



**APHID PARASITOIDS (HYMENOPTERA, BRACONIDAE, APHIDIINAE)
OF THE FOREST ZONES OF UKRAINE:
SPECIES COMPOSITION AND HABITAT ASSOCIATIONS**

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The article presents data on species composition and habitat associations of the species of a practically important group of parasitic hymenopterous insects from the subfamily Aphidiinae (Hymenoptera, Braconidae) within the Forest zones of Ukraine. Species composition of aphidiines of the territory of research includes 45 species from 16 genera. Among them, 32 species were recorded only in the Zone of Mixed Forest: *Adialytus salicaphis*, *Aphidius matricariae*, *A. megourae*, *A. rhopalosiphii*, *A. ribis*, *A. urticae*, *Areopraon silvestre*, *Binodoxys angelicae*, *Diaeretellus ephippium*, *Diaeretiella rapae*, *Diaeretus leucopterus*, *Ephedrus cerasicola*, *E. lacertosus*, *E. niger*, *E. plagiator*, *E. validus*, *Lysiphlebus cardui*, *L. dissolutus*, *L. hirticornis*, *Pauesia abietis*, *P. laricis*, *P. longicauda*, *P. pini*, *P. pinicollis*, *Praon bicolor*, *P. longicorne*, *P. megourae*, *P. pubescens*, *Protaphidius wissmannii*, *Trioxys cirsi*, *T. curvicaudus*, *T. pallidus*; 3 species were recorded only in the Zone of Deciduous Forests: *Lipolexis gracilis*, *Praon abjectum*, *Toxares deltiger*; 10 species were registered in both zones: *Adialytus ambiguus*, *Aphidius asteris*, *A. ervi*, *A. rosae*, *Binodoxys acalephae*, *Ephedrus persicae*, *Lysiphlebus confusus*, *L. fabarum*, *Paralipsis evervis*, *Praon volucre*. Eight species are associated only with aphids on coniferous trees: *Diaeretus leucopterus*, *Pauesia abietis*, *P. laricis*, *P. longicauda*, *P. pini*, *P. pinicollis*, *P. unilachni*, *Praon bicolor*. Four species are euribiotic: *Aphidius ervi*, *Ephedrus plagiator*, *Lysiphlebus fabarum*, *Praon volucre*. At the same time, we consider ten species as rare on the time of research: *Diaeretus leucopterus*, *Diaeretellus ephippium*, *Pauesia abietis*, *P. longicauda*, *P. pini*, *P. pinicollis*, *Praon bicolor*, *P. megourae*, *P. pubescens*, *Protaphidius wissmannii*. Factors that may affect the low abundance of some species in Forest zones in Ukraine: trophic specialization of species, features of biology, patterns of geographical and habitat associations of species in the area of research, patterns of material collection.

Key words: aphidiines, aphid parasitoids, species composition, Forest zones, habitat, distribution, Ukraine.

Їздці-афідіїни (Hymenoptera, Braconidae, Aphidiinae) лісових зон України: видовий склад та біотопічний розподіл

Калюжна М.О.

У статті наведено дані про видовий склад та біотопічний розподіл практично важливої групи паразитичних перетинчастокрилих комах з підродини Aphidiinae (Hymenoptera, Braconidae) в межах лісових зон України. Видовий склад афідіїн території дослідження включає 45 видів з 16 родів. З них 32 види були зареєстровані тільки в зоні мішаних лісів; три види — тільки в зоні листяних лісів; десять видів були зареєстровані в обох зонах; вісім видів пов'язані тільки з попелицями на хвойних деревах; чотири види (*Aphidius ervi* Haliday, 1834, *Ephedrus plagiator* (Nees, 1811), *Lysiphlebus fabarum* (Marshall, 1896), *Praon volucre* Haliday, 1833) є еврибіонтами. Десять видів вважаються рідкісними. Фактори, які можуть вплинути на низьку чисельність деяких видів в лісових зонах України: трофічна спеціалізація видів, особливості біології, закономірності географічного та біотопічного поширення видів в районі дослідження, особливості збору матеріалу.

Ключові слова: афідіїни, паразити попелиць, видовий склад, біотопічний розподіл, Україна.

Наездники-афидиины (Hymenoptera, Braconidae, Aphidiinae) лесных зон Украины: видовой состав и биотопическое распределение

Калюжная М.А.

В статье приведены данные о видовом составе и биотопическом распределении практически важной группы паразитических перепончатокрылых насекомых из подсемейства Aphidiinae (Hymenoptera, Braconidae) в

пределах лесных зон Украины. Видовой состав афидиин территории исследования включает 45 видов из 16 родов. Из них 32 вида были зарегистрированы только в зоне смешанных лесов; три вида — только в зоне лиственных лесов; десять видов были зарегистрированы в обеих зонах; восемь видов связаны только с тлями на хвойных деревьях; четыре вида (*Aphidius ervi* Haliday, 1834, *Ephedrus plagiator* (Nees, 1811), *Lysiphlebus fabarum* (Marshall, 1896), *Praon volucre* Haliday, 1833) являются эврибионтами. Десять видов считаются редкими. Факторы, которые могут повлиять на низкую численность некоторых видов в лесных зонах Украины: трофическая специализация видов, особенности биологии, закономерности географического и биотопического распространения видов в районе исследования, особенности сбора материала.

Ключевые слова: афидиины, паразитоиды тлей, видовой состав, биотопическое распределение, Украина.

Introduction

Aphidiinae (Hymenoptera, Braconidae) is an economically important group of braconid wasps, represented by solitary endoparasitoids of aphids (Starý, 1970; Tobias and Chiriac, 1986; Davidian, 2007; Yu et al., 2012). They take part in the regulation of aphid population growth; some species are used in aphid biocontrol programs worldwide (EPPO, 2019).

The recent studies on aphidiines of Ukraine were mainly concentrated in the Forest-Steppe Zone (Kaliuzhna, 2015), and knowledge on these parasitoids in other regions of the country remained scarce. In this study, we present preliminary data on species composition and habitat associations of aphidiines of the Forest zones (Zone of Mixed Forests and Zone of Deciduous Forest) of Ukraine. These zones are located in the north and west of the non-mountainous part of Ukraine and cover approximately 24% of the territory (Marynych and Shyshchenko, 2005). The species list includes new original data and analyzed information from previous publications of the author and colleagues.

The aim of this work is to create a species list of Aphidiinae of the Forest zones of Ukraine, to facilitate further studies in the region and contribute to the dataset on fauna, biology, and ecology of aphidiines of Ukraine.

Material and methods

The material was collected by the author and other collectors during 2010–2019 in Zones of Mixed and Deciduous Forests of Ukraine. In addition, the collection of I.I. Schmalhausen Institute of Zoology, NAS of Ukraine (SIZK, Kyiv) was studied.

Material was collected by sweeping and rearing of parasitoids in the laboratory conditions from infested aphids collected in a field. Material was sorted, studied, identified and deposited in SIZK. The labels of studied material are supplied with geographical coordinates, which were found through Google Maps service and show the location of the settlement or area indicated on the label.

Results and discussion

In total, 45 species from 16 genera are recorded here for the Forest zones of Ukraine. The list of species includes a reference on material examined, habitat associations, and distribution in Ukraine. Some listed species are mentioned here on the basis of previous publications, where no material was cited.

List of Aphidiinae of Forest Zones of Ukraine

Adialytus ambiguus (Haliday, 1834)

Material: Kyiv Region: 1 ♀, Kyiv, Teremky [50°21'43.7"N, 30°27'10.1"E], forest, forest openings and edges, 24.07.2010 (M. Kaliuzhna); 1 ♀, Brovary District, v. Semypolky [50°40'05" N, 31°03'50" E], sweeping on grass and flowers, 31.07.2015 (R. Krivosheev).

Habitats: forest edges and openings, parks, fields, meadows, ruderal.

Distribution in Ukraine: Kyiv, Kirovohrad, Poltava Regions (Kaliuzhna, 2015), Cherkasy Region (Kaliuzhna, 2016), Ternopil Region (Kaliuzhna, 2017).

***Adialytus salicaphis* (Fitch, 1855)**

Material: Kyiv Region (Kaliuzhna, 2014).

Habitats: mixed and deciduous forests, gardens, parks and other habitats with *Salix* and *Populus*.

Distribution in Ukraine: Kyiv Region (Kaliuzhna, 2014).

***Aphidius asteris* Haliday, 1834**

Material: 1 ♀, Kyiv Region, Kyiv-Sviatoshyn District, v. Vita-Poshtova [50°18'39.5" N, 30°24'49.0" E], field, on oak forest edge, on *Centaurea cyanus*, 13.07.2015 (R. Krivosheev).

Habitats: parks, meadows, field edges, ruderal, steppe, garden.

Distribution in Ukraine: Kirovograd, Poltava, Cherkasy, Kherson Regions (Kaliuzhna, 2015), Ternopil Region (Kaliuzhna, 2017), Crimea (Starý, 1961, 1962), Kyiv Region (Zinchenko, Kaliuzhna, 2016).

***Aphidius ervi* Haliday, 1834**

Material: Kyiv Region, Kyiv: 1 ♀, Lisnyky [50°17'31.0"N, 30°31'04.8"E], forest, 12.06.2002 (A. Kotenko); 1 ♀, Feofaniya [50°20'20.4"N, 30°29'26.6"E], forest, 21.06.2002 (A. Kotenko); 1 ♀, UkrNIZR, from mummies of *Acyrtosiphon pisum* on alfalfa, 3.05.1983 (unknown); 1 ♂, Pirogov [50°21'14.8"N, 30°30'35.0"E], 10.07.2007 (O. Simutnik).

Habitats: fields, meadows, steppe, forests, parks, ruderal.

Distribution in Ukraine: Transcarpathian Region (Zerova et al., 1996); Kyiv, Poltava, Kharkiv Regions (Kaliuzhna, 2015); the steppe zone of right-bank Ukraine (Berest, 1980, 1981, 1985), Cherkasy Region (Kaliuzhna, 2016), Ternopil Region (Kaliuzhna, 2017).

***Aphidius matricariae* Haliday, 1834**

Material: 1 ♀, Kyiv Region, Borodianka District, near v. Klavdievo [50°35'15.01" N, 29°59'56.49" E], sweeping in the forest (*Betula*, *Pinus*) and on fern in a swamp, 23.05.1976 (A. Kotenko); 1 ♀, Kyiv, on wheat, experimental plot, 21-22.04.1978 (Z. Berest).

Habitats: meadows, steppes, ruderal areas, fields, parks, forests.

Distribution in Ukraine: Kyiv Region (Kaliuzhna, 2015), the steppe zone of right-bank Ukraine (Berest, 1980, 1981, 1985).

***Aphidius megourae* Starý, 1965**

Material: Kyiv Region (Kaliuzhna, 2014).

Habitats: mixed forests: edges and glades.

Distribution in Ukraine: Kyiv Region (Kaliuzhna, 2014).

***Aphidius rhopalosiphi* De Stefani-Perez, 1902**

Material: Kyiv Region, Kyiv-Sviatoshyn District: 1 ♀, 1 ♂, near v. Kruglik [50°18'15.5"N, 30°27'25.9"E], 31.08.2010 (M. Kaliuzhna); 1 ♀, idem, sweeping on forest edge and meadow near field, 31.08.2010 (M. Kaliuzhna); 1 ♀, rail station "Spartak" [50°40'29.21" N, 29°44'21.92" E], mixed forest, Tal river bank, sweeping on grass, 10.07.1977 (A. Kotenko); Kyiv: 1 ♀, Sviatoshyn Forest, near the "Nivki" fish farm [50°27'50.1"N, 30°16'38.0"E], 1.07.2009 (A. Ignatiuk); 2 ♀, Darnytsia, Park of Partisan Glory [50°24'57.0"N, 30°40'35.2"E], 15.07.2009 (A. Ignatyuk); 1 ♀, Darnitsa, Park "Peremoga" [50°27'41.9"N, 30°36'20.8"E], 17.06.2009 (A. Ingatyuk); 1 ♀, Teremky [50°21'43.7"N, 30°27'10.1"E], forest edges and openings, 25.06.2010 (A. Kotenko); 1 ♀, Feofaniya [50°20'30.6"N, 30°29'28.8"E], stepped slope of the beam, 21.06.2002 (A. Kotenko); 2 ♀, Lisnyky [50°18'41.6"N, 30°31'20.1"E], forest, 12.06.2002 (A. Kotenko).

Habitats: fields, meadows, forest undergrowth, parks, ruderal.

Distribution in Ukraine: Transcarpathian Region (Zerova et al., 1996); the steppe zone of right-bank Ukraine (Berest, 1980, 1981, 1985), Kirovograd, Kyiv, Mykolaiv, Kharkiv, Kherson Regions (Kaliuzhna, 2015), Cherkasy Region (Kaliuzhna, 2016).

***Aphidius ribis* Haliday, 1834**

Material: 2 ♀, Kyiv Region, Kyiv, Teremky [50°21'43.7"N, 30°27'10.1"E], forest glades, 26.06.2011 (M. Kaliuzhna).

Habitats: mixed forests, gardens.

Distribution in Ukraine: Poltava Region (Telenga, 1950), Kyiv Region (Kaliuzhna, 2015).

***Aphidius rosae* Haliday, 1833**

Material: 10 ♀, 7 ♂, Kyiv Region, Kyiv, near Institute of Zoology [50°26'43.4"N, 30°30'52.2"E], on *Rosa canina*, 07.05-14.05.2014 (M. Kaliuzhna).

Habitats: forests, gardens, parks, roadsides.

Distribution in Ukraine: Kyiv and Kharkiv Regions (Kaliuzhna, 2015), Ternopil Region (Kaliuzhna, 2017).

***Aphidius urticae* Haliday, 1834**

Material: Kyiv Region, Kyiv-Sviatoshyn District: 1 ♀, v. Kruglik [50°18'15.5"N, 30°27'25.9"E], sweeping of steppe slopes, 22.08.1980 (A. Kotenko); Kyiv: 2 ♀, Teremky [50°21'43.7"N, 30°27'10.1"E], forest, forest edges and openings, 7.06.2010 (A. Kotenko); 1 ♀, Feofaniya [50°20'30.6"N, 30°29'28.8"E], forest, sweeping on wild grasses, 17.09.2009 (A. Kotenko).

Habitats: forests, forest edges and openings, ruderal.

Distribution in Ukraine: Kyiv Region (Kaliuzhna, 2015), Cherkasy Region (Kaliuzhna, 2016).

***Areopraon silvestre* (Starý, 1971)**

Material: Kyiv and Donetsk Regions (Kaliuzhna, 2014).

Habitats: forests, parks, forest openings.

Distribution in Ukraine: Kyiv and Donetsk Regions (Kaliuzhna, 2014).

***Binodoxys acalephae* (Marshall, 1896)**

Material: Kyiv Region, Kyiv: 1 ♀, Vynogradar [50°30'10.7"N, 30°25'48.1"E], reared from *Aphis craccivora* on *Robinia pseudoacacia*, 13.06.2011 (M. Kaliuzhna); 1 ♀, Teremky [50°21'43.7"N, 30°27'10.1"E], forest opening, from *Aphis cracciae* L. on *Vicia cracca* L., 15.07.2010 (M. Kaliuzhna); 1 ♀, idem, from *Aphis cracciae* L. on *Vicia tetrasperma* (L.) Shreb., 15.07.2010 (M. Kaliuzhna); 1 ♀, idem, sweeping, 7.06.2010 (M. Kaliuzhna).

Habitats: steppe and forest-steppe habitats, forests edges, parks, ruderal.

Distribution in Ukraine: Transcarpathian (Tobias and Chiriac, 1986), Kyiv and Cherkasy Regions (Kaliuzhna, 2015, 2016), Ternopil Region (Kaliuzhna, 2017).

***Binodoxys angelicae* (Haliday, 1833)**

Material: 1 ♀, Kyiv Region, Kyiv, Teremky [50°21'43.7"N, 30°27'10.1"E], forest, forest edges and openings, 7.08.2010 (A. Kotenko).

Habitats: forest and forest-steppe habitats, forest edges, parks, gardens.

Distribution in Ukraine: Kyiv and Cherkasy Regions (Kaliuzhna, Zubenko, 2013; Kaliuzhna, 2015, 2016).

***Diaeretellus ephippium* (Haliday 1833)**

Material: 1 ♂, Kyiv Region, Borodianka Distr., near v. Klavdievo [50°35'15.01" N, 29°59'56.49" E], forest, swamp, sweeping on the fern, 30.05.1976 (A. Kotenko).

Habitats: forests.

Distribution in Ukraine: Kyiv Region (Kaliuzhna, 2015).

***Diaeretiella rapae* (M'Intosh, 1855)**

Material: 2 ♀, Chernihiv Region, Kozelets District, v. Morovsk [51°04'58.1"N, 30°52'31.4"E], 10.07.2011 (A. Prokhorov); 2 ♀, Kyiv Region, v. Nemishayeve [50°33'12.8"N, 30°04'58.5"E], potatoes, rearing, 27.07.1986 (unknown).

Habitats: steppe, fields, gardens.

Distribution in Ukraine: Mykolaiv and Odesa Regions, the steppe zone of right-bank Ukraine (Berest, 1980, 1981, 1985), Kyiv, Cherkasy Region (Kaliuzhna, 2015), Chernigiv Region (first record).

***Diaeretus leucopterus* (Haliday, 1834)**

Material: Kyiv Region (Kaliuzhna, 2014).

Habitats: Mixed and coniferous (pine) forests, forest edges, parks.

Distribution in Ukraine: Kyiv Region (Kaliuzhna, 2014).

***Ephedrus cerasicola* Starý, 1962**

Material: Kyiv Region (Kaliuzhna, 2014).

Habitats: deciduous forests, parks, gardens.

Distribution in Ukraine: Kyiv Region (Kaliuzhna, 2014), Cherkasy Region (Kaliuzhna, 2016).

***Ephedrus lacertosus* (Haliday, 1833)**

Material: 1 ♀, Kyiv Region, near Kyiv, v. Motovylyvka [50°10'08.3"N, 30°03'17.3"E], mixed forest along the creek, wild grasses, 19.05.1979 (A. Kotenko).

Habitats: fields, forest undergrowth, parks.

Distribution in Ukraine: Kyiv and Lugansk Regions (Kaliuzhna, 2015).

***Ephedrus niger* Gautier, Bonnamour et Goumont, 1929**

Material: Kyiv Region: 1 ♀, Borodianka District, near v. Poroskoten [50°34'02.6"N, 29°57'11.9"E], sweeping on grass and birch, 15.05.1976 (A. Kotenko); 1 ♀, Kyiv-Sviatoshyn District, near v. Khodosivka [50°17'16.3"N, 30°29'47.7"E], sweeping on wild grasses, 14.08.1980 (A. Kotenko); Kyiv: 1 ♀, Teremky [50°21'43.7"N, 30°27'10.1"E], meadows, forest edges, 7.06.2010 (A. Kotenko); 2 ♀, idem, forest glades, edges, 12.06.2010 (M. Kaliuzhna); 3 ♀, 2 ♂, Lysa Hora [50°23'41.3"N, 30°33'03.7"E], 6.07.2011 (M. Kaliuzhna).

Habitats: forest edges and openings, meadows.

Distribution in Ukraine: steppe and forest-steppe zones (Starý, 1965), Transcarpathian (Zerova et al., 1996), Kyiv, Mykolaiv, Kharkiv, Chernivtsi Regions (Kaliuzhna, 2015), Cherkasy Region (Kaliuzhna, 2016).

***Ephedrus persicae* Froggat, 1904**

Material: 1 ♀, 1 ♂, Kyiv, Darnytsia [50°25'20.98" N, 30°40'12.49" E], 19.05.2010, reared from aphids on apple-tree 25–31.05.2010 (V. Fursov).

Habitats: forest edges and openings, gardens, meadows, ruderal areas.

Distribution in Ukraine: Kyiv Region (Kaliuzhna, 2015), Ternopil region (Kaliuzhna, 2017).

***Ephedrus plagiator* (Nees, 1811)**

Material: Kyiv Region, Kyiv-Sviatoshyn District: 2 ♀, v. Kruglik [50°18'15.5"N, 30°27'25.9"E], 22.08.1980 (A. Kotenko); Kyiv: 1 ♀, Teremky [50°21'43.7"N, 30°27'10.1"E], forest, forest openings and edges, 7.06.2010

(M. Kaliuzhna); 2 ♀, idem, 12.06.2010 (M. Kaliuzhna); 3 ♀, 2 ♂, Lysa Hora [50°23'41.3"N, 30°33'03.7"E], 6.07.2011 (M. Kaliuzhna); 1 ♀, soviet farm "Bortnychi", garden, 18.04.1989 (S. Sviridov).

Habitats: forest, forest openings and edges, gardens, steppe, ruderal.

Distribution in Ukraine: Kyiv, Poltava Regions (Telenga, 1950), Crimea (Starý, 1962, 1965), the steppe zone of right-bank Ukraine (Berest, 1980, 1981, 1985), Transcarpathian (Zerova et al., 1996), Chernivtsi, Kharkiv, Kherson, Cherkasy Regions (Kaliuzhna, 2015, 2016).

Ephedrus validus (Haliday, 1833)

Material: 1 ♀, 1 ♂, Kyiv Region, Borodianka Distr., near v. Klavdievo [50°35'15.01" N, 29°59'56.49" E], forest, swamp, sweeping on a fern, 30.05.1976 (A. Kotenko).

Habitats: wet forests, gardens.

Distribution in Ukraine: Kyiv Region (Kaliuzhna, 2015).

Lipolexis gracilis Förster, 1862

Material: Cherkasy, Kirovohrad, Ternopil Regions (Kaliuzhna, 2017, 2018).

Habitats: meadows and stepe, forest edges.

Distribution in Ukraine: Cherkasy (Kaliuzhna, Zubenko, 2013), Kirovohrad (Kaliuzhna, 2015), and Ternopil Regions (Kaliuzhna, 2017, 2018).

Lysiphlebus cardui (Marshall, 1896)

Material: Kyiv Region, Kyiv: 1 ♀, Lysa Hora [50°23'34.9"N, 30°33'04.2"E], from *Aphis* (*Uraphis*) *glareosae* Borzh. on *Euphorbia* sp. 10.09.1987 (O. Chervonenko); 1 ♂, idem, from *Aphis gerardiana* Mordv. on *Euphorbia* sp., 8.09.1987 (O. Chervonenko); 1 ♀, Bakinska str. [50°28'55.9"N, 30°26'57.9"E], on bird-cherry, 14.09.1987 (O. Chervonenko); 4 ♀, Fomin Botanical Garden [50°26'35.4"N, 30°30'15.4"E], on *Malva* sp., 19.07.2012 (M. Kaliuzhna); 1 ♀, idem, on *Solanum nigrum*, 19.07.2012 (M. Kaliuzhna); 1 ♀, Teremky [50°21'43.7"N, 30°27'10.1"E], on *Cirsium* sp., 1.07.2010 (M. Kaliuzhna); 1 ♀, from mummy on *Chenopodium album* L., VII.2011 (M. Kaliuzhna); Chernobyl District: 3 ♀, v. Kopachi [51°21'14.6"N, 30°07'31.6"E], on *Helichrisum arenarium* (L.), 7.06.1988 (O. Chervonenko); 3 ♀, idem, on *Viburnum opulus* L. (O. Chervonenko); Borodianka District: 1 ♀, v. Nemishayeve [50°33'12.8"N, 30°04'58.5"E], potatoes, rearing, 27.07.1986 (unknown).

Habitats: meadows, fields, gardens, forest openings and edges.

Distribution in Ukraine: Kyiv, Poltava, Sumy, Kharkiv, Kherson, Cherkasy Regions (Kaliuzhna, 2015).

Lysiphlebus confusus Tremblay et Eady, 1978

Material: Kyiv Region, Kyiv: 7 ♂, Teremky [50°21'43.7"N, 30°27'10.1"E], forest clearings and edges, from *Aphis craccae* L. on *Lathyrus pratensis* L., 22.07.2010 (M. Kaliuzhna); 7 ♂, idem, from *Aphis craccivora* Koch on *Lotus corniculatus* L., 01.07.2010 (M. Kaliuzhna); 3 ♂, idem, from *Aphis fabae* Scop. on *Lupinus polyphyllus* Lindl., 25.06.2010 (M. Kaliuzhna); 5 ♂, idem, 01.07.2010 (M. Kaliuzhna); 2 ♂, idem, from *Aphis fabae* Scop. on *Trifolium alpestre* L., 01.07.2010 (M. Kaliuzhna); 1 ♂, idem, on *Lotus corniculatus* L., 15.07.2010, (M. Kaliuzhna); 9 ♂, Muromets island, Park "Druzhby Narodiv" [50°30'50.5"N, 30°32'42.9"E], from *Aphis craccae* L. on *Vicia cracca* L., 22.06.2011 (M. Kaliuzhna); 5 ♂, idem, from *Aphis craccivora* Koch on *Lotus corniculatus* L., 22.06.2011 (M. Kaliuzhna); 3 ♂, Lysa Hora [50°23'41.3"N, 30°33'03.7"E], from *Aphis craccivora* Koch on *Medicago sativa* L., 14.09.2010 (M. Kaliuzhna); Borodianka District: 1 ♂, ~70 km from rail station "Spartak" [50°40'29.21"N, 29°44'21.92"E], forest cutting, 1.07.2004 (O. Simutnik).

Habitats: meadows, steppe, forest clearings and edges, ruderal.

Distribution in Ukraine: Kyiv, Poltava Regions (Telenga, 1950), Kirovograd, Cherkasy, Sumy, Kharkiv, Kherson Regions (Kaliuzhna, 2015), Ternopil Region (Kaliuzhna, 2017).

***Lysiphlebus dissolutus* (Nees, 1811)**

Material: 1 ♀, Kyiv Region, Borodianka Distr., near v. Klavdievo [50°35'15.01"N, 29°59'56.49"E], sweeping in the forest (*Betula*, *Pinus*) and on fern in a swamp, 23.05.1976 (A. Kotenko).

Habitats: forests.

Distribution in Ukraine: Zaporizhzhya and Kyiv Regions (Kaliuzhna, 2015).

***Lysiphlebus fabarum* (Marshall, 1896)**

Material: Kyiv Region, Kyiv: 11 ♀, Teremky [50°21'43.7"N, 30°27'10.1"E], forest clearings and edges, from *Aphis craccae* L. on *Lathyrus pratensis* L., 22.07.2010 (M. Kaliuzhna); 7 ♀, idem, from *A. craccae* on *Vicia tetrasperma* (L.) Shreb., 15.07.2011 (M. Kaliuzhna); 6 ♀, idem, 22.07.2010 (M. Kaliuzhna); 5 ♀, idem, from *Aphis craccivora* Koch on *Lotus corniculatus* L., 01.07.2010 (M. Kaliuzhna); 3 ♀, idem, 15.07.2010 (M. Kaliuzhna); 14 ♀, idem, from *Aphis fabae* Scop. on *Lupinus polyphyllus* Lindl., 25.06.2010 (M. Kaliuzhna); 9 ♀, idem, 01.07.2010 (M. Kaliuzhna); 4 ♀, idem, from *Aphis fabae* Scop. on *Trifolium alpestre* L., 01.07.2010 (M. Kaliuzhna); 9 ♀, Muromets island, Park "Druzhby Narodiv" [50°30'50.5"N, 30°32'42.9"E], from *Aphis craccae* L. on *Vicia cracca* L., 22.06.2011 (M. Kaliuzhna); 4 ♀, idem, from *Aphis craccivora* Koch on *Lotus corniculatus* L., 22.06.2011 (M. Kaliuzhna); 12 ♀, Lysa Hora [50°23'41.3"N, 30°33'03.7"E], from *Aphis craccivora* Koch on *Medicago falcata* L., 14.09.2010 (M. Kaliuzhna); 5 ♀, idem, from *Aphis craccivora* Koch on *Genista tinctoria* L., 23.06.2011 (M. Kaliuzhna); Volyn Region: 1 ♀, near v. Dachne (~20 km from Lutsk) [50°48'51.5"N, 25°23'34.3"E], National Park "Tsumanska Pushcha", 8.06.2019 (M. Kaliuzhna).

Habitats: meadows, steppe, forest edges, fields, ruderal.

Distribution in Ukraine: Kyiv, Poltava Regions (Telenga, 1950), Kirovograd, Cherkasy, Sumy, Kharkiv, Kherson Regions (Kaliuzhna, 2015), Ternopil Region (Kaliuzhna, 2017).

***Lysiphlebus hirticornis* Mackauer, 1960**

Material: 1 ♀, Kyiv Region, Kyiv, Teremky [50°21'43.7"N, 30°27'10.1"E] forest, forest openings and edges, 22.07.2010 (M. Kaliuzhna).

Habitats: meadows, steppe, ruderal, roadsides, forest edges.

Distribution in Ukraine: Kyiv and Kherson Regions (Kaliuzhna, 2013, 2015).

***Paralipsis evervis* (Nees, 1834)**

Material: Kyiv, Ternopil Regions (Kaliuzhna, 2017).

Habitats: steppe, fields, ruderal, meadows, gardens.

Distribution in Ukraine: Kyiv (Kaliuzhna, 2014, 2015) and Ternopil Regions (Kaliuzhna, 2017).

***Pauesia abietis* (Marshall, 1896)**

Material: Kyiv and Cherkasy Regions, Crimea (Kaliuzhna, 2014).

Habitats: coniferous and mixed forests, forest edges.

Distribution in Ukraine: Kyiv and Cherkasy Regions, Crimea (Kaliuzhna, 2014).

***Pauesia laricis* (Haliday, 1834)**

Habitats: coniferous and mixed forests, forest-steppe.

Distribution in Ukraine: Kyiv Region (Tobias and Chiriak, 1986), Cherkasy Region, Crimea (Kaliuzhna, 2015).

***Pauesia longicauda* Chiriak, 1993**

Material: Kyiv Region (Kaliuzhna, 2014).

Habitats: coniferous and mixed forests.

Distribution in Ukraine: Kyiv Region (Kaliuzhna, 2014).

Pauesia pini (Haliday, 1834)

Habitats: coniferous and mixed forests.

Distribution in Ukraine: Kyiv Region, Crimea (Tobias and Chiriac, 1986), Cherkasy Region (Kaliuzhna, 2015).

Pauesia pinicollis Starý, 1960

Habitats: coniferous and mixed forests.

Distribution in Ukraine: Transcarpathian and Kyiv Regions, Crimea (Tobias and Chiriac, 1986), Cherkasy Region (Kaliuzhna, 2015).

Praon abjectum (Haliday, 1833)

Material: Ternopil Region (Kaliuzhna, 2017).

Habitats: forest openings and edges, parks.

Distribution in Ukraine: Ternopil Region (Kaliuzhna, 2017).

Praon bicolor Mackauer, 1959

Material: 1 ♀, Kyiv Region, Borodianka Distr., rail station “Spartak” [50°40'29.21"N, 29°44'21.92"E], deciduous forest, Tal riverside, 10.07.1977 (A. Kotenko).

Habitats: coniferous and mixed forests.

Distribution in Ukraine: Transcarpathian (Zerova et al., 1996) and Kyiv Regions (Kaliuzhna, 2015).

Praon longicorne Marshall, 1896

Material: 1 ♀, Kyiv, Feofaniya [50°20'20.4"N, 30°29'26.6"E], forest, sweeping on herbs, 17.09.2009 (A. Kotenko).

Habitats: mixed and deciduous forests.

Distribution in Ukraine: Transcarpathian (Zerova et al., 1996) and Kyiv Regions (Kaliuzhna, 2015).

Praon megourae Starý, 1971

Material: 1 ♀, Kyiv Region, Borodianka Distr., ~70 km from rail station “Spartak” [50°40'29.21" N, 29°44'21.92" E], forest cutting, 1.07.2004 (O. Simutnik).

Habitats: forests, ruderal.

Distribution in Ukraine: Kyiv Region (Kaliuzhna, 2015).

Praon pubescens Starý, 1961

Material: 1 ♀, Kyiv, Teremky [50°21'43.7"N, 30°27'10.1"E], forest, forest openings and edges, sweeping, 7.06.2010 (M. Kaliuzhna).

Habitats: forests.

Distribution in Ukraine: Kyiv Region (Kaliuzhna, 2015).

Praon volucre Haliday, 1833

Material: Kyiv Region, Kyiv: 1 ♀, Teremky [50°21'43.7"N, 30°27'10.1"E], forest openings and edges 01.08.2009 (A. Kotenko); 2 ♀, idem, 12.06.2010 (M. Kaliuzhna); 4 ♀, Lysa Hora [50°23'41.3"N, 30°33'03.7"E], 6.07.2011 (M. Kaliuzhna).

Habitats: meadows, steppe, forest edges, fields, ruderal.

Distribution in Ukraine: Transcarpathian Region (Zerova et al., 1996); the steppe zone of right-bank Ukraine (Berest, 1980, 1981, 1985), Kyiv Region, Odesa, Kharkiv, Kherson Regions, Crimea (Kaliuzhna, 2015), Cherkasy Region (Kaliuzhna, 2016), Ternopil Region (Kaliuzhna, 2017).

***Protaphidius wissmannii* (Ratzeburg, 1848)**

Material: Kyiv Region (Kaliuzhna, 2012).

Habitats: deciduous and mixed forests, parks.

Distribution in Ukraine: Kyiv Region (Kaliuzhna, 2012).

***Trioxys cirsii* (Curtis 1831)**

Material: 2 ♀, 1 ♂, Kyiv, Darnytsia, [50°27'26.8"N, 30°36'26.8"E] from *Drepanosiphon platanoides* on *Acer platanoides*, 12.06.1994 (V. Zhuravlev).

Habitats: deciduous and mixed forests, parks.

Distribution in Ukraine: Kyiv Region (Kaliuzhna, 2015).

***Trioxys curvicaudus* Mackauer, 1967**

Material: 5 ♀, Kyiv, Tereshchenkivska str. [50°26'39.9"N, 30°30'55.8"E], from *Eucalipterus tiliae* on *Tilia cordata*, 10.07.2013 (M. Kaliuzhna); see also (Kaliuzhna, 2014).

Habitats: deciduous and mixed forests, parks.

Distribution in Ukraine: Kyiv Region (Kaliuzhna, 2014).

***Trioxys pallidus* Haliday, 1833**

Material: 1 ♀, Kyiv, Teremky [50°21'43.7"N, 30°27'10.1"E] forest clearings and edges, 30.07.2010 (M. Kaliuzhna).

Habitats: deciduous and mixed forests, parks, gardens.

Distribution in Ukraine: Kyiv and Chernivtsi Regions (Kaliuzhna, 2015).

***Toxares deltiger* (Haliday, 1833)**

Material: (Kaliuzhna, 2014, 2017).

Habitats: forest, forest-steppe, fields, riversides, parks, ruderal.

Distribution in Ukraine: Ternopil Region (Kaliuzhna, 2014, 2017).

Conclusion

Among 45 listed species, 32 species were recorded only in the Zone of Mixed Forest: *Adialytus salicaphis*, *Aphidius matricariae*, *A. megourae*, *A. rhopalosiphi*, *A. ribis*, *A. urticae*, *Areopraon silvestre*, *Binodoxys angelicae*, *Diaeretellus ephippium*, *Diaeretiella rapae*, *Diaeretus leucopterus*, *Ephedrus cerasicola*, *E. lacertosus*, *E. niger*, *E. plagiator*, *E. validus*, *Lysiphlebus cardui*, *L. dissolutus*, *L. hirticornis*, *Pauesia abietis*, *P. laricis*, *P. longicauda*, *P. pini*, *P. pinicollis*, *Praon bicolor*, *P. longicorne*, *P. megourae*, *P. pubescens*, *Protaphidius wissmannii*, *Trioxys cirsii*, *T. curvicaudus*, *T. pallidus*; 3 species were registered only in the Zone of Deciduous Forests: *Lipolexis gracilis*, *Praon abjectum*, *Toxares deltiger*; 10 species were registered in both zones: *Adialytus ambiguus*, *Aphidius asteris*, *A. ervi*, *A. rosae*, *Binodoxys acalephae*, *Ephedrus persicae*, *Lysiphlebus confusus*, *L. fabarum*, *Paralipsis evervis*, *Praon volucre*. Eight species are associated only with aphids on coniferous trees: *Diaeretus leucopterus*, *Pauesia abietis*, *P. laricis*, *P. longicauda*, *P. pini*, *P. pinicollis*, *P. unilachni*, *Praon bicolor*. Four species are euribiotic: *Aphidius ervi*, *Ephedrus plagiator*, *Lysiphlebus fabarum*, *Praon volucre*.

At the same time, we consider ten species as rare: *Diaeretus leucopterus*, *Diaeretellus ephippium*, *Pauesia abietis*, *P. longicauda*, *P. pini*, *P. pinicollis*, *Praon bicolor*, *P. megourae*, *P. pubescens*, *Protaphidius wissmannii*. Factors that may affect the low abundance of some species in the Forest zones of Ukraine: trophic specialization of species; features of biology; patterns of geographical distribution and habitat associations of species in the area of research; patterns of material collection. Further studies will facilitate a better understanding of these factors and will help to complete the dataset on species composition and biology of aphidiines of Ukraine.

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