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Brachystomatidae, Empididae and Hybotidae (Diptera) of Uzh River Basin, with additions to checklists of Ukraine

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Summary. An inventory of species from families Brachystomatidae, Empididae and Hybotidae from random and non-intensive samplings from Uzh River Basin in the Ukraine is presented. Thirteen empidid species [*Empis* (*E.*) *filata, Hemerodromia oratoria, Hilara flavipes, H. hyposeta, H. intermedia, H. lasiochira, H. litorea, H. media, Chelifera precatoria, C. trapezina, Rhamphomyia* (*Aclonempis*) *longipes, R.* (*Holoclera*) *nigripennis, Wiedemannia* (*W.*) *tricuspidata*], and three hybotid species (*Crossopalpus curvinervis, Oedalea stigmatella, Platypalpus longiseta*) are recorded for the first time for the fauna of the Ukraine. Ukrainian checklists of these families are summarized for Brachystomatidae with two species, for Empididae with 57 species and for Hybotidae with 91 species.

Résumé. Brachystomatidae, Empididae et Hybotidae (Diptera) du bassin de l'Ouj, avec de nouvelles données pour la faune d'Ukraine. Un inventaire des espèces des familles Brachystomatidae, Empididae et Hybotidae provenant d'échantillonnages aléatoires et non intensifs dans le bassin de l'Ouj, en Ukraine, est présenté. Treize espèces d'Empididés [*Empis* (*E.*) *filata, Hemerodromia oratoria, Hilara flavipes, H. hyposeta, H. intermedia, H. lasiochira, H. litorea, H. media, Chelifera precatoria, C. trapezina, Rhamphomyia* (*Aclonempis*) *longipes, R.* (*Holoclera*) *nigripennis, Wiedemannia* (*W.*) *tricuspidata*] et trois espèces d'Hybotidés (*Crossopalpus curvinervis, Oedalea stigmatella, Platypalpus longiseta*) sont citées pour la première fois d'Ukraine. La liste actualisée des espèces ukrainiennes est donnée pour les Brachystomatidae (2 espèces), les Empididae (57 espèces) et les Hybotidae (91 espèces).

Keywords: faunistics; dance flies; new records; Palaearctic region

The Carpathian Mountains, stretching across seven countries (Czech Republic, Hungary, Poland, Romania, Serbia, Slovakia, and Ukraine), represent Europe's largest continuous temperate forest ecosystem and are sometimes referred to as "Europe's Green Backbone". The mountain range is a biodiversity hotspot (Hostert et al. 2008). Pristine or virgin forests, defined as forests which have never been influenced significantly by humans, are rare in Europe, and this is particularly true for beech forests (*Fagus sylvatica* L.) (Parviainen et al. 2000). Some of the last European remains of pristine beech forest occur in Transcarpathia (Western Ukraine). The largest pristine stands of around 10,000 ha under protection in the Transcarpathian Ukraine (Commarmot et al. 2013) is located in central Transcarpathia and belongs to the eight protected forest areas united in the Carpathian Biosphere Reserve. Past and present occasional anthropogenic impacts on these forests are thought to be low and do not seem to have a discernible impact on forest dynamics (Commarmot et al. 2013). Unlike other European countries, Ukraine has demonstrated slow progress of biodiversity modelling (Prydatko 2000) and very low effort devoted to preserving biological diversity (Prydatko & Kolomytsev 2011, 2013). The state of knowledge of empidoids fauna of all Carpathian areas, after global distribution of empidoids in Europe (Chvála 2013a, 2013b), shows the following number of known species and subspecies (Empididae/Hybotidae): Czech Republic 286/196, Hungary 199/130, Poland 206/89, Romania 118/51, Slovakia 262/159, the former Yugoslavia 44/27 and Ukraine 23/73. Therefore, local research is an important way to forward overcoming the knowledge gap (Hostert 2010). The status of empidoids for this territory is not clear today.

The Uzh River seems to be a very good model river in the context of these facts. This river is an example of high horizontal diversity. It flows from protected mountain areas (Uzhansky National Park), through the valley to the lowlands where it passes to Slovakia (Východoslovenská nížina basin/the East-Slovakian lowland). The aim of this study was to collect and describe the empidids and hybotids from different habitats of Uzh River Basin.

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Material and methods

The fauna of Brachystomatidae, Empididae and Hybotidae (Diptera), especially the aquatic forms, of Uzh River Basin (Ukraine), is presented thanks to the support by the FAN (B) – Förderkreis für allgemeine Naturkunde (Biologie) – in the framework of project "Ephemeroptera, Plecoptera, Diptera biodiversity trip along the Uzh river, Ukraine".

The material presented in this paper was collected along the Uzh River, Ukraine, from 16 sites (Table 1; Figure 1). Samples were collected by sweep-netting from vegetation along streams and lakes and preserved in 75% ethanol. The material is deposited in the collection of the first author who also identified the species using general and specialized identification keys of the families Brachystomatidae, Empididae, and Hybotidae (e.g. Barták 1982; Kovalev & Chvála 1985; Grootaert & Chvála 1992; Chvála 2005; Barták & Kubík 2012).

Results

Altogether, one species of the family Brachystomatidae, 16 of the family Empididae and nine of the family Hybotidae from random and extensive sampling were recorded in the Uzh River Basin in Ukraine. The global distribution of empidoids follows Chvála (2013a, 2013b) and Shamshev (1998, 2016).

List of records

Family Brachystomatidae

Trichopeza longicornis (Meigen, 1822)

Material examined. Site 4, 10.VIII.2015, 1 ♀; Site 5, 11.VIII.2015, 1 ♀.

Comments. Species widely distributed in the Palaearctic, known from Ukraine.

Family Empididae

Empis (*Empis*) *filata* Loew, 1873

Material examined. Site 16, 27.V.2016, 1 ♂.

Comments. European species recorded from Czech Republic, Romania, Slovakia, and the former Yugoslavia. First record from Ukraine.

Empis (*Xanthempis*) *lutea* Meigen, 1804

Material examined. Site 11, 11.VIII.2015, 1 ♂.

Comments. European species, already known from Ukraine, where it was recorded only from the Carpathians.

Hemerodromia oratoria (Fallén, 1816)

Material examined. Site 2, 10.VIII.2015, 4 ♂, 4♀; Site 1, 10.VIII.2015, 1 ♂.

Comments. Species widely distributed in the Palaearctic. First record from Ukraine.

Hilara flavipes Meigen, 1822

Material examined. Site 12, 12.VIII.2015, 1 ♂.

Comments. European species known from Austria, Britain I., Czech Republic, Denmark, France, Germany, Hungary, Ireland, Netherlands, Norway, Poland, Slovakia, Spain, Sweden and Russia. First record from Ukraine.

Hilara hyposeta Straka, 1976

Material examined. Site 11, 11.VIII.2015, 3 ♂; Site 8, 11.VIII.2015, 1 ♂; Site 9, 11.VIII.2015, 2 ♀; Site 7, 11 . VIII.2 015 , 1♀

Comments. European species, known from Czech Republic, Finland, Slovakia and Russia. First record from Ukraine.

Table 1. List of sampling sites along Uzh River Basin, Ukraine.

Site no.	Site name (short description of locality)	Latitude (N)	Longitude (E)	Altitude (m)
1	Uzh River, above Uzhgorod	48°39′15.6″	22°21′03.6″	123
2	Uzh River, near Nevyts'ke bridge	48°40′48.5″	22°24′11.0″	132
3	Shypot River, near hydroelectric power plant	48°42′58.2″	22°49′16.0″	370
4	Shypot River, between hydroelectric power plants	48°45′13.9″	22°51′07.0″	380
5	Vojevodyn Stream	48°46′22.3″	22°52′30.8″	500
6	Shypotyk Stream	48°44′23.4″	22°50′17.1″	400
7	Turiya River, above Simer	48°43′41.0″	22°32′41.5″	190
8	Lyuta River above Chornoholova	48°51′43.0″	22°36′21.8″	405
9	Kamenychky Stream	48°48′37.4″	22°28′33.3″	255
10	Strychavka Stream	48°56′44.3″	22°28′17.3″	510
11	Lubnya River	49°00′37.0″	22°43′27.6″	135
12	tributary of River Uzh, near Sukhyi	48°58′12.2″	22°48′15.1″	650
13	Paporotnyi Stream	49°01′41.3″	22°35′16.0″	580
14	Uzh River, above Stuzhytsya	49°02′26.0″	22°34′53.0″	590
15	Sukhyi Stream above Kam'yanytsya	48°42′46.3″	22°25′23.8″	212
16	Vojvodina Falls – Tur'ya Polyana	48°47′7.82″	22°50′42.45″	600

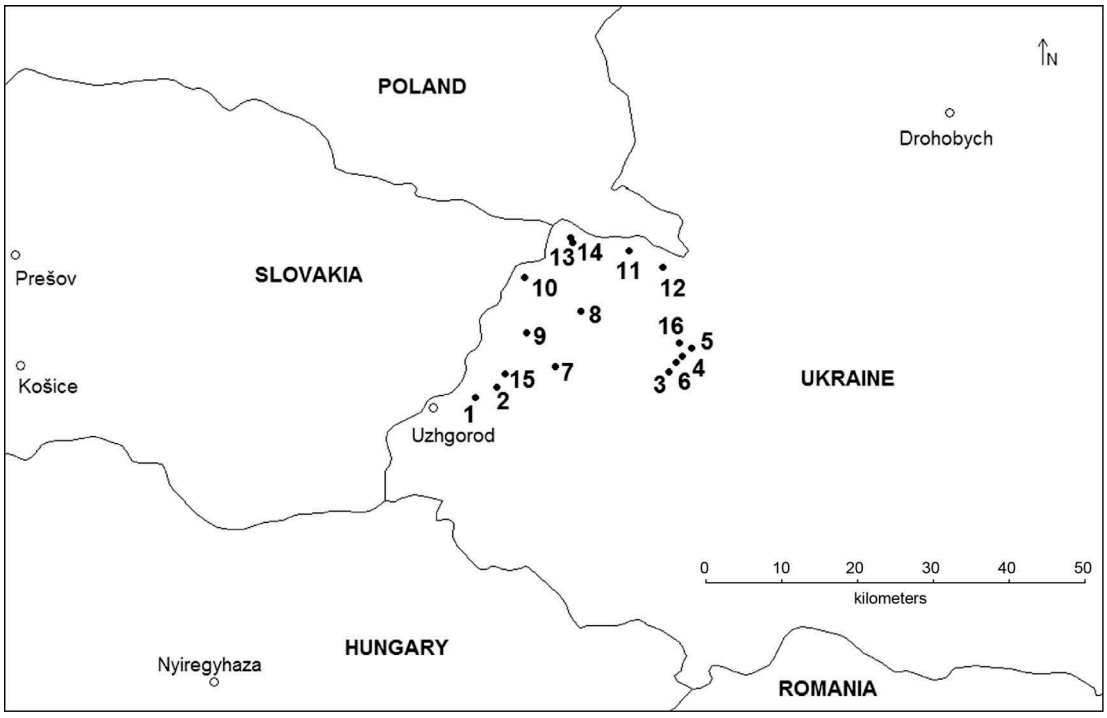

Figure 1. Map showing all sampling sites in Ukraine.

Hilara intermedia (Fallén, 1816)

Material examined. Site 8, 27.V.2016, 1 ♀.

Comments. Species widely distributed in the Palaearctic. First record from Ukraine.

Hilara lasiochira Strobl, 1892

Material examined. Site 8, 27.V.2016, 4 ♂, 4 ♀.

Comments. European species known from Austria, Czech Republic, Denmark, Germany, Italy, Poland, and Netherlands. First record from Ukraine.

Hilara litorea (Fallén, 1816)

Material examined. Site 4, 10.VIII.2015, 1 ♀.

Comments. European species recorded from Austria, Belgium, Britain I., Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Lithuania, Norway, Poland, Russia, Slovakia, Sweden, Switzerland, and Netherlands. First record from Ukraine.

Hilara lurida (Fallén, 1816)

Material examined. Site 8, 27.V.2016, 2 ♀.

Comments. European species (including the Caucasus), already known from Ukraine.

Hilara media Collin, 1927

Material examined. Site 11, 11.VIII.2015, 1 ♂.

Comments. European species, known from Austria, Britain I., Bulgaria, Czech Republic, France, Romania, Slovakia, and Netherlands. First record from Ukraine.

Chelifera precatoria (Fallén, 1816)

Material examined. Site 8, 27.V.2016, 3 ♂.

Comments. Holarctic species broadly distributed in the Palaearctic. First record from Ukraine.

Chelifera trapezina (Zetterstedt, 1838)

Material examined. Site 4, 10.VIII.2015, 1 ♂; Site 11, 11.VIII.2015, 2 ♂; Site 5, 11.VIII.2015, 1 ♂.

Comments. European species known from Austria, Belgium, Bosnia and Herzegovina, Britain I., Croatia, Czech Republic, Finland, France, Germany, Hungary, Ireland, Italy, Macedonia, North Aegean Is., Norway, Poland, Romania, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Yugoslavia. First record from Ukraine.

Rhamphomyia (*Rhamphomyia*) *gibba* (Fallén, 1816)

Material examined. Site 11, 11.VIII.2015, 1 ♂.

Comments. European species, already known from Ukraine.

***Rhamphomyia* (*Aclonempis*) *longipes* (Meigen, 1804)**

Material examined. Site 8, 27.V.2016, 1 ♀.

Comments. European species known from Austria, Belgium, Britain I., Czech Republic, France, Germany, Hungary, Ireland, Italy, Lithuania, Poland, Romania, Russia, Slovakia, Switzerland, and the Netherlands. First record from Ukraine.

***Rhamphomyia* (*Rhamphomyia*) *nigripennis* (Fabricius, 1794)**

Material examined. Site 8, 27.V.2016, 6 ♂, 1 ♀.

Comments. Species broadly distributed in the Palaearctic. First record from Ukraine.

***Wiedemannia* (*Wiedemannia*) *tricuspidata* (Bezzi, 1905)**

Material examined. Site 8, 12.VIII.2015, 1 ♂.

Comments. European species, known from Bosnia and Herzegovina, Croatia, Greece, Hungary, Poland, Romania, Slovakia, Slovenia, former Yugoslavia. First record from Ukraine.

Family Hybotidae

***Crossopalpus curvinervis* (Zetterstedt, 1842)**

Material examined. Site 2, 10.VIII.2015, 1 ♂.

Comments. Species broadly distributed in the Palaearctic. First record from Ukraine.

***Elaphropeza ephippiata* (Fallén, 1815)**

Material examined. Site 10, 11.VIII.2015, 1 ♂.

Comments. European species (including the Caucasus), already known from Ukraine.

***Hybos culiciformis* (Fabricius, 1775)**

Material examined. Site 12, 12.VIII.2015, 1 ♀; Site 4, 10.VIII.2015, 3 ♀; Site 3, 10.VIII.2015, 1 ♀; Site 8, 11.VIII.2015, 2 ♂, 2 ♀; Site 6, 11.VIII.2015, 1 ♂, 3 ♀; Site 15, 12.VIII.2015, 3 ♂; Site 10, 11.VIII.2015, 2 ♂, ♀; Site 14, 12.VIII.2015, 2 ♀.

Comments. Species broadly distributed in the Palaearctic, known from Ukraine.

***Leptopeza borealis* Zetterstedt, 1842**

Material examined. Site 16, 27.V.2016, 1 ♂ (Figure 2).

Comments. Holarctic species broadly distributed in the Palaearctic, known from Ukraine.

***Oedalea stigmatella* Zetterstedt, 1842**

Material examined. Site 8, 27.V.2016, 1 ♀.

Comments. European species, known from Austria, Belgium, Britain I., Croatia, Czech Republic, Denmark, Finland, Germany, Ireland, Italy, Lithuania, Norway, Poland, Romania, Russia, Slovakia, Sweden, Switzerland, the former Yugoslavia. First record from Ukraine.

***Platypalpus longiseta* (Zetterstedt, 1842)**

Material examined . Site 2, 10.VIII.2 015, 1 ♂; Site 1, 10.VIII.2015, 2 ♂, 1 ♀.

Comments. Species broadly distributed in the Palaearctic. First record from Ukraine.

***Platypalpus pectoralis* (Fallén, 1815)**

Material examined. Site 4, 10.VIII.2015, 1 ♀; Site 11, 11.VIII.2015, 2 ♀; Site 6, 11.VIII.2015, 1 ♂, 3 ♀.

Comments. European species (including the Caucasus), known from Ukraine.

***Tachydromia umbrarum* Haliday, 1833**

Material examined. Site 2, 10.VIII.2015, 2 ♀.

Comments. This species is often misidentified in the literature as *T. annulimana* (Meigen, 1822). Broadly distributed in the Palaearctic, known from Ukraine (Chvála & Kovalev 1989).

***Tachydromia woodi* (Collin, 1926)**

Material examined. Site 13, 12.VIII.2015, 1 ♀.

Comments. Species broadly distributed in the Palaearctic, known from Ukraine.

Proposal of checklists for families Brachystomatidae, Empididae and Hybotidae of Ukraine

Species new to Ukraine are marked with an asterisk (*).

Family Brachystomatidae
Subfamily Trichopezinae

Heleodromia (*H.*) *immaculata* Haliday, 1833
Trichopeza longicornis (Meigen, 1822)

Family Empididae
Subfamily Empidinae
Tribe Hilarini

Hilara clypeata Meigen, 1822
**H. flavipes* Meigen, 1822
**H. hyposeta* Straka, 1976
**H. intermedia* (Fallén, 1816)
**H. lasiochira* Strobl, 1892
**H. litorea* (Fallén, 1816)
H. lurida (Fallén, 1816)
**H. media* Collin, 1927

Tribe Empidini

Empis (*Anacrostichus*) *bistortae* Meigen, 1822

Figure 2. *Leptopeza borealis* Zetterstedt, 1842. **A**, habitus; **B**, aedeagus; **C**, ventral periandrium or epandrium with cerci.

E. (E.) filata Loew, 1873
E. (E.) decora Meigen, 1822
E. (E.) nigripes Fabricius, 1794
E. (E.) pennipes Linnaeus, 1758
E. (E.) prodromus Loew, 1867
E. (Euempis) tessellata Fabricius, 1794
E. (Kritempis) livida Linnaeus, 1758
E. (Leptempis) grisea Fallén, 1816
E. (L.) nigricans Meigen, 1804
E. (L.) variegata Meigen, 1804
E. (Pachymeria) tumida Meigen, 1822
E. (Platyptera) borealis Linnaeus, 1758
E. (Polyblepharis) eumera Loew, 1868
E. (P.) skufini Shamshev, 2003
E. (P.) eversmanni Loew, 1873
E. (P.) fallax Egger, 1860
E. (P.) haemi Loew, 1862
E. (P.) opaca Meigen, 1804
E. (Xanthempis) aemula Loew, 1873
E. (X.) digramma Meigen, 1835
E. (X.) lutea Meigen, 1804
E. (X.) oxilara Shamshev, 1998
E. (X.) stercorea Linnaeus, 1761
E. (X.) subscutellata Shamshev, 1998
E. (X.) trigramma Wiedemann in Meigen, 1822
E. (X.) univittata Loew, 1867
E. odessa Shamshev, 2001
*Rhamphomyia (Aclonempis) longipes (Meigen, 1804)
R. (Amydroneura) gibba (Fallén, 1816)
R. (Holoclera) flava (Fallén, 1816)
R. (Lundstroemiella) dudai Oldenberg, 1927
R. (L.) hybotina (Zetterstedt, 1838)
R. (Megacyttarus) anomalipennis Meigen, 1822
R. (M.) crassirostris (Fallén, 1816)
R. (Pararhamphomyia) anfractuosa Bezzi, 1904
R. (P.) atra Meigen, 1822
R. (P.) caesia Meigen, 1822
R. (P.) tipularia (Fallén, 1816)

**R.* (*Holoclera*) *nigripennis* (Fabricius, 1794)
R. (*Rhamphomyia*) *siebecki* Strobl, 1898
R. (*R.*) *sulcata* (Meigen, 1804)

Subfamily Hemerodromiinae

**Chelifera precatoria* (Fallén, 1816)
**C. trapezina* (Zetterstedt, 1838)
**Hemerodromia* (*Hemerodromia*) *oratoria* (Fallén, 1816)

Subfamily Clinocerinae

Wiedemannia (*Chamaedipsia*) *bicuspidata* (Engel, 1918)
W. (*C.*) *ornata* (Engel, 1918)
W. (*Wiedemannia*) *braueri* (Mik, 1880)
**W.* (*W.*) *tricuspidata* (Bezzi, 1905)

Family Hybotidae
Subfamily Ocydromiinae
Tribe Trichinini

Bicellaria austriaca Tuomikoski, 1955
B. intermedia Lundbeck, 1910
B. pilosa Lundbeck, 1910
B. spuria (Fallén, 1816)
B. vana Collin, 1926
Trichinomyia flavipes (Meigen, 1830)

Tribe Oedaleini

**Oedalea stigmatella* Zetterstedt, 1842

Tribe Ocydromiini

Leptopeza borealis Zetterstedt, 1842
L. flavipes (Meigen, 1820)
Ocydromia glabricula (Fallén, 1816)
Oropezella sphenoptera (Loew, 1873)

Subfamily Hybotinae

Hybos culiciformis (Fabricius, 1775)
H. femoratus (Müller, 1776)
H. grossipes (Linnaeus, 1767)

Subfamily Tachydromiinae
Tribe Tachydromiini

Platypalpus agilis (Meigen, 1822)
P. albiseta (Panzer, 1806)
P. albocapillatus (Fallén, 1815)
P. alpigenus (Strobl, 1893
P. annulatus (Fallén, 1815)
P. aristatus (Collin, 1926)
P. articulatus Macquart, 1827
P. brachystylus (Bezzi, 1892)
P. calceatus (Meigen, 1822)
P. candicans (Fallén, 1815)
P. carpathicus Kovalev & Chvála, 1985
P. ciliaris (Fallén, 1816)
P. confiformis Chvála, 1971
P. cothurnatus Macquart, 1827
P. cruralis (Collin, 1961)
P. ecalceatus (Zetterstedt, 1838)
P. engadinicus (Mik, 1896)
P. excavatus Yang & Yao in Yang et al., 2007
P. exilis (Meigen, 1822)
P. fasciatus (Meigen, 1822)
P. infectus (Collin, 1926)
P. insperatus Kovalev, 1971
P. interstinctus (Collin, 1926)
P. longicornis (Meigen, 1822)
P. longimanus (Corti, 1907)
**P. longiseta* (Zetterstedt, 1842)
P. luteus (Meigen, 1804)
P. macula (Zetterstedt, 1842)
P. maculipes (Meigen, 1822)
P. major (Zetterstedt, 1842)
P. mikii (Becker, 1890)
P. minutus (Meigen, 1804)
P. niger (Meigen, 1804)
P. nigrimanus Strobl, 1880
P. nigritarsis (Fallén, 1816)
P. notatus (Meigen, 1822)
P. nudithorax Chvála, 1975
P. pallidiventris (Meigen, 1822)
P. pallipes (Fallén, 1815)
P. parvicauda (Collin, 1926)
P. pectoralis (Fallén, 1815)
P. pictitarsis (Becker, 1902)
P. stigmatellus (Zetterstedt, 1842)
P. subtilis (Collin, 1926)
P. tonsus (Collin, 1961)
P. unguiger Kovalev & Chvála, 1985
Symballophthalmus pictipes (Becker, 1889)
Tachydromia aemula (Loew, 1864)
Tachydromia arrogans (Linnaeus, 1761)
T. calcanea (Meigen, 1838)
T. carpathica Chvála, 1966
T. halterata (Collin, 1926)
T. parva Chvála, 1970
T. sabulosa Meigen, 1830
T. subarrogans Kovalev & Chvála, 1985
T. terricola Zetterstedt, 1819
T. umbrarum Haliday, 1833
T. woodi (Collin, 1926)
Tachypeza fennica Tuomikoski, 1932
T. fuscipennis (Fallén, 1815)
T. heeri Zetterstedt, 1838
T. nubila (Meigen, 1804)
T. tanaisense Kovalev in Chvála, 1975
T. truncorum (Fallén, 1815)

Tribe Drapetini

Chersodromia curtipennis Collin, 1950
C. nigrosetosa Chvála, 1970
C. pontica Chvála, 1970
Crossopalpus abditus Kovalev, 1972
C. aeneus (Walker, 1871)
**C. curvinervis* (Zetterstedt, 1842)
C. nigritellus (Zetterstedt, 1842)
Drapetis completa Kovalev, 1972
D. assimilis (Fallén, 1815)
D. convergens Collin, 1926
D. flavipes Macquart, 1834
D. parilis Collin, 1926
Elaphropeza ephippiata (Fallén, 1815)

Discussion

In the present paper, all credible and available data about the occurrence of dance flies (Diptera Brachystomatidae, Empididae and Hybotidae) from Ukraine are summarized. Altogether 13 records of the family Empididae [*Empis* (*E.*)

filata, Hemerodromia oratoria, Hilara flavipes, H. hyposeta, H. intermedia, H. lasiochira, H. litorea, H. media, Chelifera precatoria, C. trapezina, Rhamphomyia (*Aclonempis*) *longipes, R.* (*Holoclera*) *nigripennis, Wiedemannia* (*W.*) *tricuspidata*] and three records of the family Hybotidae (*Crossopalpus curvinervis, Oedalea stigmatella, Platypalpus longiseta*) from random and extensive sampling were recorded for the first time from Ukraine (Chvála 2013a, 2013b; Shamshev 2016). With records present in this paper, Brachystomatidae now includes two species in Ukraine, Empididae 57 species (Barták 1985, 2007; Shamshev 1998, 2016; Chvála 2013a), and Hybotidae 91 species (Barták & Kubík 2013; Chvála 2013b; Shamshev et al. 2015; Shamshev 2016). The study of dance flies is still far from complete in Ukraine. Non-random (scheduled) and intensive sampling in pristine or virgin forests, which have never been influenced significantly by humans and are rare in Europe, can detect many more interesting faunistic results.

Acknowledgements

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