

Checklist of Empididae and Hybotidae (Diptera) flies from selected sites in Slovakia (Central Europe), with new records of five species for Slovakia

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Abstract: A checklist of Diptera families Empididae and Hybotidae from 25 selected sites in Slovakia is presented. The checklist comprises 91 taxa (51 species of family Empididae and 40 species of family Hybotidae) including the first records of *Platypalpus eximius* (Oldenberg, 1924) and *P. optivus* (Collin, 1926) from family Hybotidae, and *Hilara lugubris* (Zetterstedt, 1819), *H. sturmii* Wiedemann in Meigen, 1822 and *Rhamphomyia (Holoclera) caliginosa* Collin, 1926 from family Empididae.

Key words: dance flies, *Platypalpus*, *Hilara*, *Rhamphomyia (Holoclera)*, first records

INTRODUCTION

Families Empididae and Hybotidae are closely related families. They are treated together with Atelestidae, Brachystomatidae and Dolichopodidae as a superfamily Empidoidea (Chvála 1983; Sinclair and Cumming 2006), which is nowadays, however, known not to be monophyletic clade. Both families include very diverse species, clearly differing in the general appearance, body size, general morphology, wing venation and behaviour. They are generally predators, except for some species of Empidinae and Ocydromiinae which are nectar feeders (e.g., Chvála 1983; Collins and Wiegmann 2002). Altogether, 277 empidid species (Chvála 2009a; Oboňa et al. 2014) and 170 hybotid species are currently known to occur in Slovakia (Chvála 2009b).

MATERIALS AND METHODS

Specimens were collected by sweep netting on 25 localities (Table 1; Figure 1) sporadically over the years 2013 and 2014 and preserved in 70% ethanol in the field. In laboratory, the flies were identified when still in 70% ethanol. After identification the specimens were put in a

vial containing about 1 part 70% ethanol/ 1 part aethyl acetate for 5 minutes, followed by another 5 minutes in a vial containing 1 part 70% ethanol/ 2 parts aethyl acetate. The last bath was finally followed by a rinsing in a vial containing pure aethyl acetate for 5 minutes. After rinsing the specimens were dried on a tissue sheet for 15 minutes. When possible, specimens were double mounted on a minuten pin or, in case of very large flies as *Empis (Euempis) tessellata*, directly pinned on needles of size 0 and 1. Fragile specimens, as most of the Hybotidae, were glued on triangular cards. And then all individuals were identified to the lowest possible taxonomic level using

Table 1. List of sampling sites with geographic coordinates.

Number	Locality name	Latitude (N)	Longitude (E)
1	Blatnica	48°55'56.0604"	018°55'59.3430"
2	Borkút - Haniska	48°57'44.4096"	021°13'53.1726"
3	Breznica - Železná Breznica	48°38'20.0760"	019°01'33.4524"
4	Budiš	48°52'30.5868"	018°44'53.7750"
5	Diablova diera - Branisko	49°01'09.8112"	020°51'32.1840"
6	Diviacka Nová Ves	48°44'56.3892"	018°29'16.3680"
7	Kremnica	48°44'20.3244"	018°28'54.2748"
8	Majdán - Olejníkov	49°12'11.2134"	021°04'59.2068"
9	Nitrianské Rudno	48°48'56.4480"	018°28'58.6302"
10	Olavec - Diviacka Nová Ves	48°45'10.6986"	018°29'23.3628"
11	Peklisko - Veľká Svinka	49°00'46.7094"	020°51'57.5202"
12	Podbanské	49°08'34.4502"	019°54'08.4456"
13	Pomocná - Cigeľ	48°43'04.3998"	018°39'19.4400"
14	Stará Lesná	49°07'57.0534"	020°18'34.1598"
15	Torysa - pod Tichým Potokom	49°08'37.2366"	020°47'36.6534"
16	Torysa - Prešov	48°59'55.0932"	021°13'51.1896"
17	Torysa - Tichý Potok	49°08'59.9202"	020°45'38.5236"
18	Trstenec - Diviacka Nová Ves	48°44'19.8414"	018°29'11.7528"
19	Veľká Svinka	48°59'44.6814"	020°54'17.8020"
20	Vrbany - Diviacka Nová Ves	48°45'9.47880"	018°30'39.3726"
21	Zatrichovec	49°03'09.8112"	020°51'40.1840"
22	Zlatá Baňa 1	48°56'16.1844"	021°26'17.7570"
23	Zlatá Baňa 2	48°56'16.1844"	021°26'17.7570"
24	Zlatá Baňa A	48°56'40.1316"	021°25'48.0966"
25	Zlatá Baňa B	48°56'16.1844"	021°26'17.7570"

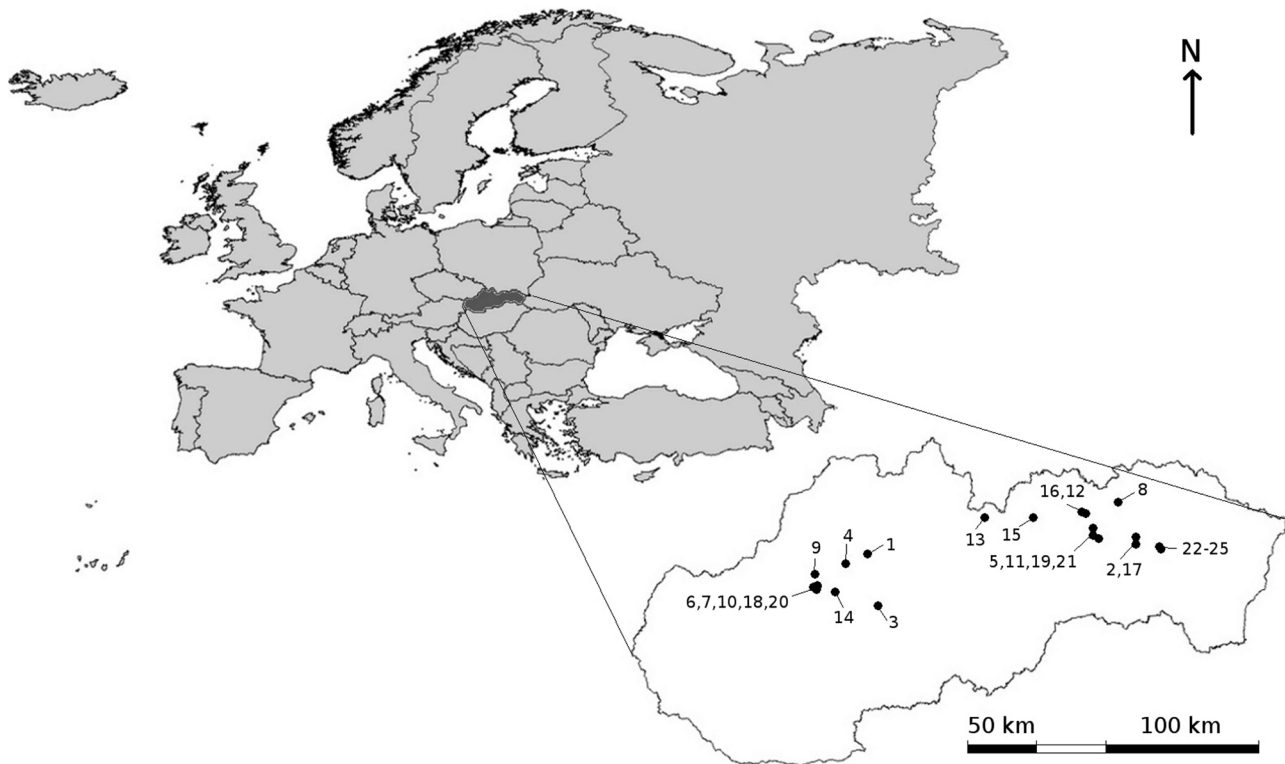


Figure 1. Map showing studied area location and sample sites (see table 1).

general and specialized identification keys of the families Empididae and Hybotidae (e.g. Barták 1982; Grootaert and Chvála 1992; Chvála 2005). All material is deposited in private collection of the first author, all specimens are open to the public.

RESULTS

List of first records

Family Empididae

Hilara lugubris (Zetterstedt, 1819)

Material examined: Site 17, 12.6.2014, 1 ♂.

Comments: Previously recorded from Austria, Czech Republic, Germany, Great Britain, Hungary, Romania, Sweden, Switzerland and the Netherlands (Chvála 2011a).

Hilara sturmii Wiedemann in Meigen, 1822

Material examined: Site 2, 1.5.2014, 1 ♀; Site 15, 12.6.2014, 1 ♀.

Comments: Previously known from Austria, Belgium, Corsica, Czech Republic, Denmark, Finland, France, Germany, Great Britain, Lithuania, Norway, Poland, Romania, Russia, Spain, Sweden, Switzerland and the Netherlands (Chvála 2005; Chvála 2011a).

Rhamphomyia (Holoclera) caliginosa Collin, 1926

Material examined: Site 3, 30.4.2013, 1 ♂.

Comments: Previously recorded from Czech Republic, Denmark, Finland, Germany, Great Britain, Hungary, Ireland, Italy, Sweden and Switzerland (Chvála 2011a).

Family Hybotidae

Platypalpus eximius (Oldenberg, 1924)

Material examined: Site 12, 15.7.2013, 1 ♂.

Comments: Previously recorded from Austria, Croatia, Germany, Italy and Switzerland (Chvála 2011b).

Platypalpus optivus (Collin, 1926)

Material examined: Site 18, 1.7.2013, 1 ♂.

Comments: Previously known from Belgium, Czech Republic, Denmark, Germany, Great Britain, Hungary, Ireland, Italy, Lithuania and Switzerland (Chvála 2011b).

DISCUSSION

Altogether, were collected 51 species (286 specimens) of the family Empididae, which constitutes 18.4 % of the empidid species currently known from Slovakia (Chvála 2009a; Oboňa et al. 2014); and 40 species (100 specimens) of the family Hybotidae, which constitutes 23.5 % of currently known hybotid from Slovakia (Chvála 2009b) (Table 2).

The first records mentioned above increase the empidid fauna of Slovakia to 280 species and hybotid fauna to 172 species.

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Table 2. Checklist of Empididae and Hybotidae (Diptera) species from selected sites in Slovakia. Plus sign indicates presence of taxa at each sampling site. Number of sampling site refers to Table 1.

	Sampling Sites																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Empididae																										
<i>Climocera appendiculata</i> (Zetterstedt, 1838)				+																						
<i>Climocera wesmaeli</i> (Macquart, 1835)							+																			
<i>Dryodromia testacea</i> Rondani, 1856			+																							
<i>Empis (Empis) aestiva</i> Loew, 1867	+																									
<i>Empis (Empis) anfractuosa</i> Mik, 1884		+																								
<i>Empis (Empis) caudatula</i> Loew, 1867																										
<i>Empis (Empis) dasyprocta</i> Loew, 1867																										
<i>Empis (Empis) chioptera</i> Meigen, 1804										+																
<i>Empis (Empis) melanotricha</i> Loew, 1873																										
<i>Empis (Empis) nigripes</i> Fabricius, 1794								+				+									+					
<i>Empis (Empis) nuntia</i> Meigen, 1838								+																		
<i>Empis (Empis) pennipes</i> Linnaeus, 1758				+																						
<i>Empis (Euempis) tessellata</i> Fabricius, 1794												+														
<i>Empis (Leptempis) dimidiata</i> Meigen, 1835																										
<i>Empis (Leptempis) maculata</i> Fabricius, 1781																										
<i>Empis (Leptempis) mesogramma</i> Loew, 1867																										
<i>Empis (Leptempis) nigricans</i> Meigen, 1804																										
<i>Empis (Lisempis) nigriraris</i> Meigen, 1804																										
<i>Empis (Xanthempis) digramma</i> Meigen in Gistl, 1835										+																
<i>Empis (Xanthempis) lutea</i> Meigen, 1804												+														
<i>Empis (Xanthempis) scutellata</i> Curtis, 1835												+														
<i>Empis (Xanthempis) stercorea</i> Linnaeus, 1761												+														
<i>Empis (Xanthempis) trigramma</i> Wiedemann, 1822				+																						
<i>Hilara beckeri</i> Strobl, 1892										+																
<i>Hilara borealis</i> Oldenberg, 1916																										
<i>Hilara brevistyla</i> Collin, 1927																										
<i>Hilara canescens</i> Zetterstedt, 1849																										
<i>Hilara cilipes</i> Meigen, 1822																										
<i>Hilara cornicula</i> Loew, 1873				+																						
<i>Hilara discalis</i> Chvála, 1997																										
<i>Hilara diversipes</i> Strobl, 1892																										
<i>Hilara galactoptera</i> Strobl, 1910																										
<i>Hilara intermedia</i> (Fallén, 1816)																										
<i>Hilara interstincta</i> (Fallén, 1816)																										
<i>Hilara lugubris</i> (Zetterstedt, 1819)																										
<i>Hilara lurida</i> (Fallén, 1816)																										
<i>Hilara maura</i> (Fabricius, 1776)																										
<i>Hilara nitidorella</i> Chvála, 1997																										
<i>Hilara quadrula</i> Chvála, 2002																										

Continued

Table 2. Continued.

	Sampling Sites																										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25		
<i>Hilara sturnii</i> Wiedemann in Meigen, 1822	+														+												
<i>Hilara thoracica</i> Macquart, 1827																		+				+					
<i>Chelifera precabunda</i> Collin, 1961							+																+			+	
<i>Kowarzia plectrum</i> (Mik, 1880)																											
<i>Rhaphomomyia (Aclonempis) longipes</i> (Meigen, 1804)																											
<i>Rhaphomomyia (Holoclera) caliginosa</i> Collin, 1926			+																								
<i>Rhaphomomyia (Holoclera) nigripennis</i> (Fabricius, 1794)				+																							
<i>Rhaphomomyia (Megacyrtarus) crassirostris</i> (Fallén, 1816)																											
<i>Rhaphomomyia (Megacyrtarus) poissoni</i> (Trehen, 1966)			+																								
<i>Rhaphomomyia (Pararhaphomomyia) atra</i> Meigen, 1822																											
<i>Rhaphomomyia (Pararhaphomomyia) pilifer</i> Meigen, 1838			+																								
<i>Wiedemannia (Pseudowiedemannia) lamellata</i> (Loew, 1869)																											
Hybotidae																											
<i>Bicellaria sulcata</i> (Zetterstedt, 1842)				+																							
<i>Bicellaria vana</i> Collin, 1926																											
<i>Euthyneura myrtilli</i> Macquart, 1836																											
<i>Hybos grossipes</i> (Linnaeus, 1767)																											
<i>Leptopeza flavipes</i> (Meigen, 1820)																											
<i>Ocydromia glabricula</i> (Fallén, 1816)																											
<i>Oedalea flavipes</i> Zetterstedt, 1842																											
<i>Oedalea tibialis</i> Macquart, 1827																											
<i>Oropezella sphenoptera</i> (Loew, 1873)																											
<i>Platypalpus agilis</i> (Meigen, 1822)																											
<i>Platypalpus albiseta</i> (Panzer, 1806)																											
<i>Platypalpus annulipes</i> (Meigen, 1822)																											
<i>Platypalpus aristatus</i> (Collin, 1926)																											
<i>Platypalpus ciliaris</i> (Fallén, 1816)																											
<i>Platypalpus cothurnatus</i> Macquart, 1827																											
<i>Platypalpus cruralis</i> (Collin, 1961)																											
<i>Platypalpus cursitans</i> (Fabricius, 1775)																											
<i>Platypalpus ecalceatus</i> (Zetterstedt, 1838)																											
<i>Platypalpus exilis</i> (Meigen, 1822)																											
<i>Platypalpus eximius</i> (Oldenberg, 1924)																											
<i>Platypalpus laticinctus</i> Walker, 1851																											
<i>Platypalpus longiseta</i> (Zetterstedt, 1842)																											
<i>Platypalpus luteipes</i> Zusková, 1966																											
<i>Platypalpus luteus</i> (Meigen, 1804)																											
<i>Platypalpus major</i> (Zetterstedt, 1842)																											
<i>Platypalpus melancholicus</i> (Collin, 1961)																											
<i>Platypalpus minutus</i> (Meigen, 1804)																											

Continued

Table 2. Continued.

	Sampling Sites																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
<i>Platypalpus niger</i> (Meigen, 1804)																										
<i>Platypalpus optivus</i> (Collin, 1926)																										
<i>Platypalpus pectoralis</i> (Fallén, 1815)																										
<i>Platypalpus rapidae</i> (Meigen, 1822)																										
<i>Platypalpus stigmatalus</i> (Zetterstedt, 1842)																										
<i>Symbalophthalmus fuscitarsis</i> (Zetterstedt, 1859)																										
<i>Symbalophthalmus pictipes</i> (Becker, 1889)																										
<i>Tachydromia arrogans</i> (Linnaeus, 1761)																										
<i>Tachydromia smithi</i> Chvála, 1966																										
<i>Tachydromia woodi</i> (Collin, 1926)																										
<i>Tachypeza nubila</i> (Meigen, 1804)																										
<i>Trichina bilobata</i> Collin, 1926																										
<i>Trichina elongata</i> Haliday, 1833																										

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