

Additions to the Cylindrotomidae, Limoniidae and Pediciidae species (Diptera) in Romania and Bulgaria

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Abstract:

Between 2000 and 2005 a number of 173 different Limoniidae and Pediciidae species were collected from different sites in Romania and Bulgaria. A number of 21 species are new records to the Romanian fauna, as *Austrolimnophila (A.) brevicellula* Stary, 1977; *Hexatoma (E.) grisea* (Riedel, 1914); *Hexatoma (H.) fuscipennis* (Curtis, 1826); *Idioptera macropteryx* (Tjeder, 1955); *Phylidorea (Ph.) abdominalis* (Staeger, 1840); *Cheilotrichia (E.) coerulea* Stary, 1987; *Hoplolabis (P.) spinosa* (Nielsen, 1953); *Idiocera (Idiocera) punctata* Edwards, 1938; *Molophilus (M.) brevihammatus* Bangerter, 1947; *M. (M.) ermolenkoi* Savchenko, 1976; *M. (M.) priapoides* Stary, 1971; *Ormosia (O.) egena* (Bergroth, 1891); *Antocha (O.) alpigena* (Mik, 1883); *Dicranomyia (D.) omissinervis* Meijere, 1918; *Limonia dilutior* (Edwards, 1921); *Lipsothrix eccuculata* Edwards, 1938; *Metalimnobia (M.) zetterstedti* (Tjeder, 1968) and *Orimarga (Orimarga) juvenilis* (Zetterstedt, 1851) between Limoniids; *Dicranota (P.) flammatra* Stary, 1981 and *Pedicia (Crunobia) stary* Savchenko, 1978 between Pediciids and a new record of Cylindrotomidae, *Triogma trisulcata* (Schummel, 1829). *Baeoura malicky* Mendl and Tjeder is new record to the Bulgarian fauna. A short comment on general distribution of the species is also presented.

Keywords: new records, Limoniidae, Pediciidae, Cylindrotomidae, distribution

Introduction:

Limoniidae, belongs to Diptera, are insects forming a large family with over 1,700 species in the Palearctic, from which more than 520 species are known to occur in Europe (SAVCHENKO & *all.* 1992 and subsequent authors), inhabiting various terrestrial and aquatic ecosystems. Most of Pediciids are important representatives of aquatic macroinvertebrate communities, with a relative small number of species in Europe, around 65 (STARÝ & PAPP 2001; UJVÁROSI & STARÝ 2002), but with important local and regional endemics. Cylindrotomidae are comparatively large crane flies, with only six species present in Europe (SOOS & OOSTERBROEK 1992). In general, all species are considered local and rare, sometimes however they are fairly common, flying slowly around in marshy habitats (STARÝ & BARTAK 2000). The crane flies fauna from the Central Europe, including the three families mentioned before, Cylindrotomidae, Limoniidae and Pediciidae, are the most diversified in Europe and reflects the variety of suitable habitats, but the knowledge of the fauna of Limoniidae and Pediciidae from here, where the Romanian and Bulgarian faunas belongs, may be evaluated as highly inadequate (UJVÁROSI & STARÝ 2002).

A first overlook of the entire Romanian Limoniidae and Pediciidae fauna was published by WEINBERG and ASTANEI in 1979, based mostly on some bibliographical data. The total number of species cited from here was only 60 species. In the last thirty years no more comprehensive work was published, even some important contributions had have appeared. One of the most important papers was published by ERHAN and CEIANU in 1986, in where they enumerated 163 species of Limoniidae and Pediciidae from the northern part of the Eastern Carpathians. Quite recently important new data concerning the Limoniids from some less investigated regions was published by PÁRVU (2003), especially from Maramureş region. A revised check list of the Romanian Pediciidae and new records for the country's fauna, as well as describing new species to the science were published recently (UJVÁROSI & STARÝ 2002). The present number of the Pediciidae and Limoniidae from Romania could be approximate to 268 (OOSTERBROEK 2005), but year by year new species will be added mostly from less investigated regions (see present paper). Cylindrotomidae was recorded for the first time for the Romanian fauna quite recently by UJVÁROSI and OOSTERBROEK (2002).

The Bulgarian Limoniidae, Pediciidae and

Cylindrotomidae fauna is poorly known; from here we can expect also highest number of species, due to the suitable habitat especially from high altitudes. Up to the present besides some sporadically faunistic records made by KRZEMINSKY 1984; KRZEMINSKY & STARÝ (1989), only a single attempt was made to summarize the knowledge of the Bulgarian fauna in the Catalogue of the Palearctic Diptera (SAVCHENKO et al. 1992), which data were quite recently actualized by OOSTERBROEK (2005). Based on this information the present number of Limoniidae and Pediciidae species from here could be estimated around 230.

The present paper is an important contribution to the better knowledge of the Limoniidae and Pediciidae fauna, especially from Romania, and a new record is publishing to Bulgaria. The material from Romania and Bulgaria were collected by Dr. Steffen Pauls, Peter Neu (Germany), Laszlo Rakosy (Romania) and by the author. The specimens are deposited in the L. Ujvárosi collection, Romania.

Abbreviations: L.R. (Laszlo RAKOSY), P.N. (Peter NEU), S.P. (Steffen PAULS), U.L. (Lujza UJVÁROSI).

New records of Limoniidae and Pediciidae in the Romanian fauna

Cylindrotomidae

Triogma trisulcata (Schummel, 1829)

Material: 1 ♀, Apuseni Mts., 460 m, Lorău, Pădurea Craiului, Boiu valley near stream, 8.VIII.2005 (U.L.).

Biology: larvae are entirely aquatic, living under the moss carpet of the stones in brooks (PEUS, 1952).

Distribution: in whole Westpaleartic, but in Europe exist only sporadically data from Austria, Czech Republic, Denmark, Finland, Germany, Great Britain, Hungary, Italy, Netherlands, Poland, Slovakia, Switzerland, Estonia, Lithuania and Russia. The species is expected to be more wide spread in Europe (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Pediciidae

Dicranota (Paradicranota) flammatra Stary, 1981

Material: 2 ♂♂, Apuseni Mts., 1260 m, Padiș Protected Area, Cetatea Rădesii area, swept around carstic springs, 21.VII.2000 (U.L.).

Biology: very little is known about the biology of this species.

Distribution: Andorra, Austria, Bulgaria, Czech

Republic, France, Germany, Italy, Poland, Slovakia, Switzerland (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Pedicia (Crunobia) stary Savchenko, 1978

Material: 4 ♂♂, Southern Carpathians, Bucegi Mts., Sinaia, Sf. Ana Rock, 1320 m, swept near by a small brook, 22.07.2004 (P.N.).

Biology: the larvae is predator in small mountainous brooks between 800-1500 m in the Carpathians.

Distribution: up to the present it was recorded only from Ukraine (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Limoniidae

Limnephilinae

Austrolimnophila (Austrolimnophila) brevistyla

Stary, 1981

Material: 7 ♂♂, Dobrogea, Macin Mts., Cetatua, Valea Fagilor, 320 m, swept near by a small brook, 01.06.2005 (U.L.).

Biology: the biology of the species and the breeding habitat of larvae is completely unknown.

Distribution: up to the present it was recorded only from Grece (Samos) (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Hexatoma (Eriocera) grisea (Riedel, 1914)

Material: ♂, Apuseni Mountains, Somesului Cald gorge, Doda Pili, 1320 m, swept from the vegetation near by the river, 09.06.2000 (U.L.); 3 ♂♂, Transylvania, damp meadows near by Cluj, Valea Garbaului, 350 m, sweep from the vegetation, 18.05.2001 (U.L.); 6 ♂♂, Eastern Carpathians, damp meadows between Senetea and Suseni, in the Gheorgheni Depression, 720-750 m, swept from the vegetation, 24.05.2002; 23.05.2003 (U.L.).

Biology: the larval development take place in moist habitats near by brooks and small rivers or even in peat bogs (MENDL 1978). It is a spring or early summer species.

Distribution: Up to the present it was recorded only from Bulgaria, Yugoslavia (Montenegro) and Ukraina (Carpathians) (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Hexatoma (Hexatoma) fuscipennis (Curtis, 1836)

Material: ♂, Apuseni Mountains, Iara, Iara Valley, light trap, 4.07.2000 (U.L.).

The male terminalia is very similar with the previous species, but the subgenus separation could be made easy after the wing venation (DIENSKE, 1987).

Biology: the larval development is close related to wet habitats (MENDL, 1978).

Distribution: It is a wide distributed species all over Europe, recorded from countries, like Austria, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Hungary, Italy, Poland, Slovakia, Sweden, Yugoslavia, Ukraine, Turkey. (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Idioptera macropteryx (Tjeder, 1955)

Material: 3 ♂♂, Eastern Carpathians, Ciaracio, Ciuc Depression, 640 m, lamping in damp meadow near by a brook, 15.07.2001 (U.L).

Biology: the biology of this species is unknown, our adult material was collected in a damp meadow near by a mountainous brook, and the larval habitat is possible close to the water.

Distribution: Up to the present it was recorded from Finland, Norway, Sweden, Yugoslavia (Montenegro); Lithuania, Ukraine; Russia (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Phylidorea (Phylidorea) abdominalis (Staeger, 1840)

Material: ♂, Eastern Carpathians, Dupa Lunca" Protected Area, peat-bog at Voşlobeni, Gheorgheni Depression, 720 m, sweeping the swampy vegetation, 24.05.2002 (U.L), 2 ♂♂, Benes peat bog, near Tusnad Sat, Ciuc Depression, 670 m, swept the vegetation, 25.05.2003 (U.L).

Biology: the larvae is a swamp dwelling species, all the adult specimens collected by us come from such specific habitats.

Distribution: It was recorded in a large number of European countries, like Austria, Belgium, Czech Rep., Denmark, Finland, France, Germany, Great Britain, Hungary, Ireland, Netherlands, Norway, Poland, Slovakia, Sweden; Lithuania, Byelorussia, Ukraine and Russia (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Chioneinae

Cheilotrichia (Empeda) caerulea Stary, 1987

Material: ♂, Eastern Carpathians, Rodna Mountains, Lala Valley, 1000 m in spruce fir forest, lamping near by Lala brook, 27.07.2003 (S.P.).

Biology: the larval development place is unknown, but most probably is close related with the high altitude forested areas.

Distribution: After its recent description, with a complete revision of the European species of the whole subgenus *Empeda*, the present of this species was confirmed in a number of other central Euro-

pean counties, too, like Austria, Czech Rep., Germany, Slovakia and Switzerland (SAVCHENKO et alii, 1992; OOSTERBROEK, 2005).

Hoplolabis (Parilisia) spinosa spinosa (Nielsen, 1953)

Material: ♂, Eastern Carpathians, Oitoz, Nemira Mountains, 750 m, mixed forest with spruce-fir and beech, lamping near by a brook, 09.07.2001 (U.L.).

Biology: the larval development requires swampy meadows in mountainous regions (MENDL, 1978).

Distribution: a very rare Central and Eastern European species, up to the present it was recorded only from Austria, Czech Rep., Poland, Slovakia; Ukraine and Moldavia (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Idiocera (Idiocera) punctata Edwards, 1938

Material: ♂, Eastern Carpathians, Gutin Mountains, Valea Neagra, 800, lamping near by a sulphurous springbrook, 25.07.2003 (S.P.).

Biology: the adults of the species belong to the *Idiocera* genus is close related to the high humidity, close to the river shores. The adults could be collected easily from the vegetation near by the running waters. The identity of larvae belong to *Idiocera* hardly could be appreciate, the breeding sites for majority of them is unknown.

Distribution: Austria, Bulgaria, Czech Rep., Great Britain, Slovakia, Switzerland and also Azerbaydzhan and Afghanistan (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Molophilus (Molophilus) brevihammatus Bangerter, 1947

Material: 23 ♂♂, Oitoz, Nemira Mountains, 750 m, mixed forest with spruce-fir and beech, lamping near by a brook, 08-13.07.2001 (U.L.).

Biology: It is a characteristic species along mountainous brooks, where the adults could be caught sweeping the bvegetation or in night with lamping. The larval development take place in swampy places, being higrophilous (MENDL 1978). **Distribution:** This species is a limited distributed in Europe, being present only in the mountainous region in Central and Southern Europe, recorded up to the present from Austria, Bulgaria, Czech Rep., Germany, Slovakia, Switzerland, Yugoslavia; Ukraine (Carpathians) (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Molophilus (M.) ermolenkoi Savchenko, 1976

Material: ♂, Eastern Carpathians, Gutin Mts., Taul lui Dumitru peat bog, 900 m, sweeping in damp sp-

ruce-fir forest, 22.02.2004 (U.L).

Biology: the larval breeding habitat is unknown, probably associated with damp spruce-fir forest.

Distribution: up to the present it was recorded only from the Carpathians, in Ukraine (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Molophilus (Molophilus) priapoides Stary, 1971

Material: 2 ♂♂, Southern Carpathians, Stanisoara, Cozia Mts., 800 m, mixed forest with spruce-fir and beech, lamping near by a brook, 06-07.06.2000 (L.R.).

Biology: Up to the present it was little published about the habitat requirement of this mountainous species, but like other representants from the *Molophilus* frequently it has collected along different mountainous brooks, the larval could be associated with aquatic habitats from here (MENDL 1978).

Distribution: The species was described by STARY in 1971 from Czech Republic and Bulgaria, later it was collected in Austria, France, Germany, Italy, Poland and Slovakia, too (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Ormosia (Ormosia) egena (Bergroth, 1891)

Material: 2 ♂♂, Southern Carpathians, Stanisoara, Cozia Mts., 800 m, mixed forest with spruce-fir and beech, lamping near by a brook, 06-07.06.2000 (L.R.), ♂, Southern Carpathians, Retezat Mts., Rausor valley, 8.08.2003 (S.P).

Biology: It was collected by us in the same habitat, like the former species, so the habitat requirement could be similar. In the literature it was very little published about the biology and ecology of this species (MENDL 1978). The adults are in fly from May to August.

Distribution: Albania, Austria, Czech Rep., France, Germany, Italy, Poland, Serbia, Slovakia, Switzerland; Ukraine (Carpathians) (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Limoniinae

Antocha alpigena (Mik, 1883)

Material: ♂, Southern Carpathians, Retezat Mts., Hobita, Sohodol stream valley, 560 m, 09.08.2003 (S.P.).

Biology: the adult was frequently collected around mountainous brooks.

Distribution: Austria, Czech Republic, Denmark, France, Germany, Italy, Slovakia, Slovenia, Switzerland, Ukraine (Carpathians), Russia and Georgia (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Dicranomyia (Dicranomyia) omissinervis Meijere, 1918

Material: ♂, Cluj, Transylvania, ruderal vegetation, swept the vegetation, 450 m, 14.05.2002 (U.L); ♂, Ciaracio, Ciuc Depression, 640 m, lamping in damp meadow near by a brook, 15.07.2001 (U.L.).

Biology: As many other representative species of the family Limoniidae, this species is also associated with moist environment, like swamps, peat bogs or small rivers side (MENDL 1978), but sometimes could be collected from drier places too, like shaded vegetation in parks and gardens. The male genitalia is presented in fig. 11.

Distribution: It is a widely distributed species in the Palearctic, recorded from the following countries: Czech Republic, France, Germany, Great Britain, Ireland, Netherlands, Poland, Slovakia, Sweden, Switzerland, Yugoslavia; Lithuania, Ukraine (Carpathians); Russia and Mongolia (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Limonia dilutior (Edwards, 1921)

Material: 8 ♂♂, Apuseni Mts., Lorau, Padurea Craiului, Boiului valley, 450 m, 17.05.2002 (U.L); 30.04.2004 (U.L.), ♀, Apuseni Mts., Buru, Berchisului Gorge, 420 m, 19.06.2004, swept from the vegetation near a brook (U.L), ♂, Southern Carpathians, Fagaras Mts., Calugareni Valley, 800 m, 06.08.2003 (S.P).

Biology: the larval breeding habitat is associated with decaying organic material from beech forests.

Distributions: (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Lipsothrix eccuculata Edwards, 1938

Material: ♂, Eastern Carpathians, Nemira Mts., Oitoz, 750 m, 11.07.2001, sweeping near a brook in damp beech and spruce-fir forest (U.L.).

Biology: the adults were frequently collected around springs with abundant decaying material in beech forests.

Distribution: (SAVCHENKO et al. 1992; OOSTERBROEK 2005).

Metalimnobia (Metalimnobia) zetterstedti (Tjeder, 1968)

Material: ♂, Eastern Carpathians, Calimani Mts., Toplita, Lomas valley, 1000 m, 30.07.2003, sweeping the vegetation near a brook (S.P); 3 ♂♂, 2 ♀♀, Harghita Mts., Luci peat bog, Santimbru Bai, 1050 m, 10.06.2001, sweeping the hydrophilous vegetation in the bog (U.L); ♂, Gutin Mts., „Poi-ana printre brazi” peat bog, 24.07.2004 (P.N.); ♀, Apuseni Mts., Gilau Mts., Muntele Baisorii, Bus-

cat, 1300 m, 03.08.2003, sweeping the vegetation around spring (S.P.); ♂, Southern Carpathians, Buccegi Mts., Moroieni, Pietrele Albe Rock, 800 m, 05.08.2003 (U.L.).

Biology: the species is associated with fleshy fungi (Reusch & Oosterbroek 1997).

Distribution: Austria, Belgium, Bulgaria, Czech Republic, Finland, Germany, Italy, Montenegro, Norway, Serbia, Slovakia, Sweden, Switzerland, Estonia, Lithuania, Ukraine, Russia, Mongolia (Savchenko et al. 1992; Oosterbroek 2005).

Orimarga juvenilis (Zetterstedt, 1851)

Material: 3 ♂♂, Apuseni Mts., Rimetea, Trascaului Mts., 480 m, shrubs near the village (U.L.), ♂, ♀, Eastern Carpathians, Haghimas Mts., Lacul Rosu, Cupas Valley, 800 m, 28.07.2003, sweeping the vegetation near a brook (S.P.).

Biology: the larval breeding site is unknown.

Distribution: Austria, Bulgaria, Croatia, Finland, Great Britain, Ireland, Italy, Norway, Slovakia, Sweden, Switzerland, Ukraine (Savchenko et al. 1992; Oosterbroek 2005).

New records of Limoniidae in the Bulgarian fauna

Baeoura malicky

Material: ♂, Sarmena Gora, 420 m, 2004.08.03, sweeping along brook (P.N.).

Biology: the larval breeding site is unknown.

Distribution: Greece (central, Rodos), Romania, Serbia (Savchenko et al. 1992; Oosterbroek 2005).

Conclusions

Between 2000 and 2005 a number of 173 Limoniidae, Pediciidae and Cylindrotomidae species were identified, from which 22 provided to be new to the Romanian and Bulgarian fauna. The collecting sites are distributed mostly on the mountainous region, where the species diversity and the number of suitable habitats were expected highest than in the hilly or plain regions.

Part from these species we can find as widely distributed in Europe like *Triogma trisulcata*, *Hexatoma (H.) fuscipennis*, *Phylidorea (P.) abdominalis*, *Idiocera (I.) punctata*, *Dicranomyia (D.) omissinervis*, *Metalimnobia zetterstedti*, while others has more limited distribution, collected only in a few countries, where they are rare or very rare, like *Pedicia (C.) staryi*, *Austrolimnophila (A.) brevicellula*, *Hexatoma (E.) grisea*, *Baeoura malicky*, *Chelictrotrichia caerulea*, *Idioptera macropteryx*, *Hoplola-*

bis (P.) spinosa spinosa, *Molophilus (Molophilus) ermolenkoi*.

The number of individuals collected from different sites oscillates between a few to more than 40 species. The high number of species from some suitable sites (mountainous brook valleys, damp forests) shows that they could be an important component of the biological diversity of the wet areas, especially from the mountainous regions, having an important implication in the ecology of these habitats. Unfortunately our knowledge on the ecology and distribution of majority of Pediciidae, Limoniidae and Cylindrotomidae in Europe is so superficial than the practical importance of these insects in environmental assessments and classifications are subsequent neglected.

We believe that in the future more faunistic investigations will provide new records and the list of the mentioned country's species should increase in the future.

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