CONTRIBUTIONS TO KNOWLEDGE OF THE FAUNA OF HAWK-MOTHS (LEPIDOPTERA, SPHINGIDAE) FROM THE REPUBLIC OF MOLDOVA

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Abstract. The paper summarizes data on the diversity and distribution of the Sphingidae family in the Republic of Moldova. The analysis of our research and literature data, materials from entomological collections in the Museum of Ethnography and Natural History and museum of the Institute of Zoology showed that the Sphingidae family is represented by 20 species, or 53 % of the European fauna. The Macroglossinae, Smerinthinae and Sphinginae subfamilies consist of 11, 4, and 5 species respectively. Hawk moths have been collected by authors from different parts of Republic of Moldova during 2012-2019. The species *Marumba quercus* (Denis & Schiffermüller, 1775), *Acherontia atropos* (Linnaeus, 1758), *Dolbina elegans* (A. Bang-Haas, 1912) and *Proserpinus proserpina* (Pallas, 1772) are endangered and require protection and conservation.

Keywords: Lepidoptera, Hawk-moths, Republic of Moldova.

Rezumat. Contribuții la cunoașterea faunei sfingidelor (Lepidoptera, Sphingidae) din Republica Moldova. Lucrarea prezintă date privind diversitatea și distribuția fluturilor din familia Sphingidae în Republica Moldova. În urma analizei datelor personale și din literatura de specialitate, materialelor din colecțiile entomologice din patrimoniul Muzeului de Etnografie și Istorie Naturală și muzeului Institutului de Zoologie am constatat că familia Sphingidae este reprezentată de 20 specii, ceea ce constituie cca 53% din fauna europeană. Subfamilia Macroglossinae este reprezentată de 11 specii, Smerinthinae – de 4 specii, iar subfamilia Sphinginae include 5 specii. Sfingidele au fost colectate de către autori din diferite zone ale Republicii Moldova în perioada anilor 2012-2019. Speciile *Marumba quercus* (Denis și Schiffermüller, 1775), *Acherontia atropos* (Linnaeus, 1758), *Dolbina elegans* (A. Bang-Haas, 1912) și *Proserpinus proserpina* (Pallas, 1772) sunt critic periclitate și necesită protecție și conservare.

Cuvinte cheie: Lepidoptera, sfingide, Republica Moldova.

INTRODUCTION

The Hawk-moths (Sphingidae family) are among the largest and most easily recognized Lepidoptera. The family was named in 1802 by the French zoologist Pierre Latreille. Hawk-moths are medium-sized to large moths with strong and robust bodies and relatively short wings, usually with a forewing between 16 to 90 mm. The proboscis is well developed for a lot of species, being sometimes longer that the body, although some have a rudimentary proboscis. Hawk-moths are strong fliers, and are among the fastest insects. Most species are nocturnal, but some genera (e.g. *Hemaris*) are active during the day. The coloration of adults and larvae is often polymorphic, usually with cryptic coloration for protection (POWELL, 2009).

The larvae are medium to large in size, and usually with a single prominent appendage at the posterior part of bodies. According to this feature, larvae are usually referred to as hornworms. The larvae from the Sphingidae family feed on different plant species. Caterpillars of Hawk-moths are often specialists on feeding on plants with chemical defence like the families: *Apocynacea, Rubiacea, Solanaceae* and *Violacea*. Most adult Hawk-moths are well-known flower visitors and feed on nectar. Some species are very specific in their visitations to flowers. A lot of species of Hawk-moths are very important pollinators (KRPAČ et al., 2019).

The family is distributed worldwide, present on all continents, except Antarctica, with more than 1450 described species in about 200 genera (NIEUKERKEN et al., 2011). The objectives of this study were to investigate the Sphingidae fauna of Republic of Moldova and summarize available knowledge previously recorded for the Sphingidae species in Republic of Moldova, as well as our research in the past 7 years. Accordingly, in this paper we present: a list of the Sphingidae family for the Republic of Moldova; notice of historical review; data from entomological collections and some ecological preferences of species.

MATERIALS AND METHODS

In this paper we included data from the "R. Stepanov" Entomological Collection housed at the National Museum of Ethnography and Natural History and at the Institute of Zoology, Chișinău, Republic of Moldova. The insects in the „R. Stepanov" Entomological Collection are not published. This is the first work in which Hawk-moth species from the „R. Stepanov" Collection are mentioned. The species were collected in Ivancea, Orhei district; Chișinău city; Durlești city; Hîrbovăț, Anenii-Noi district and Baurci-Moldoveni, Cahul district.

In addition to data from the entomological collections, in this paper we have included literature data for fauna from the Sphingidae family in the Republic of Moldova (MILLER & ZUBOWSKY, 1908; PLUGARU, 1983; DERJANSCHI et al., 2016; TIMUȘ et al., 2017 etc.) and our research in the past 7 years (2012-2019).

The new material of Hawk-moths was collected using methods like entomological nets, ultraviolet and white light traps and the usual bulb (100 W). Hawk-moths were collected in 5 sites in the Republic of Moldova: Brînzeni, Edineț district; the "Cobîleni" Nature Reserve, Orhei district; Susleni, Orhei district; Chișinău city; Pelinei, Cahul district.

In addition, specimens of Hawk-moths previously collected from the Republic of Moldova (preserved at the Institute of Zoology) were examined and identified. The specimens were collected during 1958-1987 in the following sites from the Republic of Moldova: Chișinău city; Durlești city; Caracușeni, Briceni district; Rădeni, Strășeni district; Lozova, Strășeni district; Cosăuți, Soroca district; Ivancea Orhei district; Bahmut, Călărași district and Hîrbovăț, Anenii-Noi district.

The taxonomy of the checklist is established according to Fauna Europea and RAKOSY (2003). Biological features (host plants) for each species are given according to ROBINSON et al. (2010).

Abbreviations: RSEC – „R. Stepanov" Entomological Collection, spec. – specimen.

RESULTS AND DISCUSSIONS

The first summary about the Hawk-moths species (Sphingidae) for Moldova was given by CRULICOVSCHI (1908), regarding the species *Macroglossum stellatarum* (Linnaeus, 1758) collected in Goian, ON 15.06.1904 – 1 spec.

A great value for Hawk-moths fauna is the work of Miller E. and Zubowsky N., later joined by Ruscinski A., who published a series of articles between 1908-1937, with a major impact on the study of Hawk-moths, and registered 15 species for the territory of Bessarabia, being the first and most valuable taxonomic works up to the present moment. In the first paper (MILLER & ZUBOVSCHI, 1908), the authors list 10 species from the Sphingidae family: *Acherontia atropos* (Linnaeus, 1758), *Agrius convolvuli* (Linnaeus, 1758), *Deilephila elpenor* (Linnaeus, 1758), *Hyles euphorbiae* (Linnaeus, 1758), *Laothoe populi* (Linnaeus, 1758), *Macroglossum stellatarum* (Linnaeus, 1758), *Marumba quercus* (Denis & Schiffermüller, 1775), *Mimas tiliae* (Linnaeus, 1758), *Sphinx ligustri* Linnaeus, 1758 and *Hyles livornica* (Esper, 1779).

During the years 1912-1913, the authors publish two other works in the catalogue of Bessarabia (MILLER & ZUBOWSKY 1912, MILLER & ZUBOWSKY 1913), under the same name, thus completing the existing list with five species: *Deilephila porcellus* (Linnaeus, 1758), *Hyles gallii* (Rottemburg, 1775), *Smerinthus ocellata* (Linnaeus, 1758), *Daphnis nerii* (Linnaeus, 1758) and *Hemaris fuciformis* (Linnaeus, 1758). This is the only registration on the territory of the Republic of Moldova for two species: *Hemaris fusciformis* – Goian, 01.05.1911, many specimens (their number is not specified by the author) and *Daphnis nerii* – Chișinău, 08.1909, 1 spec. After almost two decades, the authors published three works in the Bulletin of the National Museum of Natural History (MILLER et al. 1929, MILLER et al. 1932, ZUBOWSKY & RUSCINSKI, 1937) and the species *Proserpinus proserpina* (Pallas, 1772) is mentioned for the first time in the fauna of the Moldova, being so far the only reporting on the territory of the country (MILLER et al., 1929) – the authors mentioned that they found a larvae of this species near the village of Bularda.

Following the examination of insects preserved in the "N. Zubowsky" Entomological Collection (DERJANSCHI et al., 2016), the presence of the species *Hemaris tityus* (Linnaeus, 1758) is confirmed on the territory of Bessarabia. During his lifetime, N. Zubowsky created a private entomological collection, which includes more than 10,000 insects, more than 5,800 beetles and 3600 butterflies. This collection was elaborated during 1900-1940 years in Bessarabia. 52 specimens of Hawk-moths were analysed, belonging to a total of 13 species, including 10 genera and 3 subfamilies. Zubowsky collected this species in five sites: Chișinău city; Gîsca, Căușeni district; Dănceni, Ialoveni district; Goian; Cornești, Ungheni district.

Hyloicus pinastri (Linnaeus, 1758) are reported for the first time for the fauna of Republic of Moldova in 2016 (ȚUGULEA, 2016). Many specimens were collected near the "Cobîleni" forest Nature Reserve, in a coniferous sector, from host plants of larvae.

The paper also analyses the Hawk-moths preserved in the "R. Stepanov" Entomological Collection collected in 1914-1991. The "R. Stepanov" Entomological Collection includes a large number of insects, most of which were collected in the natural and anthropogenic ecosystems of the Republic of Moldova. The 61 specimens of Hawk-moths belong to a total of 15 species, including 12 genera and 3 subfamilies.

Our research in the past 7 years confirmed the presence of 14 species of Sphingidae in the fauna of the Republic of Moldova: *Mimas tiliae*, *Smerinthus ocellata*, *Agrius convolvuli*, *Sphinx ligustri*, *Hyloicus pinastri*, *Macroglossum stellatarum, Laothoe populi, Acherontia atropos*, *Hyles euphorbiae*, *Hyles galii*, *Hyles hippophaes*, *Hyles livornica*, *Deilephilla porcellus* and *Deilephila elpenor*.

According to Fauna Europaea, the Sphingidae family in Europe is represented by three subfamilies: Macroglossinae, Smerinthinae and Sphinginae, with 40 species arranged in 20 genera. The subfamily Macroglossinae has 11 genera with 26 species. The subfamily Smerinthinae is represented by 6 genera and 9 species. The subfamily Sphinginae has 3 genera with 5 species.

Including our research and literature data, materials from the entomological collections in the Museum of Ethnography and Natural History and the Museum of the Institute of Zoology, 20 species of Hawk-moths were recorded in the Republic of Moldova, which is about 53% of European fauna. The Hawk-moth family in the Republic of Moldova is represented in three subfamilies: Macroglossinae, Smerinthinae and Sphinginae. From the Macroglossinae subfamily 6 genera with 11 species are confirmed. The Smerinthinae subfamily is represented by 4 genera and 4 species

and the Sphinginae subfamily has 5 genera and 5 species. The species with the largest number of data for the Republic of Moldova are: *Deilephilla porcellus*, *Hyles euphorbiae*, *Macroglossum stellatarum*, *Laothoe populi*, *Smerinthus ocellata*, *Agrius convolvuli* and *Sphinx ligustri*. The species with the smallest number of data for the Republic of Moldova are: *Hemaris fuciformis*, *Daphnis nerii, Proserpinus proserpina* and *Dolbina elegans*.

Most of the revealed Hawk-moths species (7) from the Republic of Moldova have a Euro-Asian occurrence what constitutes 35% from the total of identified species. The Holarctic elements consist of 5 species and 25%, Ponto-Mediterranean and Subtropical elements of three species and 15% each. Only two species – *Dolbina elegans* and *Hyles hippophaes* have a Palearctic distribution, i.e. 10% from the revealed number of species (Fig. 1).

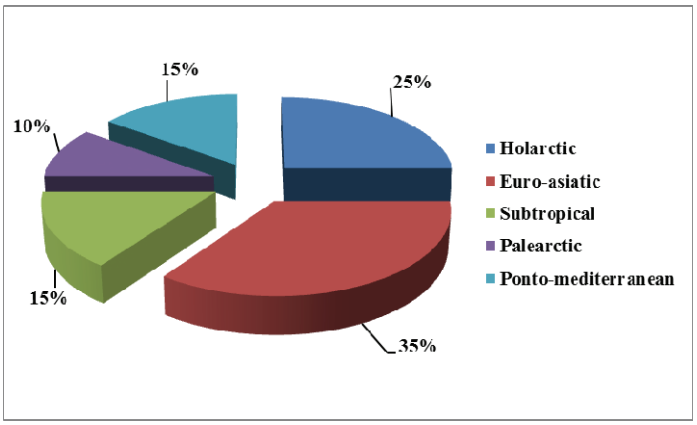

Figure 1. Zoogeographic structure of Hawk-moth fauna from the Republic of Moldova.

The analysis of the ecological spectrum revealed that from these 20 reported Hawk-moths species, the mesophilous elements prevailed with 11 species, i.e. 55%. The next groups were cited in decreasing order: meso-xero-thermophilous, meso-thermophilous, meso-xerophilous and meso-hygrophilous elements with two species and 10% each and xero-thermophilous with only one species and 5% (Fig. 2).

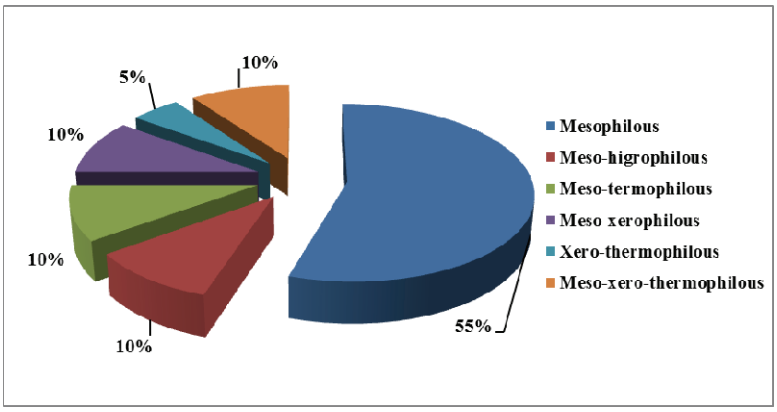

Figure 2. Ecological preference of Hawk-moths from the Republic of Moldova.

Regarding the trophic spectrum among the 20 identified Hawk-moth species, 50% have caterpillars which are herb consumers. The plant hosts of larvae consist of flowering plants and spontaneous herbs of the given reserve and from the biotopes adjacent to it. Defoliating Hawk-moths species make up 30%, of which 15% are shrubs defoliators, 10% are deciduous trees defoliators and only caterpillar *Hyloicus pinastri* feed on coniferous, i.e. 5%. The larvae of three species are defoliators of deciduous trees and shrubsand caterpillars of *Hyles galii* feed on deciduous trees, shrubs and spontaneous herbs. (Fig. 3). The species *Laothoe populi*, *Marumba quercus*, *Mimas tiliae*, *Smerinthus ocellata*, *Dolbina elegans*, *Sphinx ligustri*, *S. pinastri* and *Acherontia atropos* can cause tree damage (AKKUZU et al., 2007).

The Hawk-moth fauna is endangered. Four species are mentioned in the Red Book of the Republic of Moldova: *Acherontia atropos* (VU), *Dolbina elegans* (CR), *Marumba quercus* (VU), *Proserpinus proserpina* (CR). The species *Proserpinus proserpina* is also included in the Bern Convention (Annex II) and the IUCN Red List of Threatened Animals in Category VU. The IUCN list also includes the species *Hyles hippophaes* with DD status.

The Hawk-moth fauna is also endangered in the neighbouring countries. Four species: *Marumba quercus* (CR), *Acherontia atropos* (CR), *Proserpinus proserpina* (CR), *Hemaris tityus* (CR) are cited in the Red Book of Ukraine, and the Red List of Romania includes 11 species: *Marumba quercus* (NT), *Acherontia atropos* (VU), *Sphinx ligustri* (NT), *Hemaris tityus* (NT), *H. fuciformis* (VU), *Daphnis nerii* (EN), *Proserpinus proserpina* (VU), *Hyles euphorbiae* (NT), *H. galii* (VU), *H. hippophaes* (VU), *H. livornica* (VU), *Deilephila elpenor* (NT) (RAKOSY, 2003).

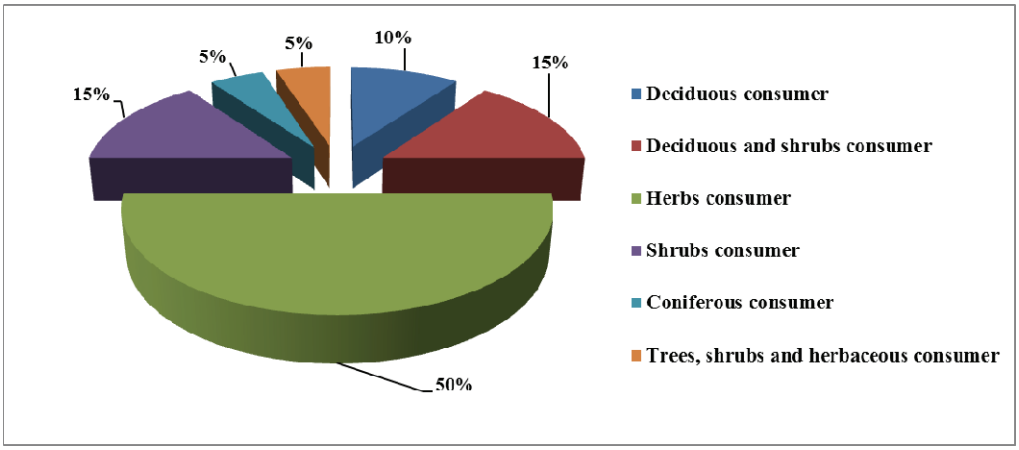

Figure 3. Trophic status of Hawk-moths from the Republic of Moldova.

The list of Hawk moth species identified in the fauna of the Republic of Moldova is shown below.

SPHINGIDAE FAMILY Latreille, 1802

Smerinthinae Subfamily Grote et Robinson, 1865

1. Marumba quercus (Denis & Schiffermüller, 1775)

Previous citations: MILLER & ZUBOWSKY (1908), PLUGARU (1983), DERJANSCHI et al. (2016), TIMUȘ et al. (2017), Cartea Rosie a R.M. (2015).
Examined material: Gîrbovăț, 06.1969, 1 spec. (RSEC); Călărași, 13.06.1963, 1 spec., leg. Plugaru S.
Geographical spread: Holarctic element.
Ecological preference: mesophilousspecies.
Host plants: *Quercus*.

2. Mimas tiliae (Linnaeus, 1758)

Previous citations: MILLER & ZUBOWSKY (1908), ZUBOWSKY & RUSCINSKI (1937), PLUGARU (1983), DERJANSCHI et al. (2016), TIMUȘ et al. (2017).
Examined material: Ivancea, 06, 29.06.1964, 2 specs.; 29.05.1965, 1 spec.; 03.05.1967, 1 spec. (RSEC); "Cobîleni" Nature Reserve, 23.06; 12.07.2016, 2 specs., leg. Țugulea Cr.
Geographical spread: Euro-Asian element.
Ecological preference: mesophilous species.
Host plants: *Tilia, Ulmus, Betula pendula, Corylusavellana, Alnus, Morus, Sorbus aucuparia, Malus, Prunus, Quercus, Castanea sativa, Acer pseudoplatanus, Juglans regia, Fraxinus* and *Aesculus hippocastanum*.

3. Smerinthus ocellata (Linnaeus, 1758)

Previous citations: MILLER & ZUBOWSKY (1912), PLUGARU (1983), DERJANSCHI et al. (2016), TIMUȘ et al. (2017).
Examined material: Ivancea, 10, 20.07.1965, 2 specs. (RSEC); Lozova, 23, 28.07.1971, 2 specs., leg. Plugaru S.; Brînzeni, 24.06.2014, 1 spec.; "Cobîleni" Nature Reserve, 02, 24.07.2016, 3 specs., leg. Țugulea Cr.
Geographical spread: Euro-Asian element.
Ecological preference: meso-hygrophilous species.
Host plants: *Populus, Salix repens, Malus sylvestris, Malus pumila, Prunus persica, Pyrus, Betula, Alnus, Ligustrum vulgare, Tilia* and *Viburnum*.

4. Laothoe populi (Linnaeus, 1758)

Previous citations: MILLER & ZUBOWSKY (1908), MILLER & ZUBOWSKY (1929), MILLER & ZUBOWSKY (1932), TIMUȘ et al. (2017).
Examined material: Chișinău, 20.04.1915, 1 spec., 24.08.1988, 2 specs.; Ivancea, 18.05.1963, 1 spec., 03.07.1965, 1 spec., 07.1969, 1 spec. (RSEC); Lozova, 23.06.1971, 1 spec., 03.08.1972, 1 spec., 06, 28.08.1986, 2 specs., leg. Plugaru S.; "Cobîleni" Nature Reserve, 02.08.2016, 1 spec., leg. Țugulea Cr., Brînzeni, 24.06.2013, 1 spec., leg. Chiriac I.
Geographical spread: Euro-Asian element.
Ecological preference: mesophilous species.
Host plants: *Salix, Populus tremula, Ulmus, Betula* and *Alnus, Fraxinus, Quercus, Rosa, Crataegus, Malus* and *Laurus*.

Sphinginae Subfamily Latreille, 1802

5. Agrius convolvuli (Linnaeus, 1758)
Previous citations: MILLER & ZUBOWSKY (1908), DERJANSCHI et al. (2016), TIMUȘ et al. (2017).
Examined material: Chișinău, 07.08.1922, 1 spec.; Ivancea, 30.06.1965, 1 spec.; 17.06.1970, 1 spec.; 16/17.06.1974, 3 specs. (RSEC); Susleni, 06.09.2019, 1 spec., leg. Țugulea Cr.; Chișinău, 10.09.2013; 15.09.2019, 2 specs. leg. Țugulea Cr., "Cobîleni" Nature Reserve, 09.09.2016, 1 spec., leg. Țugulea Cr.
Geographical spread: Subtropical element.
Ecological preference: mesophilous species, migratory.
Host plants: *Convolvulus arvensis, Calystegia, Ipomoea, Chrysanthemum*, *Helianthus* and *Rumex*.

6. Acherontia atropos (Linnaeus, 1758)
Previous citations: MILLER & ZUBOWSKY (1908), PLUGARU (1983), DERJANSCHI et al. (2016), TIMUȘ et al. (2017), Cartea Rosie a R. M. (2015).
Examined material: Ivancea, 08.1967, 1 spec. (RSEC); Brînzeni, 24.09.2016, 1 spec., leg. Chiriac I.
Geographical spread: Subtropical element.
Ecological preference: mesophilous species, migratory.
Host plants: *Lycium, Olea europaea, Jasminum, Fraxinus, Hyoscyamus, Solanum tuberosum, S. dulcamara, S. melongena, Nicotiana tabacum, Atropa belladonna, Datura stramonium, Symphoricarpos albus, Beta vulgaris, Nerium oleander, Cannabis sativa, Tecomaria capensis, Malus pumila* and *Pyrus communis* and many other plants.

7. Sphinx ligustri Linnaeus, 1758
Previous citations: MILLER & ZUBOWSKY (1908), PLUGARU (1983), DERJANSCHI et al. (2016), TIMUȘ et al. (2017).
Examined material: Ivancea, 21.06.1963, 1 spec., 20.06.1974, 1 spec., VI.1975, 1 spec., 13/19.06.1969, 1 spec., 03.08.1970, 1 spec.; Chișinău, 20.05.1915, 1 spec; 11, 27.07.1917, 2 specs. (RSEC); Brînzeni, 09.08.2013, 1 spec., 24.06.2014, 1 spec.; "Cobîleni" Nature Reserve, 08, 19.07.2016, 4 specs., leg. Țugulea Cr.
Geographical spread: Euro-Asian element.
Ecological preference: mesophilous species.
Host plants: *Malus pumila, Ligustrum, Fraxinus, Syringa vulgaris, Malus pumila, Viburnum opulus, Spiraea media, S. salicifolia, S. trilobata* and *Ilex aquifolium*.

8. Hyloicus (Sphinx) pinastri (Linnaeus, 1758)
Previous citations: ȚUGULEA (2016).
Collected material: "Cobîleni" Nature Reserve, 23.07.2016, 2 specs., 11.08.2016, 11 specs., 25.07.2016, 20 specs., 05.08.2016, 30 specs., 02.08.2016, 2 specs., leg. Țugulea Cr.
Geographical spread: Euro-Asian element.
Ecological preference: mesophilous species.
Host plants: *Pinus* (especially *Pinus sylvestris*), *Picea, Larix decidua* and *Cedrus*.

9. Dolbina elegans (A. Bang-Haas, 1912)
Previous citations: Cartea Rosie a R. M. (2015)
Examined material: Ivancea, 10.06.1968, 1 spec. (RSEC)
Geographical spread: Palearctic element.
Ecological preference: mesophilous species.
Host plants: *Fraxinus, Olea, Syringa, Phillyrea* and *Ligustrum vulgare*.

Macroglossinae Subfamily Harris, 1839

10. Hemaris tityus (Linnaeus, 1758)
Previous citations: DERJANSCHI et al. (2016).
Examined material: Ivancea, 06.1962, 07.1972, 2 specs.; Baurci-Moldoveni, 21.06.1961, 1 spec. (RSEC).
Geographical spread: Holarctic element.
Ecological preference: meso-thermophilous species.
Host plants: *Scabiosa*.

11. Hemaris fuciformis (Linnaeus, 1758)
Previous citations: MILLER & ZUBOWSKY (1912).
Geographical spread: Euro-Asian element.
Ecological preference: mesophilous species.
Host plants: *Lonicera* and *Galium*.

12. Macroglossum stellatarum (Linnaeus, 1758)
Previous citations: CRULICOVSCHI (1906), MILLER & ZUBOWSKY (1908), DERJANSCHI et al. (2016), TIMUȘ et al. (2017).
Examined material: Chișinău, 22.04.1914, 1 spec.; Baurci-Moldoveni, 02.06.1961, 1 spec.; Ivancea, 09.1962, 1 spec., 14.08.1964, 1 spec., 14.08.1972, 1 spec., 19.08. 1973, 1 spec. (RSEC); Chișinău, 13.10.1958, 1 spec., leg. Plugaru S.; Lozova, 30.07.1971, 1 spec., leg. Plugaru S.; Cosăuți, 22.07.1996, 1 spec., leg. Lozan A.; "Cobîleni" Nature Reserve, 11.08.2016, 1 spec., leg. Țugulea Cr.
Geographical spread: Holarctic element.
Ecological preference: meso-xerophilous species, migratory.
Host plants: *Galium* and *Rubia peregrina*.

13. Daphnis nerii (Linnaeus, 1758)
Previous citations: MILLER & ZUBOWSKY (1912).
Geographical spread: Subtropical element.
Ecological preference: mesophilous species.
Host plants: *Nerium oleander* and *Vinca*.

14. Proserpinus proserpina (Pallas, 1772)
Previous citations: MILLER et al. (1929); CARTEA ROSIE a R. M. (2015).
Geographical spread: Ponto-Mediterranean element.
Ecological preference: xerothermophilous species.
Host plants: *Oenothera, Epilobium* and *Lythrum*.

15. Hyles euphorbiae (Linnaeus, 1758)
Previous citations: MILLER & ZUBOWSKY (1908), MILLER et al. (1932), DERJANSCHI et al. (2016), TIMUȘ et al. (2017), PLUGARU (1983).
Examined material: Durlești, 27.07.1987, 2 specs.; Chișinău, 10.08.1932, 2 specs.; Chișinău, 25, 27.07.1919, 5 specs.; Ivancea, 26.05.1963, 1 spec. (RSEC); Brînzeni, 17.08.2012, 1 spec.; 24.06.2013, 1 spec.; 08, 12, 26.07.2016, 3 specs., 03, 24.06.2016, 3 specs., 17.08.2016, 1 spec., leg. Chiriac I.
Geographical spread: Holarctic element.
Ecological preference: meso-xerophilous species, migratory.
Host plants: *Euphorbia cyparissias*, *E. esuloides*, *E. esula*, *E. paralias*, *Onagraceae*, *Polygonaceae* and *Vitaceae*.

16. Hyles galii (Rottemburg, 1775)
Previous citations: MILLER & ZUBOWSKY (1912), DERJANSCHI et al. (2016), TIMUȘ et al. (2017).
Examined material: Ivancea, 17.06.1964, 1 spec., 06.07.1969, 1 spec. (RSEC); Chișinău, 25.08.2014, 1 spec., leg. Țugulea Cr.; Brînzeni, 24.06.2013, 1 spec., leg. Chiriac I.
Geographical spread: Holarctic element.
Ecological preference: meso-xerothermophilous species, migratory.
Host plants: *Epilobium, Fuchsia, Galium, Betula pendula, Euphorbia, Geranium, Malus, Plantago, Rosa, Rumex, Salix, Syringa, Vitis* and other plants.

17. Hyles hippophaes (Esper, 1793)
Previous citations: Fauna Europaea.
Collected material: "Cobîleni" Nature Reserve, 11.08.2016, 1 spec. leg. Țugulea Cr.; Brînzeni, 17.08.2012, 1 spec., leg. Chiriac I.
Geographical spread: Palearctic element.
Ecological preference: meso-xerothermophilous species.
Host plants: *Hippophae rhamnoides* and *Elaeagnus angustifolia*.

18. Hyles livornica (Esper, 1779)
Previous citations: MILLER & ZUBOWSKY (1908), DERJANSCHI et al. (2016).
Examined material: Durlești, 27.07.1987, 1 spec.; Ivancea, 14.07.1969, 1 spec. (RSEC); Chișinău, 25.07.2014, 1 spec., leg. Țugulea Cr.
Geographical spread: Ponto-Mediterranean element.
Ecological preference: meso-thermophilous species, migratory.
Host plants: *Fuchsia, Rumex, Polygonum, Galium* and *Vitis vinifera*.

19. Deilephila elpenor (Linnaeus, 1758)
Previous citations: MILLER & ZUBOWSKY (1908), DERJANSCHI et al. (2016), TIMUȘ et al. (2017).
Examined material: Ivancea, 30.05.1965, 1 spec., 17.07.1969, 1 spec. (RSEC); Durlești, 27.07.1982, 1 spec.; Rădeni,

27.06.1967, 1 spec., leg. Plugaru S.; "Cobîleni" Nature Reserve, 25.07.2016, 1 spec., leg. Țugulea Cr.
Geographical spread: Euro-Asian element.
Ecological preference: meso-hygrophilous species.
Host plants: *Epilobium* and *Galium*.

20. Deilephila porcellus (Linnaeus, 1758)
Previous citations: MILLER & ZUBOWSKY (1912), MILLER et al. (1932), DERJANSCHI et al. (2016), TIMUȘ et al. (2017).
Examined material: Ivancea, 07.06.1962, 1 spec.,1963, 1 spec., 03.08.1971, 1 spec. (RSEC); Durlești, 27.07.1987, 1 spec.; Caracușăni, 03.07.1967, 4 spec., leg. Plugaru S.; Rădeni, 27.06.1967, 1 spec., leg. Plugaru S.; Brînzeni, 17.08.2013, 1 spec., 24.06.2014, 1 spec., 02.07-05.08.2016, 46 spec., 21.06.19, 4 spec., leg. Chiriac I.; "Cobîleni" Nature Reserve, 09.06-05.09.2016, 45 specs., leg. Țugulea Cr.; Pelinei, 24.05.2014, 2 specs., leg. Derjanschi V.
Geographical spread: Ponto-Mediterranean element.
Ecological preference: mesophilous species.
Host plants: *Epilobium*, *Galium* and *Lythrum salicaria*.

CONCLUSIONS

Based on our research and literature data, materials from entomological collections in the Museum of Ethnography and Natural History and Museum of the Institute of Zoology, 20 species of Hawk-moths have been recorded in the Republic of Moldova, which is about 53% of European fauna. From the Macroglossinae subfamily, 6 genera with 11 species are confirmed. The Smerinthinae subfamily is represented by 4 genera and 4 species and the Sphinginae subfamily has 5 genera and 5 species. The species with the largest number of data for the Republic of Moldova are: *Deilephilla porcellus*, *Hyles euphorbiae*, *Macroglossum stellatarum*, *Laothoe populi*, *Smerinthus ocellata*, *Agrius convolvuli* and *Sphinx ligustri*. The species with the smallest number of data for the Republic of Moldova are: *Hemaris fuciformis*, *Daphnis nerii*, *Proserpinus proserpina* and *Dolbina elegans*.

The Hawk-moths species reported in the Republic of Moldova have a Euro-Asian distribution – 7 species, Holarctic – 5, Ponto-Mediterranean and Subtropical with 3 species each and Palearctic distribution – 2 species.

Regarding the trophic spectrum among the identified 20 Hawk-moth species, 50% have caterpillars which are herb consumers. Defoliating Hawk-moths species make up 30%, of which 15% are shrubs defoliators, 10% are deciduous trees defoliators and only the caterpillar *Hyloicus pinastri* feeds on coniferous, i.e. 5%. The larvae of three species are defoliators of deciduous trees and shrubs and caterpillars of *Hyles galii* feed on deciduous trees, shrubs and spontaneous herbs.

The species *Marumba quercus*, *Acherontia atropos*, *Dolbina elegans* and *Proserpinus proserpina* are endangered and require protection and conservation.

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