, leg. W. Schacht. USSR, *Armenia*, near Erevan (40°11'N/44°30'E), Gherard, 16.7.1963, A. C. Soika, 3♀♀ (all my coll.).

This very large species is known from the Caucasus and the province Artvin in Anatolia.

*Liponeura euryfrons* BISCHOFF, 1935

*Material*

ANATOLIA, *Bolu* (40°44'N/31°37'E): Yedigöller Ntl Pk, 16.5.1983, 1 larva. *Gümüşhane*: Gümüşhane–Gelhit Rd, 7 km to Köse (40°13'N/39°39'E), 1500 m, 1 larva; *Erzincan* (39°44'N/39°29'E): Üzümlü, 1500 m, 15.7.1984, 3 larvae. *Rize* (41°02'N/40°31'E): Ovit Mt., Kazancuhuru Plateau, 2300 m, 8.8.1983, 2 short spined larvae and one mature female pupa; *Artvin*: River near Borçka (41°24'N/41°49'E), 21.5.1970, 1 pupa, leg. Zwick; *Muş* (38°44'N/41°30'E): Varta, Atabalik, 1.8.1982, 28 short spined larvae; *Hakkari*: Beytuşşebap (37°35'N/43°10'E)–Hakkari Rd, 50 km to Hakkari (37°36'N/43°47'E), 1100 m, 13.7.1983, 4 larvae, 3 pupae; Yukari (40°06'N/38°21'E), Otluca Katramaz Stream, 2000 m, 24.7.1984, 2 larvae, 6 pupae (including mature male and female); Sat Dag, Shagalut, SW Yüksekova (37°36'N/44°16'E), 1700 m, 4.8.1982, 3♂♂, 1♀, leg. Schacht.

The present material allows for the first time to definitely associate adults and immatures. The spiny larvae and the pupae have been described by KOMAREK (1914), BISCHOFF (1935) and ZWICK (1972), as *L. platyfrons* KOMAREK, 1914 (not definitely associated, a doubtful species), *L. euryfrons* (not definitely associated), and *Liponeura* spec. 3, respectively. Conspecificity had been anticipated in view of repeated co-existence. The fact that females with reduced mandibles have been dissected out of pupae from localities with short-spined larvae as well as from places where specimens with longer spines have been taken suggests (but does not prove) conspecificity of the different morphs distinguished by BISCHOFF (1935). As already indicated by ZWICK (1972), much of the apparent differences in spine length is in fact attributable to different degrees of body extension of the larvae, depending on the amount of food ingested since the previous moult.

*Liponeura* spec. 2, of ZWICK, 1972

*Material*

ANATOLIA, *Artvin*: Gökteş (41°18'N/41°26'E), 250 m, 31.5.1983, 1 pupa.

Previously found near Pülümür, in the province Elazığ.

*Liponeura* spec.

*Material*

ANATOLIA, *Erzincan* (39°44'N/39°29'E): Üzümlü, 1470 m, 27.5.1983, 8 larvae.

I am beginning to wonder about the identity of the *Liponeura* larvae from Betscho, which KOMAREK (1914) described. Previously, I had identified them with specimens from the north-east of Anatolia (*Liponeura* spec. 4, of ZWICK, 1972) because of the very stout body with strongly transverse segments, the short antennae, of which the basal sclerotised section is enlarged towards the tip, and

the dense pilosity of these specimens. They have very short, almost whart-like setae on the middle of their body, and hair-like setae only along the sides. The present specimens, however, are covered with very many strong club-like setae. Unfortunately, KOMAREK gives no detailed information on the pilosity, his material is not available to me. I am uncertain now, whether the two forms before me are conspecific or not and which is indeed the same as the larva from Betscho.

*Ptychoptera albimana* FABRICIUS, 1787

*Material*

ANATOLIA, *Bolu* (40°44'N/31°37'E): Yedigöller Ntl Pk, 780 m, 16.5.1983, 1♀.  
 FRANCE, *Pyrénées Orientales*, little stream nr la Bastide, 1000 m, SE of Prades, 18.5.1987, 1♂ (leg. Zwick). ITALY, *Calabria*, Sila Grande, upper course of Torrente Mucone nr Camigliatello, 5.5.1977, 1♀ (leg. Zwick). YUGOSLAVIA, *Serbia*, Stara Planina, Topli Do, Temska River, N of Plovdiv, 1♂, 18.9.1985 (leg. Sivec, my coll.).

New for Anatolia, unknown from the Caucasus (JOOST, 1978). The specimen resembles Central European ones completely. The Anatolian record is particularly interesting in view of the existence of a related species, *P. peusi* JOOST, 1974 in the Caucasus.

PEUS (1958) gives the distribution of *P. albimana* only as "Europa" and the species is indeed widespread but the exact limits of its distribution remain to be established. The occurrence in England and Scotland (STUBBS, 1972), Scandinavia (TJEDER, 1968, HANSEN, 1982), Czechoslovakia (ZITEK-ZWYRTEK, 1971), Poland (KRZEMINSKI, 1986), and the southwest of France (THOMAS, 1977) is well documented. I have examined material from many localities in Germany, in Switzerland, northern Italy, in Austria (see also THEISCHINGER, 1978) and in Yugoslavia (Slovenia). I possess material from some interesting outlying localities listed above. Eventually, the present gap between the Central European and Anatolian areas will likely be closed by additional records.

*Ptychoptera contaminata* (LINNAEUS, 1758) (Fig. 2)

*Material*

ANATOLIA, *Erzurum*: Erzurum–Ispir (40°29'N/41°04'E) Rd, Gelinkaya, 1920 m, 29.5.1983, 1♂.

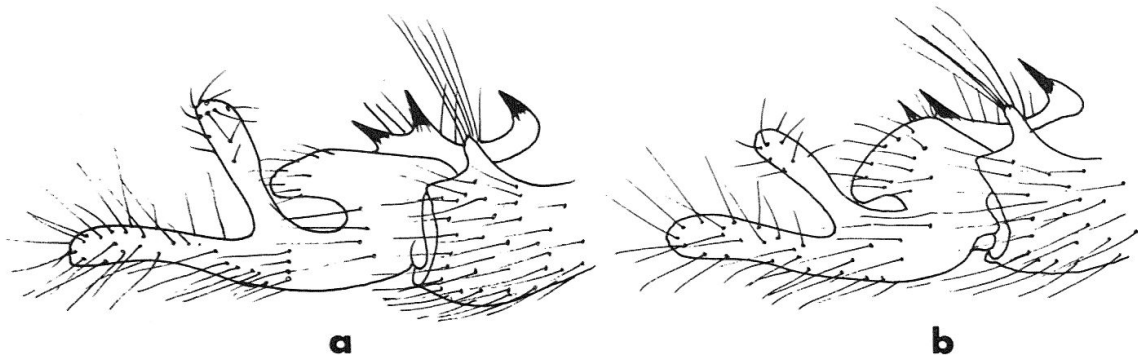


Fig. 2. *Ptychoptera contaminata* (LINNAEUS), right dististyle of male in slightly oblique dorso-lateral view; a, aberrant specimen from Gelinkaya; b, typical specimen from North Germany, Schleswig-Holstein, Lütjensee.

New for Anatolia. There is a wide gap between the present locality and confirmed Central European records which are west of a line running approximately from Budapest to Riga.

The Anatolian specimen differs from Central European ones by a completely brown tergite 3 and several details in the genitalia. These differences are most pronounced in the shape of the dorsobasal appendage of the dististyle (Fig. 2). The significance of these differences cannot be evaluated presently, but in view of the morphological homogeneity of Central European populations they likely indicate geographical variation. Distinction of an Anatolian subspecies may eventually become necessary.

#### ZUSAMMENFASSUNG

Mehrere Arten Blephariceridae und Ptychopteridae (Diptera) werden aus Anatolien gemeldet. *Liponeura bithynica* sp. n. (Blephariceridae) wird aus Kütahya beschrieben und abgebildet, die Identität der mutmasslichen Larven und Puppen der *L. euryfrons* BISCHOFF wird bestätigt. *Ptychoptera albimana* FABRICIUS und *P. contaminata* (LINNAEUS) sind neu für Anatolien, die Funde liegen weit ausserhalb der bisher bekannten Areale. Die zweite Art mag durch eine von den zentraleuropäischen Populationen verschiedene Rasse vertreten sein.

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