Additions to the Cylindrotomidae (Insecta, Diptera) fauna of Bulgaria and Romania

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Summary: The last 10 years of intensive collecting on Tipuloidea from Romania and Bulgaria revealed new faunsitic data and a massive presence of *Cylindrotoma distinctissima distinctissima* (Meigen, 1818) in every mountainous regions of Romania as well as its first record to the fauna of Bulgaria. Additionally we add a new species, *Diogma glabrata* Edwards, 1938, to the Cylindrotomidae fauna of Romania, which now summarized a total number of three species. Locality data are enumerated in the case of each species presents in the Romanian and Bulgarian fauna, with details in altitude and number of individuals.

Key words: faunistic data, new records, Cylindrotomidae, check list, Romania, Bulgaria

Introduction

The family Cylindrotomidae comprise medium sized crane flies of 11-16 mm long with about 70 described species worldwide (Oosterbroek 2006). The majority of species are concentrated in the Oriental region. In Europe, however only a limited number of only six species are known to occur with scattered faunistic data in different countries (Stary and Batak 2000, Gelhaus *et al*. 2007). In Romania the presence of the family was recorded for the first time by Ujvarosi and Oosterbroek (2002) based on four male individuals of *Cylindrotoma distinctissima distinctissima* (Meigen, 1818) from a single locality, in the Eastern Carpathians, only. Besides this first evidence a second species, *Triogma trisulcata* Schiner, 1863 was recorded in a recently published check list of the Romanian Cylindrotomidae without details in collection locality and date (Ujvarosi 2007).

Since this first records of Cylindrotomidae in Romania a large number of additionally individuals were collected from different regions in Romania, as well as from Bulgaria. As a result the known range of *Cylindrotoma distinctissima* increases considerably, which can reflect its general presence in mountainous humid and forested regions both in Romania and Bulgaria, as well. Additionally first record of *Diogma glabrata* to the Romanian fauna is mentioned in the present study.

Together a number of 46 males and 18 females belongs to three species of Cylindrotomidae were analyzed and compared. The material was deposited in the Diptera Collections of the Taxonomy and Ecology Department, Faculty of Biology and Geology, Cluj, Romania. A comparative material of Cylindrotomidae deposited in the Diptera Collections of the Natural History Museum Vienna, Austria was also used in the present study.

New species of Cylidrotomidae for the fauna of Bulgaria

Cylindrotoma distinctissima distinctissima (Meigen, 1818)

Material: **Bulgaria**: Blagoevgrad, Razlog, Dobarsko, Rila Mts., 1860 m, 42,032 N; 23,482 E: 2 ♂♂, June 8, 2008, leg. P. Neu; Pazardzhik, Velingrag, Draginov, Rhodope Mts., 1320 m, 42.075 N; 23,595 E: 1 ♂, June 11, 2008, leg. P. Neu. **Romania**: Transylvania, Eastern Carpathians, Sâncrăieni, Harghita Mts., Sântimbru Băi humid forest, 1206 m, 46.163 N; 25.454 E: 2 ♂♂, June 9, 2001, leg. L. Ujvarosi; 1 ♂, 1 ♀, June15, 2003, leg. Ujvarosi L.; Băile Chirui, Harghita Mtsd., marshy area, 740 m, 46.174 N; 25.344 E: 1 ♂, June 8, 2007, leg. M. Balint; Bălan, Hăghimaş Mts., springs around Piatra Singuratică, 1404 m, 46.404 N; 25.494 E: 1 ♂, 2 ♀♀, June 8, 2004, leg. L. Ujvarosi; 5 ♂♂, 4 ♀♀, June 6, 2006, leg. L. Ujvarosi; 1 ♂, June 11, 2010, leg. L. Ujvarosi; Voslăbeni, Gheorgheni Mts., humid forest above Súgó cave, 939 m, 46.404 N; 25.402 E: 1 ♂, June 17, 2006, leg. L. Ujvarosi; Corund, Harghita Mts., Kalonda pass, 738 m, 46.262 N; 25.132 E: 1 ♂, August 20, 2006, leg. L. Ujvarosi; Tulgheş, Gherogheni Mts., Hagota, 721 m, 46.573 N; 25.482 E: 1 ♀, July 28, 2010, leg. L. P. Kolcsár; Apuseni Region, Bihor, Piatra Craiului Mts., Lorău, Boiului waterfall, 447 m, 45.542 N; 22.371 E: 1 ♀,

May 18, 2002, leg. L. Ujvarosi; 1 ♂, May 3, 2006, leg. L. Ujvarosi; Padiş, Cheile Someşului Cald, 1159 m, 46.382 N; 22.441 E: 3 ♂♂, Padiş, Bihor Mts., 46.354 N; 22.444 E: 2 ♀♀, June 10, 2007, leg. E. Török; Padiş, Cetatea Ponorului surroundings, 1100 m, 46.343 N; 22.430 E: 7 ♂♂, June 28, 2011, leg. L. P. Kolcsár; 1 ♀, June 29, 2011, leg. E. Török; Southern Carpathians, Hobiţa, Retezat Mts., Râul Bărbat valley, 859 m, 45.243 N; 23.036 E: 1 ♂, June 1, 2007, leg. L. Ujvarosi; Maramureş, Complex Borşa, Rodnei Mts., Cascada Cailor, 1698 m, 47.352 N; 24.305 E: 8 ♂♂, 1 ♀, leg. R. Vaida; Muntenia, Lereşti, Iezer Mts., Voinea hut, 974 m, 45.263 N; 25.024 E: 8 ♂♂, 1 ♀, August 3, 2006, leg. L. Ujvarosi. **Austria**: Wienerwald: 1 ♂, October, 1814, leg. H. Franz (Diptera Collection, Natural History Museum, Vienna).

The species has a large distribution in Palaearctic Region; however its sporadic literature data is in relation with the more or less insular distribution of the favourable humid mountainous ecosystems at regional scale (Ujvarosi and Oosterbroek 2002). Adults are active in summer period from June to August. Larvae are terrestrial, developing in damp areas of shrubs and forests, usually collected on higher plats, such as *Stellaria, Anemone, Ranunculus, Caltha, Valeriana, Viola, Allius* (Peus 1952, Brinkmann 1991).

The species is rather variable in its range, which is reflected by the morphological divergence of the more or less isolated allopatric populations and distinction between a numbers of subspecies in the species range (Peus 1952). The nominotypical subspecies has a wide range from Western Europe to the Far East (Soos and Oosterbroek 1992). In the Neartic Region the subspecies *C. distinctissima americana* Osten Sacken, 1852 is known to occur (Alexander 1920). By contrast, *C. distinctissima alpestris* Peus, 1952 has a more restricted range. It was recorded only from the Italian Alps, South Tyrol (Bolzano region) distinct from the nominotypical subspecies by important colour differences but minor variability of the genital structures (Peus 1952, Podenias and Podeniene 2008). The fourth subspecies, *Cylindrotoma distinctissima borealis* Peus, 1952 was recently raised to species rank, based on important differences in adult body and genital structures (Salmela and Autio 2007).

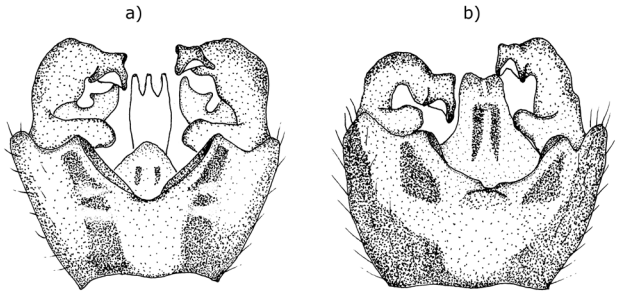

Fig.1. Male terminalia, dorsal view of *C. distinctissima distinctissima* from Bulgaria, Rila Mts. (a) and Austria, Wienerwald (b).

In Fig. 1 we present the male terminalia of the individuals originated from the Rhodope Mts. (Bulgaria) in comparison with individual from Wienerwald (Austria).

A comparison between the male terminalia of the individuals originated from Bulgaria and Austria reveal no significant differences in male terminalia. Gelhaus *et al.* (2007) also state a highly stabile morphological feature of the male terminalia in Mongolia in comparison with the European species, which demonstrate little evidence on morphological plasticity on the subspecies range. Contrastingly, high plasticity of the gonocoxite ventral basal process was identified in the present study (Fig. 2). The morphological variability of the gonocoxite basal process, however, presents no clear evidence on allopatric divergence between Austrian, Romanian and Bulgarian individuals, proving that this feature is taxonomically less important. Similar wide ranges with no evidence on morphological divergence was identified between geographically distant populations in the case a several other Tipuloidea, like *Ula bolitophyla* Loew, 1869 (Pediciidae) (Savchenko 1989), *Dolichopeza modesta* (Savchenko, 1980) (Oosterbroek *et al.* 2001) (Tipulidae) or *Diogma caudata* Takahasi, 1960 (Gelhaus *et al.* 2007). Only a comprehensive morphological and genetic study of the nominotypical species, *C. distinctissima* in its whole range can select the taxonomically most important morphological and genetic characters and a taxonomic revision in the case of *C. distinctissima* is highly recommended using an integrative approach.

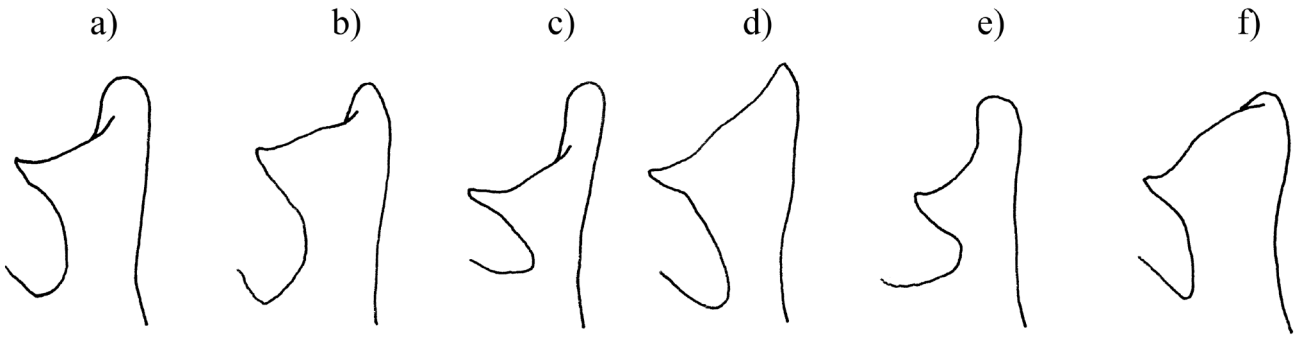

Fig. 2. Basal ventral process of the gonocoxite of *C. distintissima distinctissima* in ventral view of individuals from Bulgaria, Rila Mts. (a), Rhodope Mts. (b), Romania, Retezat Mts. (c), Bihor Mts. (d), Hăghimaş Mts. (e) and Rodnei Mts. (f).

New species of Clymidrotomidae for the fauna of Romania

Diogma glabrata (Meigen, 1818)

Material: **Romania**: Transylvania, Eastern Carpathians, Rebra, Rodnei Mts., Preluca Caului, 1021 m, 47.263 N; 24.306 E: 1 ♂, 1 ♀, June 10, 2010, leg. R. Vaida; Voşlăbeni, Gheorgheni Mts., below Súgó cave, 939 m, 46.402 N; 25.402 E: 1 ♂, June 6, 2011, leg. L.P. Kolcsár; Anieş, Rodeni Mts., Izvorul Mare, 1300 m, 47.314 N; 23.294 E: 1 ♀, June 28, 2011, leg. R. Vaida; Apuseni, Ocolişel, Gilău Mts., Arieş valley, 46.314 N; 23.294 E: 1 ♀, July 27, 2011, leg. E. Török. **Austria**: Hieflan, Slei: 1 ♂ August 6, 1911, leg. L. Czerny; Ahlbeck, 1 ♀, August 14, 1923, leg. L. Czerny.

The species has a similar wide Palaearctic range as *C. distinctissima*, but no allopatric morphological differences, hence no subspecies was recognized in the species range so far (Gelhaus *et al.* 2007). Adults are active in summer period. Larvae of this species are terrestrial, frequently collected in forested habitats and feeding on green mosses such as *Hypnum squarrosum* (Peus 1952). In Romania the species have only a few record from a few locality in the Eastern Carpathians and Apuseni region, only. In Fig. 3 we present details in male genital structures of a male individual collected in the Eastern Carpathians, along the Sugo brook.

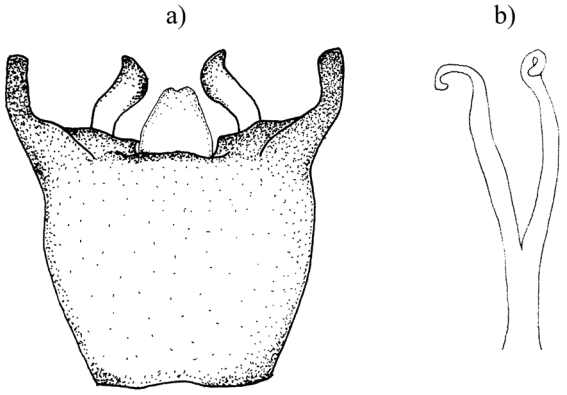

Fig. 3. Male terminalia of *Diogma glabrata* from Romania, dorsal view (a), tip of the aedeagus (b).

Discussion

In the present a number of three Cylindrotomidae species are known to occur in Romania. *C. distintissima* (represented by the nominotypical subgenus) has a general distribution in mountainous wet habitats, frequently found in forests in slopes and ridges. The species was found in similar condition and recorded first to the Bulgarian fauna. In contrast, *D. glabrata* has a more restricted distribution in Romania and it was collected in a limited number of localities in the Eastern Carpathians and Apuseni region. The species was not collected in the Southern Carpathians so far.

Triogma trisulcata (Schummel, 1829) recorded first time in the Romanian fauna by Ujvarosi (2007) has no additional records. The single female was collected in May, 2002 in a humid valley near by a limnocren complex not far from the Boiului waterfall, Lorău, Bratca, Pădurea Craiului Mts., the Apuseni region (45.542 N; 22.371 N).

Based on the known range of the species, the presence of *Phalacrocera replicata* (Linneus, 1758) in Romania is also expected. The species is well known from the Nearctic and West Palaearctic and quite recently were recorded from Eastern Palaearctic, too (Gelhaus *et al.* 2007). The species has only sporadic record in its range, mostly due to the very short adult flight period (April and/or September) and suggest that the species may be far more widely distributed and frequent in favourable habitats (Salmela 2008). The larvae are fully aquatic and develop in submerged mosses and plants such as *Sphagnum, Hypnum, Fontinalis, Drepanocladus* and aquatic species of *Ranunculus* in pools and marshes (Soos and Oosterbroek 1992, Boardman 2007).

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