

Data to the distribution of genus *Perlodes* in Hungary (Plecoptera: Perlodidae)

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ABSTRACT: The paper reports 26 imago records of two species of *Perlodes*. *Perlodes dispar* was found at seven new watercourses: Bodrog, Gerence-patak, Ipoly, Kardos-ér, Kerka, Répce, Sajó. *P. microcephalus* was known only from one stream in Hungary, its new occurrences are the Bódva (Hídvégardó, Perkupa), Hármás-patak (Kőszeg) and Sajó (Sajópüspöki). The Hungarian occurrences are depicted on a UTM map. Distinguishing characters of the eggs are illustrated by SEM photos, and a key for the identification of the imagoes of two species is provided.

Introduction

The first data on genus *Perlodes* in Hungary was given by TÓTH (1990), who reported *Perlodes microcephalus* (Pictet, 1833) from the Bakony Mts, near the Bittva-patak (Kup-village). This male imago is stored in the Collection of Smaller Insect Orders, Hungarian Natural History Museum (Budapest). We found that the identification of this species is false, and actually it is a *Perlodes dispar* (Rambur, 1842) (revid.: Kovács, T., Murányi, D.). Later *P. dispar* was reported from the following watercourses: Bódva (MÁLNÁS *et al.* 2006, WEINZIERL *et al.* 2001), Lapincs (KOVÁCS 2006, KOVÁCS & AMBRUS 2001), Rába (KOVÁCS 2006, KOVÁCS & AMBRUS 2001, WEINZIERL *et al.* 2001), Tisza (JUHÁSZ *et al.* 1998, KOVÁCS *et al.* 2001, 2002). *Perlodes microcephalus* (Pictet, 1833) is the second species of the genus that known to occurs Hungary. Hitherto it was reported only from the Zemplén Mts, Kemence-patak (Kishuta and Pálháza villages) (MURÁNYI 2001).

Material and methods

The specimens were collected with singling, beating or with sweeping net. The material on which the present study is based has been preserved in 70% ethanol and housed in the Hungarian Natural History Museum (Budapest), Kazinczy Ferenc Museum (Sátoraljaújhely) and Mátra Museum (Gyöngyös). SEM photos were made on eggs of specimens collected at the Sajó River, for the photos we were using 25.0 kV and golden-palladium coating.

The list of data

Abbreviations: AA = Ambrus András, BK = Balogh Krisztina, HK = Harmos Krisztián, KT = Kovács Tibor, MD = Murányi Dávid, MF = Murányi Ferenc, MFné = Murányi Ferencné, UÁ = Uherkovich Ákos, VA = Varga András; ♂ = male adult, ♀ = female adult; Hungarian Natural History Museum, Budapest = (HNHM), Kazinczy Ferenc Museum, Sátoraljaújhely = (KFM), Mátra Museum = (MM).

Perlodes dispar (Rambur, 1842) – Bakonybél: Gerence-patak, 23.03.1990, 1 ♀, Tóth Sándor, (HNHM) – Csepregh: Vízmű, Répce, 16.04.2003, 1 ♂, AA, (MM) – Edelény: Markovicstanya, Bódva, 28.04.1995, 1 ♀, Csányi Béla, (MM); 15.05.2000, 1 ♀, KT-VA, (MM); 19.05.2003, 1 ♂, KT-VA, (MM); 29.04.2004, 2 ♂, 2 ♀, KT-VA, (MM) – Hídvégárdó: road towards the border, Bódva, 29.04.2004, 1 ♀, KT-VA, (MM) – Himod: road to Kisföld, Répce, 14.04.2008, 1 ♀, AA, (MM) – Hugyag: Egykori híd, Ipoly, 22.05.2005, 2 ♀, BK-HK-MD, (HNHM) – Körmend: road number 86, Rába, 12.04.2000, 2 ♀, AA-KT, (MM) – Lenti: Bárszentmihályfa, Kerka, 27.05.1997, 1 ♀, Nógrádi Sára-UÁ, (MM) – Letkés: Lelédhídmajor, Ipoly, 19.03.2007, 1 ♀, senior Kovács Tibor-KT, (MM) – Pusztacsalád: road to Csapod, Kardos-ér, 04.04.2003, 1 ♀, AA, (MM) – Rábahídvég: road number 8, Rába, 21.04.2000, 2 ♀, Kovácsné Benkő Zsuzsanna-KT, (MM) – Répcelak: Répce, 21.03.2002, 2 ♀, Csúzdi Csaba-Horváth Edit-Kontschán Jenő-MD, (HNHM) – Sajópüspöki: road number 25, Sajó, 15.05.1999, 1 ♀, MD-Murányi Richárd, (HNHM); 16.03.2007, 15 ♂, 1 ♀, MD-MF-MFné, (HNHM) – Sajószentpéter: road to Borsodszirák, Bódva, 19.05.2003, 1 ♀, KT-VA, (MM); 29.04.2004, 1 ♂, 1 ♀, KT-VA, (MM) – Sátoraljaújhely: Berecki-híd, Bodrog, 02.05.1999, 1 ♀, Hegyessy Gábor (KFM) – Szécsény: Pösténypuszta, Ipoly, 21.05.2005, 2 ♀, BK-HK-MD, (HNHM) – Szendrő: road to Büdöskútpuszta, Bódva, 29.04.2004, 1 ♂, 1 ♀, KT-VA, (MM).

Perlodes microcephalus (Pictet, 1833) – Hídvégárdó: road towards the border, 29.04.2004, 4 ♂, 2 ♀, KT-VA, (MM) – Kőszeg: Hármaspatak, 03.06.1988, 1 ♀, UÁ, (MM) – Perkupa: road to Dobódél, Bódva, 29.04.2004, 1 ♂, KT-VA, (MM) – Sajópüspöki: road number 25, Sajó, 16.03.2007, 5 ♂, 1 ♀, MD-MF-MFné, (HNHM).

Discussion

The adults of *Perlodes dispar* and *P. microcephalus* have been recorded from 19 sites (10 water bodies) sampled between 3th Juny, 1988 and 14th April, 2008. The results are the following: *P. dispar* 22 data, 17 sampling places, 9 water bodies, new water bodies: Bodrog, Gerence-patak, Ipoly, Kardos-ér, Kerka, Répce, Sajó; *P. microcephalus* 4 data, 4 sampling places, 3 water bodies, new water bodies: Bódva, Hármaspatak, Sajó. The two species were found together at the upper section of the Bódva and Sajó (Hídvégárdó and Sajópüspöki, respectively).

UTM codes of the localities: *Perlodes dispar* (Rambur, 1842) – JUHÁSZ *et al.* 1998: FU33; KOVÁCS 2006: WN90, XM19, XN00, XN10, XN20, XN31, XN42; KOVÁCS & AMBRUS 2001: WN90, XN00, XN42, XN75; KOVÁCS *et al.* 2001: FU32, FU33; KOVÁCS *et al.* 2002: FU33; MÁLNÁS *et al.* 2006: DU75, DU76, DU84, DU87; TÓTH 1990: XN83; WEINZIERL *et al.* 2001: DU86, XN00, XN10, XN20, XN21, XN31; new records: CU30, CU82, DU54, DU75, DU84, DU85, DU87, EU55, XM16, XN20, XN25, XN31, XN46, XN55, XN56, YN03. *Perlodes microcephalus* (Pictet, 1833) – MURÁNYI 2001: EU36; new records: XN14, DU54, DU76, DU87. Hungarian distribution of the two species depicted on the UTM map of Hungary (Figure 1).

As the distinction of imaginal stages of genus *Perlodes* should be restricted to sexual characters (BERTHÉLEMY 1964, KNISPEL *et al.* 2002), old keys based on non-sexual morphological characters are unsuitable for reliable identifications. Thus, herein we provide a key for the identification of the two species, and SEM photos on the eggs (Fig. 2) that previously illustrated only by line drawings (BERTHÉLEMY 1964, TIERNO DE FIGUEROA *et al.* 2003).

Males

- The base of the paraproctal sclerites narrowing abruptly towards the apex, rod broad and short (MARTEN 1991: 400, Fig. 10, left photos) *Perlodes dispar* (Rambur, 1842)
- The base of the paraproctal sclerites narrowing gradually towards the apex, rod thin and long (MARTEN 1991: 400, Fig. 10, right photos) *P. microcephalus* (Pictet, 1833)

Females

- Plates absent on the collar of the eggs (Fig. 2a; BERTHÉLEMY 1964: 532, Figs. 13-14, 16)
Perlodes dispar (Rambur, 1842)
- Plates present on the collar of the eggs (Fig. 2b; BERTHÉLEMY 1964: 532, Figs. 9-10, 12)
P. microcephalus (Pictet, 1833)

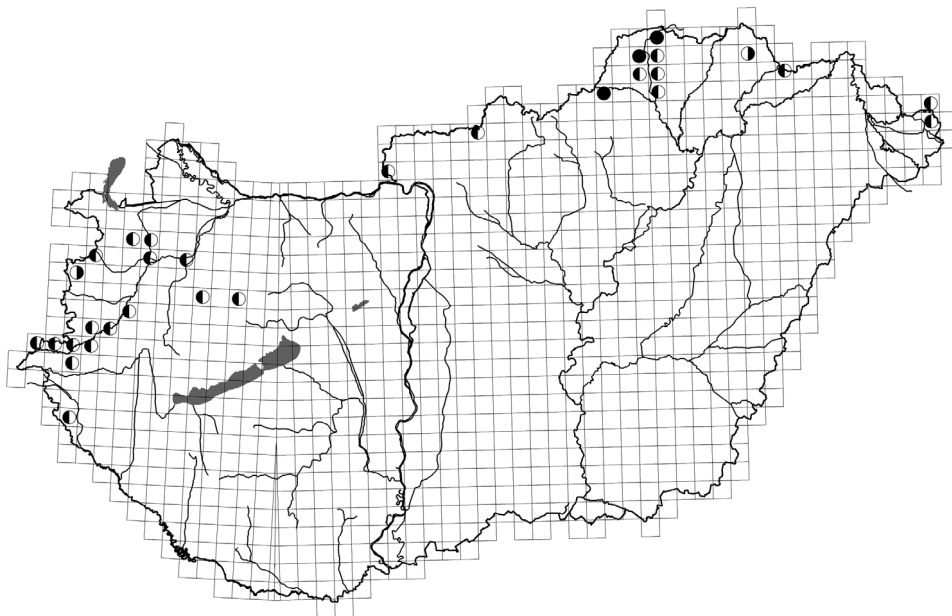


Fig. 1. Localities of *Perlodes* species in Hungary. ○ = *P. dispar*, ● = *P. microcephalus*.

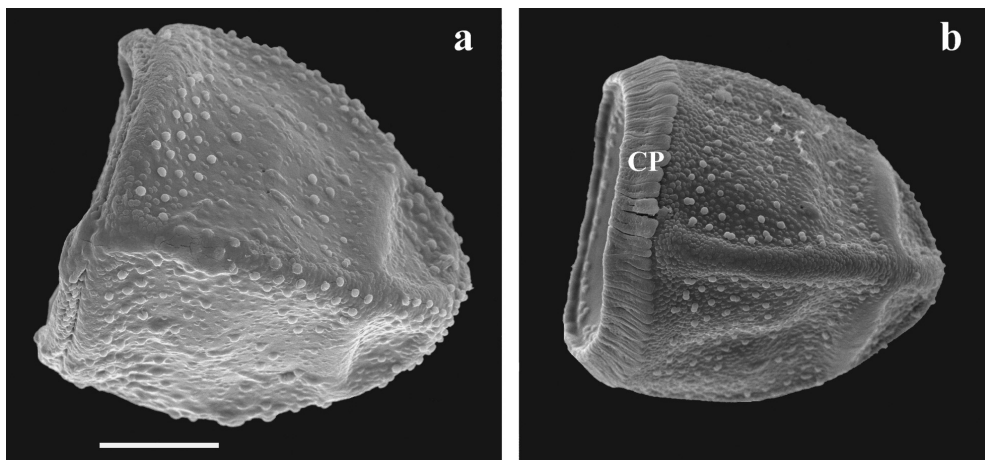


Fig. 2. The egg of *Perlodes* species, scale 0.1 mm. a = *P. dispar*; b = *P. microcephalus* (CP = collar plates).

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