

Interesting faunistic records of meniscus midges (Diptera: Dixidae) from Slovakia

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Abstract: Records of meniscus midges (Diptera: Dixidae) are reported from lotic and lentic water bodies with of Slovakia. Midges were sampled during specifically aimed research of ponds (project BIOPOND) or during field works related to various studies of running waters. In total, occurrence of 3 species of genus *Dixa* and 1 species of genus *Dixella* are presented and shortly discussed. Record of *Dixa dilatata* Strobl, 1900 on the basis of adult specimen is reported from Slovakia for the first time.

Key words: Diptera, Dixidae, *Dixa dilatata*, faunistics, Slovakia

Introduction

Dixidae is relatively small Diptera family, characterized by wing venation with 2 forks (Fig. 1) with 32 species in Europe (Wagner 2014). The larvae of this family are aquatic, living in lotic (genus *Dixa*) or lentic waters (genus *Dixella*). The adults are usually found near the larval habitat. Meniscus midges, in general, were only scarcely studied in Slovakia. Except immature Dixidae, adults were studied only in Bukovské vrchy (Martinovský 1995), Poľana (Ševčík 2009), Gemer (Ševčík 2011) and recently in Muránska planina National park (Ševčík *et al.* 2013). Only 10 species are recently known from Slovakia (Ševčík & Halgoš 2009), however occurrence of some species is documented only by larvae material.

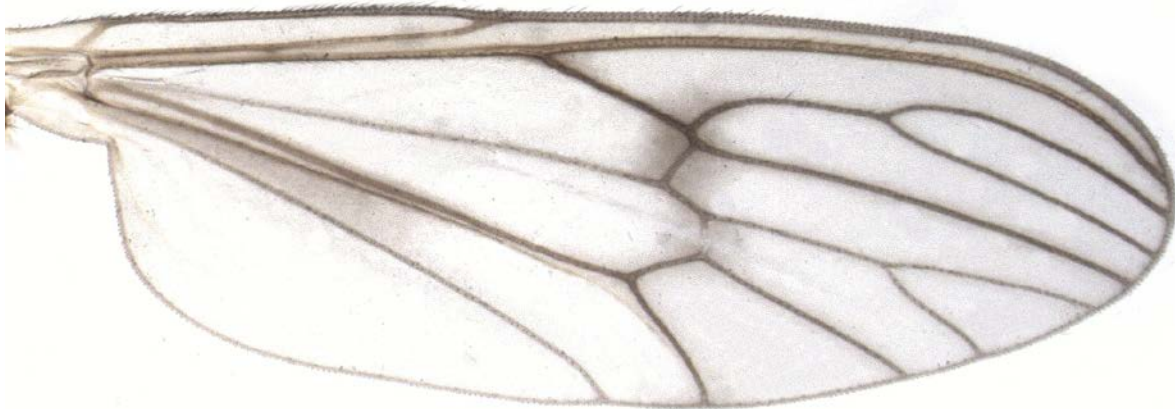


Fig. 1: Wing venation of family Dixidae

Material and methods

Material was collected by sweep netting on 9 localities and preserved in 75% ethanol in field. In laboratory, all the individuals were slide mounted and identified using microscope (magnification 50x ~ 200x). All the material is deposited in the Laboratory and Museum of Evolutionary Ecology, Department of Ecology, University of Prešov. Identification and nomenclature were based on Disney (1991) and Ševčík & Halgoš (2009).

List of sampling sites (all in Slovakia)

Site 1: Borkút, Haniska, 48° 57' 37.07" N, 21° 13' 59.01" E, 240 m a.s.l. (Fig. 2)

Site 2: Čertové diery, 49° 1' 13.94" N, 20° 51' 20.54" E, 810 m a.s.l. (Fig. 3)

Site 3: Olavec, 48° 45' 9.04" N, 18° 29' 25.20" E, 276 m a.s.l.

Site 4: Podbanské, 49° 08' 16.5" N, 19° 53' 50.2" E, 913 m a.s.l.

Site 5: Pod Pekliskom, 48° 59' 52.35" N, 20° 53' 8.51" E, 650 m a.s.l.

Site 6: Pusté Pole, 48° 53' 14.7" N, 20° 14' 08.4" E, 920 m a.s.l. (Fig. 4)

Site 7: Studený potok brook, 49° 15' 18.01" N, 19° 41' 4.49" E, 950 m a.s.l.

Site 8: Trstenec, 48° 44' 20.32" N, 18° 28' 54.27" E, 285 m a.s.l.

Site 9: Železná Breznica, 48° 38' 25.86" N, 19° 1' 39.99" E, 650 m a.s.l.



Figs 2–4: Sampling sites. **2** – Borkút, Haniska, habitat of *Dixa dilatata* Strobl, 1900. **3** – Čertové diery, habitat of *Dixa puberula* Loew, 1849. **4** – Pusté Pole, habitat of *Dixella aestivalis* (Meigen, 1818).

Results

Dixa

Dixa puberula Loew, 1849

Published records: Ševčík (2009, 2011).

Material examined: Vysoké Tatry Mts., **site 7**, brook, 28.x.2012, 1M (Fig. 5); Levočské vrchy Mts., **site 2**, brook, waterfall, 2.v.2014, 1M; **site 5**, 2.v.2014, 2M.

European distribution: Andorra, Austria, Belgium, Corsica, Czech Republic, Denmark, Finland, France, Germany, Greek, Great Britain, Hungary, Ireland, Italy, Poland, Romania, Sicily, Slovakia, Switzerland, the Netherlands (Ševčík & Halgoš 2009; Salmela *et al.* 2014; Wagner 2014).

Comments: Probably common species, often occurring along mountain streams. Immature stages inhabit stony torrent streams and small stony rivers (Disney 1999).



Fig. 5: Male terminalia of *Dixa puberula* Loew, 1849

Dixa dilatata Strobl, 1900

Material examined: Košická kotlina basin, **site 1**, spring area, brook, 1.v.2014, 1M (Fig. 6).

European distribution: Belgium, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Ireland, Italy, Poland, Selvagens, Spain, Slovakia, the Netherlands (Ševčík & Halgoš 2009; Salmela *et al.* 2014; Wagner 2014).

Comments: A rare European species. Immature stages inhabit spring areas and small streams with emergent stones, rushes, sedges or dead leaves and the margins of larges streams (Disney 1999). Until now, species was known from Slovakia only on the basis of larvae identifications (e.g. Bitušík 1995; Novikmec *et al.* 2007). Our material represents **first adult record** of this species from Slovakia.

Dixa submaculata Edwards, 1920

Published records: Martinovský (1995); Ševčík (2009, 2011).

Material examined: Kremnické vrchy Mts., **Site 9**, brook, 20.iv.2013, 2M; Strážovské vrchy Mts., spring area, **Site 8**, 9.iii.2014, 1M (Fig.7); 13.v.2014, 3M; **Site 3**, spring area, 12.v.2014, 1M.

European distribution: Belgium, Corsica, Czech Republic, Denmark, Finland, France, Germany, Greek, Hungary, Ireland, Italy, Lithuania, Poland, Romania, Slovakia, Spain, Switzerland, the Netherlands (Ševčík & Halgoš 2009; Salmela *et al.* 2014; Wagner 2014).

Comments: Probably common and widespread species. Immature stages inhabit emergent stones and dead leaves in shallow streams or slow-flowing woodland streams (Disney 1999).



Fig. 6: Male terminalia of *Dixia dilatata* Strobl, 1900



Fig. 7: Male terminalia of *Dixia submaculata* Edwards, 1920

Dixella

Dixella aestivalis (Meigen, 1818)

Published records: Ševčík (2007, 2009).

Material examined: Liptovská kotlina basin, **Site 4**, pond, 15.vii.2013, 1M (Fig. 8); Čergov Mts., **Site 6**, pond, 15.vii.2013, 1M.

European distribution: Austria, Belgium, Czech Republic, Denmark, Finland, France, Great Britain, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Norway, Poland, Russia, Slovakia, Spain, Sweden, Switzerland, the Netherlands (Ševčík 2009; Wagner 2014).

Comments: A relatively rare European species. Immature stages inhabit emergent vegetation in variety of ponds and river margins, especially in eutrophic waters (Disney 1999).



Fig. 8: Male terminalia of *Dixella aestivalis* (Meigen, 1818)

Discussion

As already indicated, the investigation of meniscus midges in Slovakia is still far from finished. Few species (e.g. *Dixa maculata* Meigen, 1818, *Dixella amphibia* (De Geer, 1776)) that are known from Czech Republic are missing in Slovak checklist (Ševčík & Halgoš 2009). We suppose that these species occur also in territory of Slovakia. Some species are reported from Slovakia only on the basis of larvae identification (e.g. *Dixa nubilipennis* Curtis, 1832, *Dixella autumnalis* (Meigen, 1838) and *Dixella serotina* (Meigen, 1818) (e.g. Bitušík 1995; Bulánková & Halgoš 1999; Halgoš & Bulánková 2003). However, because of uncertainties of larvae identification (Wagner 2004), they occurrence needs to be confirmed by records of adult specimens.

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