

SOME INSECTS (DERMAPTERA, DIPTERA, MECOPTERA) FROM BEER TRAPS IN UZHGOROD CITY (UKRAINE)

*Libor DVOŘÁK*¹ – *Jean-Paul HAENNI*² – *Jan MÁČA*³ –
*Ruslan MARIYCHUK*⁴ – *Jozef OBOŇA*⁴

ABSTRACT

Initial results of beer trapping from Uzhhorod City (Ukraine) are presented. From all obtained insect taxa more attention was dedicated to selected groups: Dermaptera, Diptera (Anisopodidae, Drosophilidae, Perisclididae, Platystomatidae, Scatopsidae), and Mecoptera. The Diptera records: minute black scavenger fly *Coboldia fuscipes* (Meigen, 1830) (family Scatopsidae), *Perisclis (Myodris) annulata* (Fallén, 1813) (family Perisclididae) represent the first records from Ukraine. *Panorpa communis* L., 1758 (order Mecoptera) has not been recorded from Ukraine in the Fauna Europaea database, maybe by omission.

KEYWORDS

Dermaptera, Diptera, Anisopodidae, Drosophilidae, Perisclididae, Platystomatidae, Scatopsidae, Mecoptera, beer trapping, new records

INTRODUCTION

One of the most often used passive techniques to assess the activity and diversity of arthropods is trapping (e.g. BARBER 1931, ZALLER et al. 2015) which has been utilized in various ecosystems. Traps baited with beer are very effective method for faunistic surveys of many insect families (e.g. DVOŘÁK 2007, DVOŘÁK & DVOŘÁKOVÁ 2012); as exemplified, often captured are flies from family Anisopodidae (DVOŘÁK 2014a, b, 2016a, b). This method is very attractive because it works for at least one week when the observer is absent, it is very simple and inexpensive and thus it has been used in numerous studies (e.g. DVOŘÁK 2014a, b, 2016a, b).

MATERIAL AND METHODS

Beer traps were placed in the garden of the family house in Uzhhorod (Ukraine), GPS: 48°39'22.1"N 22°19'50.6"E.

Two big transparent plastic bottles (1.5 liters, with a circular opening in the upper third of the bottle laterally) filled with 0.3 liter of beer were hung 1.5–2 metre above the ground on branches of apple trees – *Malus* spp. (mod. DVOŘÁK 2007, DVOŘÁK et

¹ *Municipal Museum Mariánské Lázně, Goethovo náměstí 11, 353 01 Mariánské Lázně, Czech Republic; e-mail: lib.dvorak@seznam.cz*

² *Muséum d'Histoire Naturelle, Rue des Terreaux 14, 2000, Neuchâtel, Switzerland; e-mail: Jean-Paul Haenni@unine.ch*

³ *Na Potoce 276, 391 81, Veselí nad Lužnicí, Czech Republic, e-mail: janxmaca@seznam.cz*

⁴ *Department of Ecology, Faculty of Humanities and Natural Sciences, University of Prešov, 17. novembra 1, 081 16 Prešov, Slovakia; e-mails: obonaj@centrum.sk, ruslan.mariychuk@unipo.sk*

al. 2008) in 1.–10.viii.2017 (the traps were exposed 10 days). The material was taken out, washed and fixed in ethanol.

Flies from family Anisopodidae were identified using HAENNI (1997) by L. Dvořák. Drosophilidae were identified according to BÄCHLI et al. (2004) and Periscelididae according to PAPP & WITHERS (2011) by J. Máca, Platystomatidae using RIVOSECCHI (2000) (det. L. Dvořák) and Scatopsidae using HAENNI (2002) (det. J. Oboňa and J.-P. Haenni). Mecoptera were determined using SAUER & HENSLE (1974) by L. Dvořák, and Dermaptera were determined using KOČÁREK et al. (2005) by L. Dvořák.

RESULTS AND DISCUSSION

Specimens of Diptera, Coleoptera, Lepidoptera and other groups were examined, but for the purpose of present study attention was dedicated only to selected groups: Dermaptera, Diptera (Anisopodidae, Drosophilidae, Periscelididae, Platystomatidae, Scatopsidae), and Mecoptera.

Dermaptera DeGeer, 1773

Family: Forficulidae Latreille, 1810

Forficula auricularia Linnaeus, 1758

Material examined: 1 M, 3 nymphs

Remarks: Overall this is common species of earwigs known from almost all of the European countries. It is known from Ukraine (HAAS 2013).

Diptera Linnaeus, 1758

Family: Anisopodidae Edwards, 1921

Sylvicola cinctus (Fabricius, 1787)

Material examined: 13 M, 35 F

Remarks: Overall this is the most common species of the family known from almost all of the European countries. The species is known from Ukraine (DE JONG 2013).

Family: Drosophilidae Rondani, 1856

About half of the Ukrainian species of Drosophilidae (29 out of the total number of 51 valid species) have been recorded only from 1–2 localities each; only some synanthropic species being known from more places in Ukraine (BÄCHLI 2017). This ratio holds approximately also for the present collection: 6 of the 13 recorded species (*C. amoena*, *D. helvetica*, *D. silvestris*, *D. tristis*, *P. variegata* and *S. deflexa*) were each known previously from 1–2 localities in Ukraine. With respect to poor faunistic knowledge of Ukrainian drosophilids, it seems useful to enumerate all the species present in our collection. The overall distributions and references to numerous papers dealing with the biology of individual species are given by BÄCHLI (2017).

Chymomyza amoena (Loew, 1862)

Material examined: 1 F

Drosophila (s. str.) *immigrans* Sturtevant, 1921

Material examined: 2 M, 1 F

Drosophila (s. str.) *kuntzei* Duda, 1924

Material examined: 1 F

Drosophila (s. str.) *phalerata* Meigen, 1830

Material examined: 1 M, 3 F

Drosophila (s. str.) *testacea* von Roser, 1840

Material examined: 2 M, 8 F (both pale and dark form)

Drosophila (*Sophophora*) *helvetica* Burla, 1948

Material examined: 6 M, 7 F

Drosophila (*Sophophora*) *obscura* Fallén, 1823

Material examined: 7 M, 17 F

Drosophila (*Sophophora*) *silvestris* Basden, 1954

Material examined: 1 M

Drosophila (*Sophophora*) *subobscura* Collin in Gordon, 1936

Material examined: 11 M, 40 F

Drosophila (*Sophophora*) *tristis* Fallén, 1823

Material examined: 2 M, 1 F

Hirtodrosophila confusa (Staeger, 1844)

Material examined: 1 F

Phortica variegata (Fallén, 1823)

Material examined: 1 F

Scaptodrosophila deflexa (Duda, 1924)

Material examined: 3 F (all with extensive yellow basal strip on each abdominal tergite)

Family: Periscelididae Oldenberg, 1914

Periscelis (*Myodris*) *annulata* (Fallén, 1813) (Fig. 1)

Material examined: 2 F

Remarks: The species has been relatively often collected on tree sap and by traps in

most European countries (still unknown from Norway, some Balkans countries and from east and south of the European part of Russia), it was also collected in Israel (BÄCHLI 2015). **First record from Ukraine.**



Figure 1. Documentary photo of *Periscelis (Myodris) annulata* (Fallén, 1813) (dorsal view).

Family: Platystomatidae Schiner, 1862

Platystoma seminationis (Fabricius, 1775)

Material examined: 1 M

Remarks: The most common species of the genus *Platystoma* Meigen, 1803 known from almost all of the European countries. It is known from Ukraine (KORNEEV 2013).

Family: Scatopsidae Newman, 1834

Coboldia fuscipes (Meigen, 1830) (Fig. 2)

Material examined: 2 M, 3F

Remarks: *C. fuscipes* has not been recorded from Ukraine (HAENNI 2013). However, this species is cosmopolitan and may be expected to occur practically anywhere, especially in Europe. The larvae of this species can develop in extremely wide variety of media: any kind of decaying vegetal material, fungi, dung, also animal material, etc. **This finding represents the first record from Ukraine.**



Figure 2. Documentary photo of *Coboldia fuscipes* (Meigen, 1830) (lateral view).

Mecoptera Hyatt & Arms 1891

Family: Panorpidae Linnaeus, 1758

Panorpa communis Linnaeus, 1758

Material examined: 2 M, 6 F

Remarks: This species of scorpionflies occur practically anywhere, especially in Europe, however, according WILLMANN (2013) has not been recorded from Ukraine. Actually the first record from former territory of Ukraine was published more than 120 years ago by J. Dziędzielewicz (former Galicja - DZIĘDZIELEWICZ 1867) and later many authors published data about distribution of *P. communis* in Ukraine e.g. MARTYNOVA (1957) all Ukraine, PARHOMENKO (2002-2009) – Polissia region, KOPYTKO (2009) – Zakarpattia region, LEZHENINA et al. (2009) – Kharkiv region, and many others.

CONCLUSIONS

First records of *C. fuscipes* and *P. (M.) annulata* from Ukraine shows how poorly the selected fly families of Ukraine are yet explored. It is important to know species distributions for studying biogeography and for undertaking effective actions of biodiversity conservation. This pilot research represents certainly only a small part of the results, in the future we are planning to expand the number of sites (different habitat types), collection periods and the number of traps.

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LITERATURE

- BÄCHLI, G., 2015. TaxoDros, the database on taxonomy of Drosophilidae (Database 2017/7). <http://taxodros.unizh.ch> (accessed 7.9.2017).
- BÄCHLI, G. – VILELA, C.R. – ANDERSSON ESCHER, S. – SAURA A., 2004. The Drosophilidae (Diptera) of Fennoscandia and Denmark. Fauna entomologica Scandinavica, Vol. 39, Brill, Leiden – Boston, 362 pp.
- BARBER, H.S. 1931. Traps for cave-inhabiting insects. Journal of the Elisha Mitchell Scientific Society 46: 259–266.
- DE JONG, H., 2013. Fauna Europaea: Anisopodidae. In: BEUK, P. – PAPE, T. (eds): Fauna Europaea: Diptera: Nematocera. Fauna Europaea, version 2.6.2. <http://www.faunaeur.org> (accessed 7.9.2017).
- DVOŘÁK, L., 2007. Social wasps (Hymenoptera: Vespidae) trapped with beer in european forest ecosystems. Acta Musei Moraviae, Scientiae biologicae 92: 181–204.
- DVOŘÁK, L., 2014a. Window gnats (Diptera: Anisopodidae) from beer traps in various countries across Europe. Mitteilungen der Schweizerischen entomologischen Gesellschaft 87: 247–254.
- DVOŘÁK, L., 2014b. Window gnats (Diptera: Anisopodidae) from beer traps in the vicinity of Mariánské Lázně with the first records of *Sylvicola zetterstedti* (Edwards, 1923) from the Czech Republic. Mitteilungen der Schweizerischen entomologischen Gesellschaft 87: 41–48.
- DVOŘÁK, L., 2016a. Stružilky (Diptera: Anisopodidae) jižní části Krušných hor. Západočeské entomologické listy 7: 37–40.
- DVOŘÁK, L., 2016b. The first record of *Sylvicola punctatus* (Diptera: Anisopodidae) from Greece. Parnassiana Archives 4: 33–34.
- DVOŘÁK, L. – CASTRO, L. – ROBERTS, S.P.M., 2008. Social wasps (Hymenoptera: Vespidae) trapped with beer bait in european open ecosystems. Acta Musei Moraviae, Scientiae biologicae 93: 105–130.
- DVOŘÁK, L. – DVOŘÁKOVÁ, K., 2012. Využitelnost pastí se sirupem a kvasícím ovocem pro faunistický výzkum různých skupin hmyzu: příkladová studie (Utilization of syrup and fermented fruits-baited traps for faunistic survey of various insect groups: a case study). Erica 19: 119–127.
- DZIĘDZIELEWICZ, J., 1867. Wykaz owadów siatkoskrzydłych (Neuroptera) Spraw. Kom. fizyogr. Kraków 1: 158–165
- HAAS, F., 2013. Fauna Europaea: Forficulidae. In: HELLER, K.G. (ed) Fauna Europaea: orthopteroid orders. Fauna Europaea version 2.6.2. <http://www.faunaeur.org> (accessed 7.9.2017).
- HAENNI, J.-P., 1997. Anisopodidae (Diptera) de la faune de Suisse, avec la description d'une espèce nouvelle. Mitteilungen der Schweizerischen entomologischen Gesellschaft 70: 177–186.
- HAENNI, J.-P., 2002. The Scatopsidae of the Canary Islands (Diptera). Studia dipterologica 9: 203–211.
- HAENNI, J.-P., 2013. Fauna Europaea: Scatopsidae. In: BEUK, P. – PAPE, T. (eds). Fauna Europaea: Diptera Nematocera. Fauna Europaea version 2.6.2. <http://www.faunaeur.org/> (accessed 7.9.2017).
- KOČÁREK, P. – HOLUŠA, J. – VIDLIČKA, L., 2005. Blattaria, Mantodea, Orthoptera & Dermaptera of the Czech and Slovak Republics. Illustrated key 3. Zlín, 349 pp.
- KOPYTKO, U., 2009. The consorts of *Astrantia major* l. in Chornohora (Ukrainian Carpathians). Visnyk of Lviv university, Biology series 51: 89–92.

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CITY (UKRAINE)

- KORNEEV, V., 2013. Fauna Europaea: Platystomatidae. In: BEUK, P. – PAPE, T. (eds): Fauna Europaea: Diptera: Brachycera. Fauna Europaea, version 2.6.2. <http://www.faunaeur.org> (accessed 7.9.2017).
- LEZHENINA, L.P. – GRAMMA, V.N. – TCHAPLIGINA, A.B. – SAVINSKAYA, N.A., 2009. Arthropoda in nests of *Muscicapa albicollis* in highland oak-grove (Kharkov region). Nauchnye vedomosti BelGU 3(58): 95–100.
- MARTYNOVA, O.M., 1957. Les Mecopteres de la faune de l'URSS II. Fam. Panorpidae. Revue d'Entomologie 36(3): 724–726.
- PAPP, L. – WITHERS, P., 2011. A revision of the Palaearctic Perisclidinae with notes on some New World species (Diptera: Perisclididae). Annales historico-naturales Musei Nationalis Hungarici 103: 345–371.
- PARHOMNEKO, V.V., 2002-2009. List of revealed invertebrates of prospective reserve “Vakalivskiy”. 2002-2009. In: Steppes of Ukraine. Web source: <http://pryroda.in.ua/step/dodatok-1-spisok-viyavlenix-bezxbrebnix/> (accessed 7.9.2017).
- RIVOSECCHI, L., 2000. Contributo alla conoscenza delle specie Italiane del genere *Platystoma* (Diptera, Platystomatidae). Fragmenta entomologica 32(1): 163–179.
- SAUER, K.P. – HENSLE R., 1974. Reproduktive Isolation, ökologische Sonderung und morphologische Differenz der Zwillingsarten *Panorpa communis* L. und *P. vulgaris* Imhoff und Labram (Insecta, Mecoptera). Journal of Zoological Systematics and Evolutionary Research 15(3): 169–207.
- WILLMANN, R., 2013. Fauna Europaea: Mecoptera. Fauna Europaea version 2.6.2. <http://www.faunaeur.org/> (accessed 7.9.2017).
- ZALLER, J. G. – KERSCHBAUMER, G. – RIZZOLI, R. – TIEFENBACHER, A. – GRUBER, E. – SCHEDL, H., 2015. Monitoring arthropods in protected grasslands: comparing pitfall trapping, quadrat sampling and video monitoring. Web Ecology 15 (1): 15.