FRAGMENTA FAUNISTICA 60 (2): 107–112, 2017
PL ISSN 0015-9301 © MUSEUM AND INSTITUTE OF ZOOLOGY PAS
DOI 10.3161/00159301FF2017.60.2.107

First record of *Cylindrotoma distinctissima* (Meigen, 1818) from Serbia and new data on the occurrence of Cylindrotomidae (Diptera) in Bulgaria and Romania

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Abstract: Here we present the first records of *Cylindrotoma distinctissima distinctissima* (Meigen, 1818) from Serbia, which represents a new family (Cylindrotomidae, Diptera) to the dipteran fauna of the country. Additionally, new records on this species are given from Bulgaria and Romania. New records of two other rare species of Cylindrotomidae, i.e. *Diogma glabrata* (Meigen, 1818) and *Triogma trisulcata* Schummel, 1829) are listed from Romania.

Key words: words: long-bodied craneflies, occurrence, Tipuloidea, *Diogma glabrata*, *Triogma trisulcata*

INTRODUCTION

Cylindrotomidae or long-bodied crane flies are a small diptera family, within Tipuloidea. Currently, 70 recognized species are known worldwide, from which eight species are reported from West Palaearctic (Paramonov 2005, Oosterbroek 2018, Salmela 2013). Most of the European species only occur in the northern part of Europe, nevertheless *Cylindrotoma distinctissima distinctissima* (Meigen, 1818) is the only species that is also reported from the Balkan region (Oosterboek 2017). Presence of *Diogma glabrata* (Meigen, 1818) and *Triogma trisulcata* (Schummel, 1829) is less possible in this area.

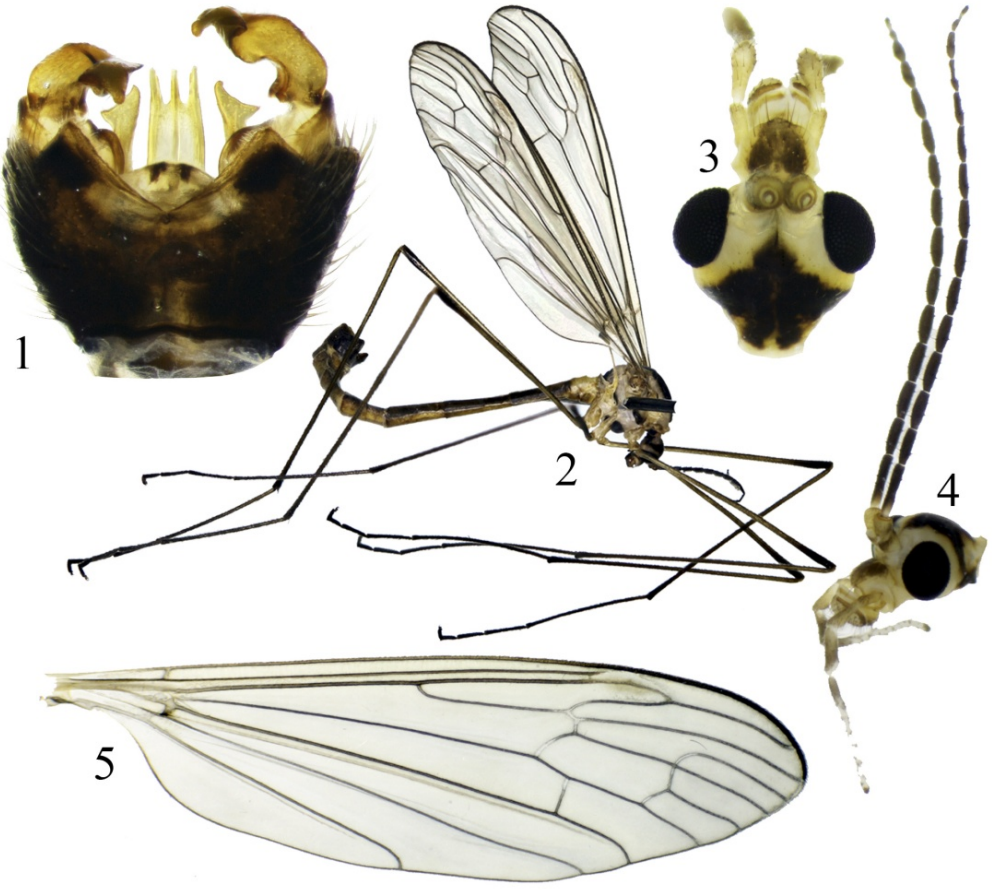
During a trip in Serbia we collected seven Cylindrotomidae specimens in Kopaonik Mountains, which represent the first records of the family in Serbia. Additional records of long-bodied crane fly species are listed from Bulgaria and Romania.

MATERIAL AND METHODS

Specimens were collected using sweep nets and were stored in 96% ethanol (four specimens) or pinned (three specimens) and deposited in Diptera Collection of the Faculty of Biology and Geology, Babeş-Bolyai University, Cluj-Napoca, Romania (DCBBU). The morphological characteristics of the male terminalia were examined after macerated in KOH 10%. The photos were taken using Olympus SZ61 stereomicroscope equipped with a Canon 650D camera and an LM Digital SLR Adapter (Micro Tech Lab, Austria). Layer photos were combined using free version of Zerene Stacker (http://zerenesystems.com/cms/stacker). Date format: day, month, year. All collection data are available on the TransDiptera Online Database (Kolcsár et al. 2018).

NEW FAUNISTIC RECORDS

***Cylindrotoma distinctissima distinctissima* (Meigen, 1818)**
(Figs 1–5)



Figs 1–5. *Cylindrotoma distinctissima distinctissima* (Meigen, 1818) from Kopaonik Mountains (Serbia); 1 – dorsal view of male hypopygium, 2 – habitus, 3 – dorsal view of the head (antennae removed), 4 – lateral view of the head, 5 – wing. Photos by L.-P. Kolcsár.

Material. **Bulgaria**: Barzia, Stara Planina Mts., Petrohan Pass, 1306 m a.s.l., 43.111397° N 23.112261° E, 10 Jun 2012, 10♂♂ 1♀, 28 May 2013, 1♂ and 1286 m a.s.l., 43.11285° N 23.11238° E, 10 Jun 2012, 3♂♂, leg. L. Keresztes (LK), E. Török (ET) and L.-P. Kolcsár (LPK).; Kiustendil, Osogovo Mts., Osogovska hut, 1520 m a.s.l., 42.196540° N 22.621927° E, 11 Jun 2012, 15♂♂ 2♀♀, leg. LK, ET & LPK; Karnare, Stara Planina Mts., Beklemeto (Troyan) Pass, 1468 m a.s.l., 42.781119° N 24.613081° E, 13 Jun 2012, 6♂♂ 1♀, leg. LK, ET & LPK; Tvarditsa, Stara Planina Mts., Ciumerna hut, 800 m a.s.l., 42.771301° N 25.897318° E, 14 Jun 2012, 3♂♂, leg. LK, ET & LPK; Siroka Laka, Rhodope Mts., Perelik hut, 1855 m a.s.l., 41.604869° N 24.595761° E, 17 Jun 2012, 2♂♂ 1♀, leg. LK, ET & LPK; **Romania**: Baia Sprie, Gutâi Mts., Gutâi pass, 990 m a.s.l., 47.694832° N 23.770095° E, 26 May 2012, 1♂, leg. LK; Padiş, Bihor Mts., IC Ponor, 1300 m a.s.l., 46.574319° N 22.725695° E, 16 Jun

2013, 2♂♂, leg. L. Keresztes & A.-L. Dénes; Hagota, Giurgeu Mts., Tisaşul Valley, 860 m a.s.l., 46.861794° N 25.677228° E, 8 Jul 2013, 1♀, leg. LPK; Stâna de Vale, Bihor Mts., Iad Valley, 1095 m a.s.l., 46.69021° N 22.615448° E, 9 Jun 2014, 4♂♂, leg. LPK; Padiş, Bihor Mts., Cheile Someşului Cald, 1300 m a.s.l., 46.630056° N 22.708094° E, 1 Jul 2016, 2♂♂ 3♀, leg. LPK. & ET; **Serbia**: between Kopaonik and Jošanička Banja, Kopaonik Mts., 1600 m a.s.l., 43.298100° N 20.787058° E, 3♂♂ (in alcohol) and 1556 m a.s.l., 43.309970° N 20.765627° E, 4♂♂ (1 in alcohol, 3 pinned), 22 Jun 2017, leg. LPK & ET.

Habitat. The specimens were collected along small brooks in spruce (*Picea abies*) dominated forest in Serbia, they were flown close to the ground (15–20 cm) or rest in ferns close to the brook (Fig. 6).

Fig. 6. Habitat where *Cylindrotoma distinctissima* was found in Serbia. Photos by L.-P. Kolcsár.

The current distribution of *C. distinctissima* according to the new and the literature data from Bulgaria and Romania (Ujvárosi and Oosterbroek 2002, Ujvárosi et al. 2011) is shown in Fig. 7.

Diogma glabrata (Meigen, 1818)

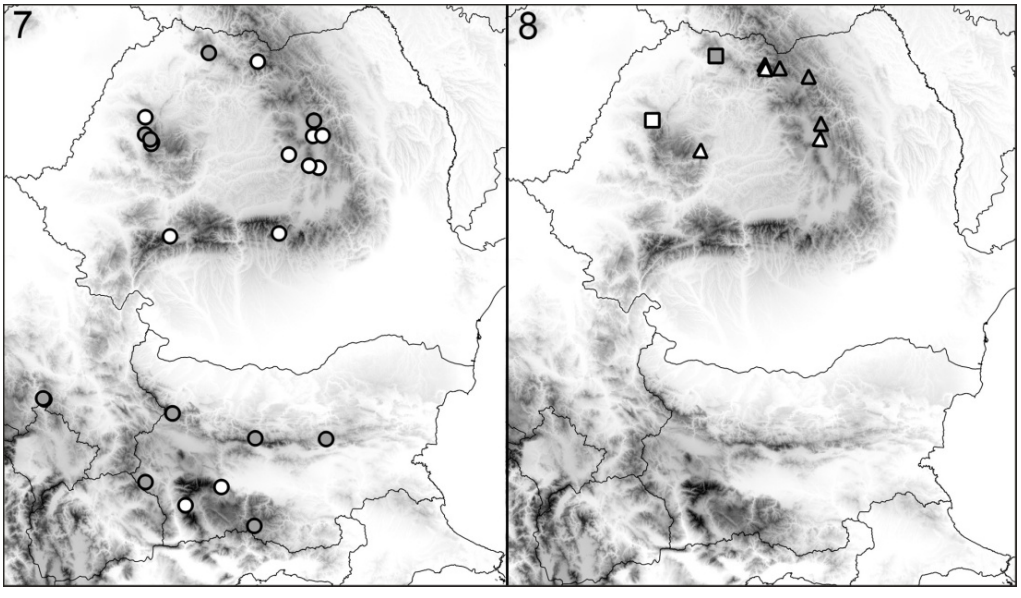
Material. **Romania**: Hagota, Giurgeu Mts., Tisaşul Valley, 860 m a.s.l., 46.861794° N 25.677228° E, 8 Jul 2013, 1♀, 17 Jul 2016, 1♀, leg. LPK; Valea Putnei, Giumalău Mts., Codrul secular Giumalău, 1186 m a.s.l., 47.44283° N 25.45423° E, 19 Jul 2013, 1♀, leg. LPK; Gura Lalei, Rodnei Mts., Lala Valley, 1200 m a.s.l., 47.545984° N 24.930069° E, 20 Jul 2013 1♂ 4♀♀, leg. LPK & LK.

The current distribution of *D. glabrata* according to the new and the literature data from Romania (Ujvárosi et al. 2011) is illustrated in Fig. 8.

Triogma trisulcata (Schummel, 1829)

Material. **Romania**: Baia Sprie, Gutâi Mts., Gutâi pass, 990 m a.s.l., 47.694832° N 23.770095° E, 15 May 2013, 1♂, leg. LPK.

The current distribution of *T. trisulcata* according to the new and the literature data from Romania (Ujvárosi 2005) is shown in Fig. 8.



Figs 7 & 8. 7 – Occurrence of *Cylindrotoma distinctissima distinctissima*) in Bulgaria, Romania and Serbia; white cirlces – literature data, grey circles – new records. 8 – Occurrence of *Diogma glabrata* (triangles) and *Triogma trisulcata* (squares) in Romania; white and gray color applies respectively to literature data and new records.

Discussion

Cylindrotoma distinctissima distinctissima is widely distributed in the Paleartic area and is more common in the northern part of Europe (Oosterbroek 2018). In Central and South Europe the species has insularly distribution in humid mountainous area (Ujvárosi and Oosterbroek 2002, Ujvárosi et al. 2011). The species was previously reported from the following neighbouring countries: Bulgaria (Ujvárosi et al. 2011), Croatia (Langhoffer 1917), Hungary

(Starý 2001) and Romania (Ujvárosi and Oosterbroek 2002). The species is rather variable in the body colour and genitalia structure in its range (Brodo 1967, Peus 1952, Salmela and Autio 2007, Ujvárosi et al. 2011). *Cylindrotoma borealis* Peus, 1952 (previously subspecies of *C. distinctissima*) was recently raised to species rank (Salmela and Autio 2007) and later synonymized with the nominotypical subspecies (*C. d. distinctissima*) based on DNA barcoding results (Salmela 2013). The Italian Alps endemic subspecies *C. distinctissima alpestris* Peus, 1952 recently raised to species rank as *Cylindrotoma alpestris* (Oosterbroek 2018). Larvae of *C. d. distinctissima* are terrestrial and phytophagous. Feeding on different higher plants, such as *Acer*, *Allium*, *Anemone*, *Caltha*, *Cirsium kamtschaticum*, *Maianthemum dilalatum*, *Ranunculus*, *Sanicula*, *Saussurea pseudo-tilesii Stellaria*, *Trientalis europeae arctica*, *Trollius*, *Valeriana* and *Viola* (Peus 1952, Brinkmann 1991, Paramonov and Lobkova 2013).

Presence of *C. distinctissima* is probable in Kosovo since the specimens were collected close to the Serbian-Kosovo border, and the Kopaonik Mountains are continuing in the territory of Kosovo. Furthermore the species occurrence in Greece and Republic of Macedonia is also probable since the specimens were collected just a few kilometre from Greek-Bulgarian and Macedonian-Bulgarian borders (Fig. 7).

Diogma glabrata and *Triogma trisulcata* are rare species in Central and Southern parts of Europe. Only a few records are known from Carpathians (Fig. 8). All specimens collected near small brooks.

ACKNOWLEDGEMENTS

We thank Tamara Szentiványi for the linguistic revision and the comments and advice of anonymous reviewers and the help of the editor.

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STRESZCZENIE

[**Pierwsze stwierdzenie *Cylindrotoma distinctissima* (Meigen, 1818) w Serbii oraz nowe dane o występowaniu Cylindrotomidae (Diptera) w Bułgarii i Rumunii**]

Artykuł prezentuje pierwsze stwierdzenie *Cylindrotoma distinctissima distinctissima* (Meigen, 1818) z Serbii, gatunku z rodziny Cylindrotomidae (Diptera), której przedstawicieli nie dotychczas nie wykazywano z tego kraju. Poza tym, podano nowe stwierdzenia tego gatunku z Bułgarii i Rumunii, gdzie gatunek jest rzadki a także nowe stwierdzenia z Rumunii dwóch innych przedstawicieli Cylindrotomidae, tj. *Diogma glabrata* (Meigen, 1818) and *Triogma trisulcata* Schummel, 1829).

Accepted: 24 January 2018