Acta et Commentationes, Exact and Natural Sciences
Volume 21(1), 2026, Pages 156–165
UDC: 595.7:574.5(478-25)

DOI: 10.36120/2587-3644.v21i1.156-165
ISSN: 2537-6284 E-ISSN: 2587-3644

Contributions to the knowledge of some insects (Coleoptera, Hymenoptera and Diptera) from the urban ecosystems of the municipality of Chișinău

Svetlana Bacal, Galina Bușmachiu, Victoria Efode, and Anastasia Tertea

Abstract. The study of insects from the orders Coleoptera, Diptera and Hymenoptera is essential for understanding the biodiversity and functioning of urban ecosystems in Chişinău. These insects fulfil important ecological roles, such as pollination, biological pest control and recycling of organic matter. At the same time, phytophagous or xylophagous species have also been reported that can become problematic for urban trees. The research was based on material collected by various methods from parks, botanical gardens and other urban green spaces and stored in the entomological museums from the Chișinău city. As a result of the study, 42 species of coleoptera, 19 of syrphids and 10 of ants were identified. The results highlight the importance of the conservation and sustainable management of urban green spaces for maintaining entomofauna and ecological balance.
Keywords: Coleoptera, Diptera, Hymenoptera, pollinator, urban area, green spaces.

Contribuții la cunoașterea unor insecte (Coleoptera, Hymenoptera și Diptera) din ecosistemele urbane ale municipiului Chișinău

Rezumat. Studiul insectelor din ordinele Coleoptera, Diptera și Hymenoptera este esențial pentru înțelegerea biodiversității și funcționării ecosistemelor urbane din Chișinău. Aceste insecte îndeplinesc roluri ecologice importante, precum polenizarea, controlul biologic al dăunătorilor și reciclarea materiei organice. Totodată, au fost raportate și specii fitofage sau xilofage care pot deveni problematice pentru arborii urbani. Cercetarea s-a bazat pe material colectat prin diverse metode din parcuri, grădini botanice și alte spații verzi urbane, fiind depozitat în muzeele entomologice din municipiul Chișinău. Ca rezultat al studiului, au fost identificate 42 de specii de coleoptere, 19 de sirfide și 10 de furnici. Rezultatele evidențiază importanța conservării și gestionării durabile a spațiilor verzi urbane pentru menținerea entomofaunei și a echilibrului ecologic.
Cuvinte-cheie: Coleoptera, Diptera, Hymenoptera, polenizator, zonă urbană, spații verzi.

1. Introduction

The urban environment suppresses the activity of insect species sensitive to environmental conditions and favors the development of tolerant species [2], [5]. A lot of insect species, especially pollinators, no longer find favourable conditions for life in urban ecosystems, where buildings and asphalt occupy the largest surface area. The oases for the survival of beneficial insects such as pollinators, xylophagous, predators are urban parks and public gardens.

The study of insect groups from the orders Coleoptera, Diptera and Hymenoptera is essential for understanding and maintaining the biodiversity of urban areas. These insects fulfil fundamental ecological roles, such as pollinating ornamental and spontaneous plants, directly contributing to maintaining the health of urban green spaces. Diptera (Syrphidae) and some species of coleoptera are among the most important pollinators, after bees. In urban environments, where bee populations may be limited, these insect groups become particularly valuable alternative pollinators.

Unlike adults, syrphids larvae, together with ants and numerous predatory beetles, contribute to natural pest control, reducing the need for insecticides. At the same time, ants influence soil structure and trophic relationships between organisms, having a major impact on the functioning of urban ecosystems.

The diversity and abundance of insects can serve as an indicator of the health of urban and rural environments. Gardens, parks and urban green spaces can function as important refuges for insects, if managed sustainably. Studying them allows the identification of specific threats to the urban environment, such as pollution. Thus, research on species from the orders Coleoptera, Hymenoptera and Diptera is essential for blue-green spaces, noting the importance of entomofauna for urban areas.

Previously Bacal et al., 2022 [3] published 99 insect species assigned to 4 orders (Hemiptera, Odonata, Coleoptera and Lepidoptera) identified in the urban fauna of Chşinau, indicating some invasive species that cause significant damage to trees. The species *Reesa vespulae* and *Lasioderma serricorne* cause damage to closed spaces, and the species *Harmonia axyridis* causes allergies through bites and contact with their hemolymph.

Also Bușmachiu et al., 2022 [5] includes a total of 103 species of invertebrates, 27 species Collembola and 76 species of Insecta from the orders Blattodea (kitchen beetles), Odonata (dragonflies), Coleoptera (beetles), Hymenoptera (ants) and Diptera (mosquitoes), which were classified into three groups (green, blue and gray) depending on the habitats they prefer to inhabit in the Chișinău city.

The purpose of this work is to complete the list of insects identified in the urban area and elucidate their role in the urban ecosystems.

2. Material and methods

The material discussed in this paper was collected by various collection methods including direct method, shaking on umbrella and Barber trap method in Chişinău municipality: Botanical Garden [1] of the National Museum of Ethnography and Natural History (NMENH), Institute and Botanical Garden, urban parks La Izvor, Valea Morilor and numerous alleys. The insects' specimens come from the authors' collections, and for Syrphids from the collection of the museum of the Institute of Genetics, Physiology and Plant Protection and was collected between 1905-1980, accompanied by the date and place of collection. For the species identification the sources indicated in this regard were used [4], [6], [8], [9], [10].

The ants were collected near private houses or on the ground floor of residential blocks, as well as in parks and other green spaces adjacent to the residential and administrative blocks of the research institutes of the Moldova State University in Chişinău (Telecentru, Botanica and Râșcani sectors), private lands in Băcioi, Străisteni, Condrița, Grătiești in 2023 and deposited in the IZ collection.

3. Results and discussion

As a result of the study of Insecta species collected from the Chişinău Municipality and the inventory of the collections of Coleoptera (Bostrichidae, Buprestidae, Carabidae, Cerambycidae, Coccinellidae, Cucujidae, Curculionidae, Dermestidae, Elateridae, Lucanidae, Melyridae, Mycetophagidae, Ptinidae, Scarabaeidae, Silphidae, Staphylinidae, Tenebrionidae, Trogossitidae), Hymenoptera (Formicidae) kept in the Entomology Museum of the Institute of Zoology and Diptera (Syrphidae) kept in the collection of the Institute of Genetics, Physiology and Plant Protection, 71 insect species were identified, which are attributed to 53 genera from 20 families and 3 orders: Coleoptera with 42 species from 37 genera and 18 families, Diptera with 19 species in 11 genera and Hymenoptera with one family, 5 genera and 10 species.

For the first time for the Chișinău Municipality, 6 species of ants and 19 species of syrphids are cited, the species are marked with an asterisk (*) in the list.

Species of coleoptera collected in Chișinău (Ch) between 1910-2025 and stored in the collection of the Museum of Entomology of the Institute of Zoology, MSU

CARABIDAE Latreille, 1802

(1) *Carabus cancellatus* Illiger, 1798 – 1 spec., 07.10.2021, Ch.

SILPHIDAE Latreille, 1806

(2) *Phosphuga atrata* (Linnaeus, 1758) – 4 specs., 26.02.2022, Ch.

STAPHYLINIDAE (Latreille, 1802)

(3) *Abemus chloropterus* (Creutzer, 1796) – 1 spec., 14.04.2008, Ch.

(4) *Astrapaeus ulmi* (Rossi, 1790) – 1 spec., 20.06.1994, Ch; 1 spec., 04.03.1997, Durleşti; 1 spec., 18.03.2008, Ch.

SCARABAEIDAE

(5) *Oryctes nasicornis* (Linnaeus, 1758) – 2 specs., 17.07.2022, Codru.

(6) *Cetonia aurata* (Linnaeus, 1758) – 2 specs., 13.08.2021, Ceucari.

LUCANIDAE Latreille, 1804

(7) *Dorcus parallelipipedus* (Linnaeus, 1785) – 2 specs., 01-05.08.1911, Ch.

(8) *Lucanus cervus* (Linnaeus, 1758) – 2 specs., 19.06.1912, Durlești; 1 spec., 19.08.1910, Ch.

BUPRESTIDAE Leach, 1815

(9) *Agrilus laticornis* (Illiger, 1803) – 1 spec., 27.02.1921, Ch.

(10) *Ptosima undecimmaculata* (Herbst, 1784) – 1 spec., 22.05.1926, Ch.

(11) *Anthaxia millefolii* (Fabricius, 1801) – 10 specs., 08.07.2021, Ch.

ELATERIDAE Leach, 1815

(12) *Ampedus cinnaberinus* (Eschscholtz, 1829) – 2 specs., 20.06.1952, Ch.

(13) *Ampedus sinuatus* (Germar, 1844) – 1 spec., 15.05.1963, Durlești.

(14) *Athous hirtus* (Herbst, 1784) – 1 spec., 15.07.1977, Ch.

(15) *Denticollis linearis* (Linnaeus, 1758) – 1 spec., 01.06.1931, Ch.

(16) *Melanotus brunnipes* (Germar, 1824) – 1 spec., 31.05.1966, Durlești; 2 specs., 20.05.1963, 1 spec., 25.07.1967, 1 spec., 06.07.1972, 4 specs., 20.06.1967, Ch.

(17) *Melanotus crassicollis* (Erichson, 1841) – 2 specs., 13.06.1966, 1 spec., 25.07.1990, Ch.

(18) *Melanotus rufipes* (Herbst, 1784) – 1 spec., 24.10.1966, Ch.

BOSTRICHIDAE Latreille, 1802

(19) *Bostrichus capucinus* (Linnaeus, 1758) – 1 spec., 06.06.1924, Ch.

MELYRIDAE Leach, 1815

(20) *Malachius bipustulatus* (Linnaeus, 1758) – 1 spec., 29.05.1910, 1 spec., 26.05.1912, 1 spec., 26.04.1914, Ch.

CERAMBYCIDAE Latreille, 1802

(21) *Aegosoma scabricorne* (Scopoli, 1763) – 2 specs., -07.2022, Ch.

(22) *Clytus rhamni* (Germar, 1817) – 1 spec., 19.06.1966, Ch.

(23) *Plagionotus arcuatus* (Linnaeus, 1758) – 1 spec., 14.04.1912, 1 spec., 27.05.1912, Ch.

(24) *Pogonocherus hispidus* (Linnaeus, 1758) – 1 spec., 25.05.1977, Ch.

(25) *Chlorophorus varius* (Muller, 1766) – 4 specs., 06.07.2019, 4 specs., 08.07.2021, Codru.

(26) *Stenurella bifasciata* (Muller, 1776) – 1 spec., 08.07.2021, Codru.

(27) *Stenurella septempunctata* (Fab., 1792) – 1 spec., 08.07.2021, Codru.

CURCULIONIDAE Latreille, 1802

(28) *Magdalis armigera* (Geoffroy, 1785) – 9 specs., 14.05.1988, Durlești; 1 spec., 12.06.1988, Ch.

(29) *Magdalis ruficornis* (Linnaeus, 1758) – 4 specs., 26.05.1916, 2 specs., 06.05.1975, 3 specs., 06.05.1986, 1 spec., 12.05.1986, 2 specs., 13.05.1986, 1 spec., 15.05.1986, Ch.

CUCUJIDAE Latreille, 1802

(30) *Cucujus cinnaberinus* (Scopoli, 1763) – 2 specs., 26.02.2022, Codru.

MYCETOPHAGIDAE (Leach, 1815)

(31) *Litargus connexus* (Geoffroy, 1785) – 2 specs., 17.07.2022, Codru.

DERMESTIDAE Latreille, 1804

(32) *Reesa vespulae* (Milliron, 1939) – 22 specs., 06.09.2022, Ch., Institue of Zoology.

PTINIDAE Latreille, 1802

(33) *Lasioderma serricorne* Fab., 1792 – 2 specs., 05.05.2022, Ch., Institue of Zoology.

TROGOSSITIDAE Latreille, 1802

(34) *Tenebroides mauritanicus* (Linnaeus, 758) – 1 spec., 17.07.2022, Codru.

TENEBRIONIDAE Latreille, 1802

(35) *Chryphaeus cornutus* (Fischer & Waldheim, 1823) – 7 specs., 17.07.2022, Codru.

(36) *Diaperis boleti* (Linnaeus, 1758) – 2 specs., 17.07.2022, Codru.

(37) *Crypticus quisquilius* (Linnaeus 1760) – 1 spec., 26.02.2022, Codru.

(38) *Tenebrio obscurus* Fabricius, 1792 – 1 spec., 26.02.2022, Codru.

COCCINELLIDAE Latreille, 1807

(39) *Adalia bipunctata* (Linnaeus, 1758) – 1 spec., on herbaceous plants, 05.06.2012, Institute Botanical Garden NMENH;

(40) *Adalia decempunctata* (Linnaeus, 1758) – 1 spec., on herbaceous plants, 18.06.2012, Botanical Garden NMENH.

(41) *Coccinella septempunctata* Linnaeus, 1758 – 2 specs., on herbaceous plants, 24.07.2012, Institute Botanical Garden MNEIN; numerous specimens, 13.08.2021, Codru.

(42) *Harmonia axyridis* (Pallas, 1773) – 1 spec., on *Spiraea* sp., 28.04.2016, Chișinău; 56 specs., 24.10. 2025, Institute Botanical Garden; numerous specimens 13.08.2021, Codru; 5 specs., 21.08.2021, La Izvor, urban park; numerous specimens, 10.10.2019, Valea Morilor urban park and Telecentru park; numerous specimens, 24.10.2025, on buildings, Chișinău.

Species of hoverflies (Diptera) collected from Chișinău and stored in the collection of the Museum of the Institute of Genetics, Physiology and Plant Protection, MSU

SYRPHIDAE Latreille, 1802

(1) **Baccha elongata* (Fabricius, 1775) – 2 specs., 29.05.1905, Ch.

(2) **Epistrophe eligans* (Harris, 1780) – 1 spec., 10.04.1975, Ch.

(3) **Epistrophe melanostoma* (Zetterstedt, 1843) – 1 spec., 05.02.1974, Ch.

(4) **Episyrphus balteatus* (De Geer, 1776) – 58 specs., collected between 25.06.1961 and 14.06.1980, Ch.

(5) **Eumerus funeralis* (Meigen, 1822) – 5 specs., collected between 14.08.1968 and 18.09.1969, Ch.

(6) **Eumerus strigatus* (Fallén, 1817) – 2 specs., 05.08.1968-18.04.1969, Ch.

(7) **Eupeodes corollae* (Fabricius, 1794) – 11 specs., 13.06.1966-05.07.1974, Ch.

(8) **Eupeodes latifasciatus* (Macquart, 1829) – 1 spec., 01.07.1967, Ch.

(9) **Eupeodes luniger* (Meigen, 1822) – 16 specs., 05.06.1974-28.06.1976, Ch.

(10) **Eupeodes nitens* (Zetterstedt, 1843) – 6 specs., 23.06.1972-05.06.1974, Ch.

(11) **Meliscaeva cinctella* (Zetterstedt, 1843) – 2 specs., 11.07.1966-07.07.1967, Ch.

(12) **Pipiza noctiluca* (Linnaeus, 1758) – 2 specs., 29.08.1967, Ch.

(13) **Platycheirus ambiguus* (Fallén, 1817) – 25 specs., 07.04.1973-08.04.1978, Ch.

(14) **Scaeva selenitica* (Meigen, 1822) – 3 specs., 04.07.1958-07.07.1961, Ch.

(15) **Sphaerophoria menthastri* (Linnaeus, 1758) – 1 spec., 22.04.1959, Ch.

(16) **Sphaerophoria scripta* (Linnaeus, 1758) – 1 spec., 08.1974, Ch.

(17) **Syrphus rectus* (Osten Sacken, 1875) – 3 specs., 14.06.1974-28.06.1976, Ch.

(18) **Syrphus ribesii* (Linnaeus, 1758) – 17 specs., 22.06.1958-23.06.1980, Ch.
(19) **Syrphus vitripennis* (Meigen, 1822) – 52 specs., 18.06.1960-31.07.1975, Ch.

Species of ant (Hymenoptera) collected in Chișinău and stored in the collection of the Museum of Entomology of the Institute of Zoology, MSU
FORMICIDAE Latreille, 1809

(1) *Dolichoderus quadripunctatus* (Linnaeus, 1771) – 3 specs., 28.03.2021, Valea Morilor, Chișinău.
(2) **Formica cinerea* (Mayr, 1853) – 2 specs., 12.04.2021, Schinoasa, Ch.
(3) *Formica pratensis* (Retzius, 1783) – 1 spec., 4.06.2021, Ch.
(4) *Lasius alienus* (Förster, 1850) – 1 spec., 10. 1999, Vieru Park Chișinău; 2 specs., 18.24.2021, loc. Băcioi.
(5) **Lasius distinguendus* (Emery, 1916) – 1 spec., 18.04. 2021, loc. Băcioi.
(6) *Lasius flavus* (Fabricius, 1782) – 1 spec., 18.24.2021, loc. Băcioi.
(7) **Lasius neglectus* (Van Loon, Boomsma & Andrásfalvy, 1990) – 10 specs., 06.05.2021, loc. Băcioi.
(8) **Lasius umbratus* (Nylander, 1846) – 11 specs., 01.10.1999, Ch.
(9) **Tetramorium semilaeve* (André, 1883) – 1 spec., 01.10.2000, Ch.
(10) **Tapinoma kinburni* (Karavaiev, 1937) – 1 spec., 21.07.1997, Ch.

Ant species in urban areas of Chișinău are dominated by generalist, eurytopic and synanthropic species, with the presence of some indicator species of relatively stable green habitats [7]. The identification of the invasive species *Lasius neglectus* suggests a significant anthropogenic impact on local communities.

Some identified species such as *Lasius alienus*, *Formica cinerea*, *Tetramorium semilaeve* and *Tapinoma kinburni* are very common in urban fauna and have been reported in habitats with poor vegetation, and *Lasius distinguendus* on sandy soil. The species *Lasius flavus*, *Lasius umbratus* and *Formica pratensis* were collected from parks with dense vegetation.

The role of beetle species in urban spaces (parks, botanical gardens etc.) is mainly saproxylic, with involvement in the decomposition of dry trees or the species are associated with diverse urban vegetation.

For example, the larvae of the species *Lucanus cervus*, *Dorcus parallelipipedus*, *Aegosoma scabricorne*, *Plagionotus arcuatus*, *Clytus rhamni*, *Bostrichus capucinus* grows in dead wood or old trees and accelerates the degradation of dead wood, the decomposition of trunks and stumps, and contributes to the enrichment of the soil with nutrients.

Other species such as *Carabus cancellatus*, *Phosphuga atrata* feed on larvae, snails, harmful insects, and *Abemus chloropterus*, *Astrapaeus ulmi*, *Malachius bipustulatus*, *Adalia bipunctata*, *Adalia decempunctata*, *Coccinella septempunctata* and *Harmonia axyridis* feed on aphids, phytophagous insect larvae, and pest eggs, playing an essential role in natural biological control and are equally important for botanical gardens, parks, and ornamental green spaces.

Harmonia axyridis, although effective as a predator, is an invasive species, which can eliminate native ladybugs from urban communities. In urban fauna, some species of coleoptera associated with trees have also been reported as phytophagous or xylophagous insects, which under certain conditions can become problematic for urban flora.

Among these are the species: *Anthaxia millefolii*, *Agrilus laticornis*, *Athous hirtus*, *Chlorophorus varius*, *Magdalis armigera*, *Magdalis ruficornis*, *Ptosima undecimmaculata* and *Chryphaeus cornutus* whose larvae live in wood, roots or soil and can affect weakened trees, which are already affected by dry air, exhaust gases, dust and lack of precipitation.

Among the species of beetles found in urban areas are the following species: *Lucanus cervus*, *Cucujus cinnaberinus*, *Aegosoma scabricorne*, *Ampedus cinnaberinus* and *Astrapaeus ulmi* which constitute indicators of the quality of the urban environment and demonstrate that the green spaces in Chișinău are still in good ecological condition and retain mature trees, dead wood, and stable microhabitats. Species of the genus *Stenurella* are pollinators; *Litargus connexus* and *Diaperis boleti* are dependent on fungi that develop on dead wood.

As for hoverflies (Syrphidae), they are some of the most valuable groups of insects in the urban space of Chișinău as pollinators of spontaneous plants in urban green spaces. Among these are the species: *Episyrphus balteatus*, *Eupeodes corollae*, *Syrphus ribesii*, *Syrphus vitripennis*, *Scaeva selenitica*, *Sphaerophoria menthastri* and *S. scripta*, adults feed on nectar and pollen of ornamental trees and shrubs or flowering plants, often seen on spontaneous plants in parks, squares, botanical gardens.

Some species of hoverflies play an important role in the natural biological control of aphids. Among the aphiphophagous species we mention: *Episyrphus balteatus*, *Scaeva selenitica*, *Meliscaeva cinctella*, *Platycheirus ambiguus* and *Syrphus vitripennis*.

The larvae of some species *Eumerus funeralis* and *Eumerus strigatus* develop in bulbs, underground parts of plants, and contribute to the decomposition of plant debris and the recycling of organic matter.

4. Conclusions

Insect species from the orders Coleoptera, Diptera (Syrphidae) and Hymenoptera (Formicidae) identified in Chișinău have a major ecological role in urban ecosystems, contributing to the pollination of spontaneous plants, decomposition of organic matter, recycling of nutrients, biological control of pests and maintenance of ecological balance in the green spaces of urban ecosystems.

The taxonomic diversity and abundance of some species indicate favourable development conditions for a wide range of insect species and a relatively good quality of urban habitats, confirming the importance of sustainable management of green spaces for biodiversity conservation.

Acknowledgements. *The work was carried out with the support of subprogram 010701 "Evaluation of the structure and functioning of animal world and aquatic ecosystems under the influence of biotic and abiotic factors in the context of ensuring ecological security and the well-being of the population". The authors sincerely thank Mînzat Cristian for the identification of some ant species; also the director and curator of scientific-practical collection of insects of the Institute of Genetics, Physiology and Plant Protection, USM.*

References

[1] BACAL, S.; BABAN, E.; CALESTRU, L. Noi contribuții la studiul faunei de coleoptere din Grădina Botanică a Muzeului Național de Etnografie și Istorie Naturală din Chișinău. *Drobeta, Seria Ştiinţele Naturii*. 2016, vol. XXVI, pp. 63–71. ISSN 1841–7086

[2] BACAL, S.; BUŞMACHIU, G.; CALESTRU, L.; MIHAILOV, I. Insecte invazive înregistrate în ultimii 20 de ani pe teritoriul Republicii Moldova. *Akademos, Revista de Ştiinţă, Inovare, Cultură şi Artă*. 2020, vol. 57, no. 2, pp. 39–46. ISSN 1857-0461

[3] BACAL, S.; ȚUGULEA, C.; BUȘMACHIU, G. Impactul antropic asupra entomofaunei (Lepidoptera, Coleoptera, Odonata, Hemiptera) în municipiul Chișinău. In: *Evaluarea și reglementarea impactului antropic asupra stabilității ecosistemelor urbane și rurale din Regiunea de Dezvoltare Nord a Republicii Moldova*. Chișinău, 2022, pp. 99–105.

[4] BOLTON, B. *Identification guide to the ant genera of the world*. Harvard University Press, 1994.

[5] BUȘMACHIU, G.; BACAL S.; ȘULEȘCO, T.; BURDUJA, D.; MÎNZAT, C. Diversitatea nevertebratelor (Collembola, Insecta) din Municipiul Chișinău. In: *Materialele simpozionului tehnico-științific internațional consacrat aniversării a 30 ani de la fondarea Întreprinderii municipale „Asociația de Gospodărire a Spațiilor Verzi"*. Chișinău, 2022, pp. 51–56.

[6] DLUSSKII, G.M. *Murav'i roda Formica*. Pod red. K. V. Arnoldi. Moskva: Nauka, 1967. 236 s.

[7] MÎNZAT, C.; BUȘMACHIU, G. Diversitatea furnicilor (Hymenoptera: Formicidae) din Republica Moldova. *Buletinul AȘM. Științele vieții. Zoologie*. 2022, vol. 347, no. 3, pp. 87–93. ISSN 1857-064X

[8] PHILLIP, B.-B.; PAUL, L.; ELVA, J.H.R. *Identifying the invasive garden ant (Lasius neglectus)*. 2017. Available: https://www.bwars.com/sites/www.bwars.com/files/info_sheets/L.neglectus_ID_sheet_v2.pdf [accessed 2026].

[9] STOCKAN, J.; ROBINSON, E.J.; TRAGER, J.C.; YAO, I.; SEIFERT, B. Introducing wood ants: evolution, phylogeny, identification and distribution. In: *Wood Ant Ecology and Conservation*. 2016, pp. 1–36. DOI:10.1017/CBO9781107261402.002

[10] *Die Käfer Europas*. Available: https://coleonet.de/coleo/index.htm [accessed 02.01.2026].

Received: March 31, 2026 *Accepted: July 10, 2026*

(Svetlana Bacal, Galina Bușmachiu, Victoria Efode, Anastasia Tertea) Institute of Zoology, Moldova State University, Chișinău, Republic of Moldova
https://orcid.org/0000-0002-8774-7718, https://orcid.org/0000-0002-9724-2414, https://orcid.org/0009-0004-9794-2287, https://orcid.org/0009-0007-6545-9911
E-mail address: svetabacal@yahoo.com, bushmakiu@yahoo.com, efodevictoria@gmail.com, terteaanastasia04@gmail.com