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## Anniversary event: 35 years for nature and butterflies

Book of Abstracts

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**Expansion, regression, phenological shifts, and voltinism in Romanian butterflies**
(opening presentation)

László Rákosy

*Department of Taxonomy and Ecology, Faculty for Biology and Geology,*
*Babeș-Bolyai University, Clinicilor 5-7, Cluj-Napoca, Romania;*
*Forestry Faculty, "Ştefan cel Mare" University, Universităţii 13, Suceava, Romania.*

*E-mail: laszlo.rakosy@ubbcluj.ro*

**Abstract**: The phenomena of expansion, regression, phenological changes, and voltinism are followed with great interest not only by biologists, ecologists, and conservationists, but also by a wide range of people interested in changes in nature. In order to monitor and evaluate these complex biological processes, we need multi-annual data. Such data can be found and used in some countries where the monitoring of diurnal butterflies has a history of several decades and a large amount of data has been accumulated (Great Britain, Germany). But what can be done in countries where such data is lacking or scarce and more recent?
Romania is in such a situation. In order to highlight some trends, we used all existing data at national, regional, and local levels. We processed published data, mostly from museum collections, private collections, and the personal data of active lepidopterists. Author's experience of over 50 years and information obtained from the accounts of lepidopterists who are no longer with us were an important source of information. The analysis period covers 1920 to 2024. The 104 years of analysis were divided into three intervals: 1920-1969; 1970-1990; 1991-2024. For interpretations and explanations, we took into account the evolution over time of average precipitation, temperature, land use dynamics, and the quantities of pesticides used in agriculture at the national and regional levels.

Processing all this information, we illustrated the decline/expansion of certain species using distribution maps.

*Zerynthia polyxena* experienced a period of decline between 1961 and 1990 due to the widespread use of pesticides and the destruction of habitats with *Aristolochia clematitis*. After 1990, *Z. polyxena* slowly reoccupied the areas from which it had disappeared, so that by 2024 it had almost returned to its pre-1960 status.

Until 1980, *Zerynthia cerisy* occupied a very limited area in the southeast of the country. Between 1980 and 1995, there were no reports or only extremely sporadic ones. After 2000, the species appeared in the south-west of the country, where it had not been mentioned before, and spread northwards, returning vigorously to the south-east.

*Aporia crataegi* was widespread throughout Romania until the 1960s, being considered a pest. Between 1961 and 1985, it disappeared from the central part of the country. After 1985, the process of expansion began, with the species now occupying all the areas it occupied before 1960.

*Pieris mannii* had stable populations in the south-west of the country until 1970-1975, after which it began to expand north and east, significantly increasing its initial range. After 1980, it appeared in Transylvania and Dobrogea.

*Colias erate* spread between 1970-1995 from east to west across the entire country, reaching Hungary, Austria, eastern Germany and Poland. After 1995, there was a massive reduction in its range and a decline in population numbers.

*Libythea celtis* occupied a limited range in the southwest and west of the country before 1930. Between 1930 and 1980, its range was reduced to a small area in southwestern Romania, from where it spread southwest and northwest by about 200 km after 1980.

*Aglais urticae* was present throughout the country between 1930 and 1970, after which it declined until 2000 (remaining in mountainous areas). After 2000, it began to expand and reoccupy the areas from which it had disappeared.

The decline/expansion is also exemplified by other species: *Nymphalis xanthomelas*, *N. vau-album*, *Neptis rivularis*, *Leptotes pirithous*, *Melitaea arduina*, *Coenonympha leander*, Pyronia tithonus, *Arethusana arethusa*, *Brintesia circe*, *Chazara briseis*.

Causes of decline: agricultural intensification: insecticides, herbicides and fertilisers, abandonment of previously extensively farmed areas, soil acidification and eutrophication due to atmospheric deposition of $SO2$, $NO2$ and $NH2$, destruction and fragmentation of habitats, climate change with natural and anthropogenic causes. The current decline could be the result of long-term environmental degradation processes associated with the Anthropocene

Causes of expansion: Combined effects of environmental factors, biotic interactions, human influences, and

the life history of species.

For the change in phenology between 1920 and 2023 around Cluj, examples are given for spring species that have brought forward their flight period by 25-30 days: *Pyrgus malvae*, *Leptidea sinapis*, *Pieris rapae*, *Pieris napi*, *Papilio machaon*, *Iphiclides podalirius*. The shift in the flight period towards the end of autumn is exemplified by: *Colias croceus*, *C. hyale/alfacariensis*, *Polyommatus icarus*, *Coenonympha pamphilus*, *Pieris rapae.*

Changes in voltinism are exemplified by *Apatura ilia*, *Melitaea phoebe*, *Coenonympha pamphilus*. For *Vanessa atalanta*, the ability to overwinter in Transylvania is confirmed under the mild winter conditions of the last 10 years.

Conclusion: Climate change is happening too fast, organisms can’t adapt to its speed, and so the decline of insects is really speeding up.

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# Observations on Lepidoptera from "Herghelia Lucina", Moldova-Sulița, Suceava County

Cătălin-Dumitrel Balan[1], Gabriela Corduneanu[2], Constantin Corduneanu*[3], Petru Bulai[4], Ovidiu-Alin Popovici[5], Ioan Surugiu[6]

*[1]"Gheorghe Asachi" Technical University of Iași, Faculty of Chemical Engineering and Environmental Protection; [2]"Nicolae Iorga" Pedagogical High School, Botoșani; [3]OPTIM Association for Sustainable Development; [4]"Ștefan cel Mare" University of Suceava; [5]"Alexandru Ioan Cuza" University of Iași, Faculty of Biology; [6]"Mihai Eminescu" Technological High School, Dumbrăveni, Suceava County*

**Corresponding author, E-mail: corduneanuc@yahoo.com*

**Abstract:** The "Herghelia Lucina" is located in northern part of Romania, Suceava County, within the administrative boundaries of Moldova-Sulița commune. A significant portion of the surrounding grasslands are included in the ROSCI0086 Găina-Lucina Natura 2000 Site of Community Importance. These grasslands, placed in the central part of the Mestecăniș Ridge (Eastern Carpathians), are found at elevations ranging between 1200 and 1400 meters. The area experiences a typical montane climate, characterized by short, cool summers, long, cold winters, and an average annual precipitation of 900–1100 mm.

The first scientific records of Lepidoptera from this area date from 1–6 July 1993 and 1–3 August 1995. Monitoring activities resumed between 2013 and 2022, primarily during the second half of the summer season, and were further extended into June for the years 2023 and 2024. Intensive surveys were conducted from 21 to 24 June 2024, during an entomological field camp organized with the support of the Association for Sustainable Development OPTIM, aiming to assess the local lepidopteran fauna.

During the course of these field studies, a total of 240 Lepidoptera species were recorded, most of which belong to the macrolepidoptera group. The most species-rich superfamilies identified in the study area were Noctuoidea (70 species), Geometroidea (62 species), and Papilionoidea (59 species).

In wet meadows dominated by *Bistorta officinalis*, robust populations of *Lycaena helle* and *Boloria eunomia* were observed. *Lycaena helle* was recorded for the first time in the area on 10 June 2023, and *Boloria eunomia* was identified on 22 June 2023. Thus, Herghelia Lucina (Lucina Stud Farm) represents the second known locality in Romania where *Boloria eunomia* has been observed, following a prior record from the Călimani Mountains in 2022.

Among the species protected under Romanian Law No. 49/2011, the following were identified:

• *Lycaena dispar* and *Lycaena helle*: Annexes 3 and 4A.

• *Parnassius mnemosyne* and *Phengaris arion*: Annex 4A.

• *Eumedonia eumedon*, *Lycaena hippothoe*, *Coenonympha tullia* and *Plusia putnami gracilis*: Annex 4B.

Other notable species recorded include: *Pharmacis carna*, *Hepialus humuli*, *Lycaena alciphron*, *Brenthis ino*, *Hydrelia sylvata*, *Venusia cambrica*, *Rheumaptera subhastata*, *Eupithecia succenturiata*, *Arctia plantaginis carpathica*, *Callimorpha dominula*, *Panthea coenobita*, *Cucullia lucifuga*, *Photedes captiuncula* and *Photedes minima*.

It is proposed that *Lycaena dispar* and *Lycaena helle* to be included in Section 3.2 of the Standard Data Form for ROSCI0086 Găina-Lucina (species listed in Article 4 of Directive 2009/147/EC and Annex II of Directive 92/43/EEC). Furthermore, the inclusion of *Parnassius mnemosyne*, *Phengaris arion*, *Eumedonia eumedon*, *Lycaena hippothoe*, *Coenonympha tullia*, and *Plusia putnami gracilis* is recommended under Section 3.3 (other important flora and fauna species).

**Keywords**: "Herghelia Lucina", Lepidoptera, protected species, *Lycaena helle*, *Boloria eunomia*.

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# Diurnal Lepidoptera from degraded and restored mining areas in the region of Moldova Nouă – Fluturi diurni din arii miniere poluate și renaturate din zona Moldova Nouă

Andreea Oros[1], Cristina Craioveanu*[2,3]

[1]Faculty of Biology and Geology, Babeș-Bolyai University; [2]Department of Taxonomy and Ecology, Babeș-Bolyai University, Clinicilor 5-7 Cluj-Napoca, 400006, Romania; [3]Babeş-Bolyai University, Centre for Systems Biology, Biodiversity and Bioresources 3B, Cluj-Napoca, Romania

*Corresponding author, E-mail: cristina.craioveanu@ubbcluj.ro*

**Abstract:** The study assessed the diversity of diurnal Lepidoptera in the region of the former mining site in Moldova Nouă (Caraș-Severin County, Romania). A total of 22 transects were analysed and classified into five areas based on habitat types: natural grasslands, restored areas, contaminated areas, grazed pastures, agricultural fields, and household gardens. The restored zone recorded the highest values for both the number of individuals and the number of taxa, followed by the natural zone, highlighting the effectiveness of ecological restoration efforts. In terms of species composition, taxa of higher conservation concern, such as *Spialia orbifer* (VU) and *Phengaris arion* (NT), were predominantly recorded in the natural and restored zones. Although no statistically significant differences in biodiversity were detected among the five studied areas, the observed patterns support a positive influence of habitat restoration on lepidopteran communities. An extension of the sampling period in the coming years is recommended to validate the identified trends.

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# Hoverfly diversity in restored mining areas from Caraș-Severin County

Cristina Craioveanu*[1], Andreea Oros[2]

[1]*Department of Taxonomy and Ecology, Babeş-Bolyai University, Clinicilor 5-, Cluj-Napoca, 400006, Romania, Babeş-Bolyai University, Centre for Systems Biology, Biodiversity and Bioresources 3B, Cluj-Napoca, Romania;* [2]*Babeş Bolyai University of Cluj-Napoca, Faculty of Biology and Geology*
**Corresponding author, E-mail: cristina.craioveanu@ubbcluj.ro*

**Abstract:** Hoverflies play several important roles in open and semi-open ecosystems, as predators and pollinators. We assessed hoverfly diversity to explore the connections between ecosystem components in old mining areas from Caraș-Severin County, Romania. Six different representative types of habitats were investigated: protected natural grasslands that were not altered by mining activities, pastures, croplands, restored/revegetated tailing dumps, contaminated areas, and home gardens. We collected hoverflies by sweep-netting along a 100 m long transect. We hypothesised that natural grasslands would show a higher hoverfly diversity than restored tailing dumps and agricultural cropland. Overall, our results showed a low diversity with a small number of hoverfly species and a low abundance, and a hoverfly fauna composed of common, widespread species. The contaminated areas and agricultural croplands showed a lower diversity of hoverflies. On the other hand, the restored tailing dumps the highest hoverfly diversity, even compared to that of the natural protected grasslands. Between-site variation in diversity indices was particularly high in home gardens, pastures, and contaminated areas. Our study indicates that the restoration efforts started approximately 40 years ago have resulted in a stable vegetation cover with enough nectar resources to sustain a relatively high diversity of hoverflies, which is comparable to that of natural, uncontaminated grasslands.

**Keywords:** contaminated sites, revegetation, mining areas, hoverfly communities

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# The Metamorphosis Life Project
# Inventory and monitoring of butterflies in ten Natura 2000 sites

László Rákosy[1,2,3], Andrei Crişan*[3], Mihai Pop[1,3], Tibor-Csaba Vizauer[1,3], Răzvan Popa[1,4]

*[1]Faculty of Biology and Geology, Doctoral School of Integrative Biology, Babeş-Bolyai University, Cluj-Napoca; [2]Forestry Faculty, "Ştefan cel Mare University, Suceava; [3]Romanian Lepidopterological Society; [4]Fundația ADEPT*
**Corresponding author, E-mail: andrei.crel@gmail.com*

**Abstract**: Fundatia ADEPT, in collaboration with the Romanian Lepidopterological Society, is a partner in the international LIFE Metamorphosis project "Developing best practices in butterfly conservation in Central and Eastern Europe" (LIFE21-NAT-SK-LIFE Metamorphosis/ 101074487). The project will be implemented between 2022 and 2029 in three EU member states: Slovakia, Hungary, and Romania. The main goal of the project is to conserve 15 protected species of diurnal butterflies included in Annexes II and IV of the Habitats Directive. The coordinator for Romania is Fundatia ADEPT.

In Romania, the most laborious activity in the first three years of the project is the inventory and mapping of butterflies in ten Natura 2000 sites included in the project: ROSCI0227 Sighișoara-Târnava Mare (89264.88 ha), ROSCI0323 Munții Ciucului (60044.99 ha), ROSCI0253 Trascău (49963.47 ha), ROSCI0295 Dealurile Clujului de Est (19622.88 ha), ROSCI0238 Suatu - Cojocna – Crairât (4157.70 ha), ROSCI0427 Pajiștile de la Liteni – Săvădisla (2424.65 ha), ROSCI0074 Făgetul Clujului – Valea Morii (1686.42 ha), ROSCI0439 Valea Chiuruților (1245.22 ha), ROSCI0035 Cheile Turzii (326.40 ha) și ROSCI0274 Agârbiciu (240.81 ha).

During 2023-2024, the activities were implemented by three teams of two people each. The teams were coordinated by Prof. Dr. László Rákosy, Drd. Tibor-Csaba Vizauer, and Drd. Mihai Pop, respectively. The working protocol included 52 transects with a length of 500 m, covered monthly between May and July. After completing each transect, lepidopterofaunistic observations continued on a freely chosen route, approximately 1.5 km long. The species protected by the Habitats Directive that were mapped and inventoried were: *Colias myrmidone* (Agârbiciu, Munții Ciucului, Valea Chiuruților); *Euphydryas aurinia* (Munții Ciucului, Sighișoara-Târnava Mare, Trascău, Valea Chiuruților); *Euphydryas maturna* (Cheile Turzii); *Leptidea morsei* (Dealurile Clujului de Est, Munții Ciucului), *Lopinga achine* (Munții Ciucului, Sighișoara-Târnava Mare, Trascău); *Lycaena dispar* (Munții Ciucului, Sighișoara-Târnava Mare, Trascău, Valea Chiuruților); *Parnassius mnemosyne* (Dealurile Clujului de Est, Trascău); *Phengaris arion* (Cheile Turzii, Munții Ciucului, Sighișoara-Târnava Mare, Trascău, Valea Chiuruților), *Phengaris nausithous* (Dealurile Clujului de Est); *Phengaris teleius* (Dealurile Clujului de Est, Munții Ciucului).

We collected data on the distribution of the following protected species of national interest: *Arethusana arethusa* (Trascău); *Argynnis laodice* (Sighișoara-Târnava Mare); *Boloria titania transsylvanica* (Munții Ciucului, Valea Chiuruților); *Coenonympha tullia* (Munții Ciucului); *Cupido osiris* (Dealurile Clujului de Est, Munții Ciucului, Sighișoara-Târnava Mare, Trascău); *Erebia melas runcensis* (Trascău); *Eumedonia eumedon* (Munții Ciucului, Trascău, Valea Chiuruților); *Heteropterus morpheus* (Sighișoara-Târnava Mare, Trascău); *Lycanea hippothoe* (Munții Ciucului); *Muschampia tessellum* (Dealurile Clujului de Est); *Neptis sappho* (Dealurile Clujului de Est, Munții Ciucului, Sighișoara-Târnava Mare); *Phengaris alcon* (Dealurile Clujului de Est, Munții Ciucului, Sighișoara-Târnava Mare, Trascău).

In total, 119 species and 20,989 individuals were recorded in 2023, and 127 species and 21,284 individuals in 2024. All results are included in a project database, which currently contains over 7,000 records with more than 42,000 individuals.

Various measures have been proposed to protect and conserve valuable habitats, such as: optimizing livestock numbers on pastures, removing invasive plants *Pteridium* sp., *Robinia pseudoacacia*, *Betula* sp., *Asclepias syriaca* etc.

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**Lepidopterofaunistic Observations in the Peri-Urban Area of Bistrița**

Bogdan Curticăpeanu

*Ruralis Association, Bistrița*
*E-mail: bcurticapeanu@gmail.com*

**Abstract:** The Bistrița area encompasses habitats classified under the pan-European EUNIS system: from forests and meadows to surface waters and built-up areas, where (so far) a total of 124 species of diurnal and nocturnal butterflies have been recorded.
Of these, 84 belong to the superfamily Papilionoidea. A few of the species with endangered or Natura 2000 status include: *Cupido alcetas* (EN), *Argynnis laodice* (VU), *Pieris brassicae* (NT), *Aglais io* (NT), *Phengaris alcon* (NT), *Cupido osiris* (NT), *Parnassius mnemosyne* (LC), *Lycaena dispar* (LC), *Lopinga achine* (NT).
Nocturnal butterflies have been relatively recently observed (starting in 2024), with some species of particular interest: *Dysgonia algira* (NT), *Eriogaster catax* (NT).
All of these 124 species have been observed and photographed using a mobile phone, with field work carried out either solo or in groups (e.g., Ruralis Association).
Habitat degradation through deforestation, construction of houses in natural areas, and pollution (from household waste or chemicals) may lead to the loss of important butterfly species.
The number one solution to counter these phenomena is raising public awareness about the degradation of these habitats, as well as the beauty and importance of these local treasures.

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**Popularising issues related to knowledge of alien and invasive Coleoptera in Romanian fauna**

Andreea-Cătălina Drăghici*[1,2], Alexandru-Mihai Pintilioaie[3,4], Cosmin-Ovidiu Manci[5], Dumitru Murariu[6]

*[1]"Grigore Antipa" National Museum of Natural History, Kiseleff Road no. 1, 011341 Bucharest, Romania [2]University of Bucharest, Faculty of Biology, Splaiul Independenței 91–95, Bucharest, R-050095, Romania [3]Laboratory of Interdisciplinary Research on the Marine Environment and Marine Terrestrial Atmosphere, Al. I. Cuza University of Iasi, Prof. Dr. Ioan Borcea Marine Biological Station, Nicolae Titulescu str. no. 163, Agigea, Constanţa, Romania [4]Doctoral School of Biology, Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Avenue, 20A, 700505 Iași, Romania [5]Oceanographic Research and Marine Environment Protection Society „Oceanic-Club", Decebal no. 41, 900674 Constanţa, Romania [6]Romanian Academy, Calea Victoriei no. 125, 010071 Bucharest, Romania*

**Corresponding author, E-mail: andreea.draghici@antipa.ro*

Insects, a large and diverse group of terrestrial animals, are also an important source of invasive alien species. Scientific and public interest in invasive alien species is mainly driven by their socio-economic impact, resulting mainly from unintentional introductions in international agricultural, horticultural, and forestry trade. In Romania, 60 species of alien and invasive or potentially invasive Coleoptera have been reported: 52 species of alien and invasive or potentially invasive beetles reported in the first national list after the application of Regulation (EU) 1143 (2014). In addition to the species on the list, *Leptinotarsa decemlineata* Say, 1824, *Diabrotica virgifera virgifera* LeConte, 1868 and *Ips duplicatus* Sahlberg, 1836 have been reported. A further five species are added in our latest contribution, *Cis chinensis* Lawrence, 1991 (Ciidae), *Latheticus oryzae* C.O. Waterhouse, 1880, *Palorus subdepressus* (Wollaston, 1864), *Tribolium destructor* Uyttenboogaart, 1933, and *Litargus balteatus* LeConte, 1856, which also includes occurrence data for 19 other species with deficient distribution found in unintentional collections. Subsequently, we developed a collection methodology, which was implemented between April and September 2024 in Constanța, Agigea, Valu lui Traian and Murfatlar, to facilitate the early detection and assessment of the biodiversity of alien coleopteran communities introduced in the port area of Romania, and the results of this collection will be published.

At the national level, access to scientific information on invasive species and their risk analysis is still limited, which automatically leads to a lower level of public awareness. Citizen-scientist interaction and data generation are recognised as having great potential to contribute to biodiversity research due to the number of species observations that can be collected by the public. However, data uploaded to the various platforms or social media groups dedicated to biodiversity, and more specifically to invasive alien species, are lost due to a lack of connectivity, fragmentation, or lack of centralisation. Even unintentional collections appear to be essential for finding these species, yet until systematic collection methods or other mechanisms are applied to improve national surveillance strategies. In addition, there is a need to intensify actions to involve local communities in the detection and monitoring of these alien insects, because citizen science is an essential partnership for invasive alien species management and research, and also to centralise data on the dedicated platforms for these species which that can bypass the main detection systems.

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# Catalogue of the „Friedrich Deubel” Lepidoptera Collection of the Faculty of Silviculture and Forestry Engineering, ”Transilvania” University, Brașov (Insecta: Lepidoptera)

Ionuț-Marian Dragomir*[1], Levente Székely[2]

*[1] Faculty of Silviculture and forestry engineering, ”Transilvania” University of Brașov, Brașov, Romania.; [2] Independent researcher, Săcele, Brașov, Romania.*
**Corresponding author, E-mail: ionut.dragomir@unitbv.ro*

**Abstract:** This work showcased the catalogue of the “Friedrich Deubel” Lepidoptera collection, a historically significant yet relatively small assemblage comprising 594 species and 1,540 specimens. Originating from the Saxon Museum of Bârsa Country—founded in 1908 and dismantled after World War II—the collection provided important historical insights into the Lepidoptera fauna of Brașov and other parts of Transylvania. Although Friedrich Deubel was primarily recognized as a coleopterologist, his contributions to Lepidoptera studies offered a valuable faunistic record dating back over a century.

The presentation focused on the scientific valorization of this collection, highlighting its significance in documenting the ecological transformations that have occurred over the past hundred years. Specific attention was given to the disappearance of species once widespread, such as *Colias myrmidone* (Esper, 1781), and the impact of urban development on former habitats.

In addition, the presentation explored the broader context of zoological collecting in Brașov between 1890 and 1930, bringing to light the work of local entomologists who, unlike their counterparts from Sibiu or Cluj, remain largely unknown today. Despite the substantial losses these collections suffered between 1944 and 1947, the surviving specimens, now housed at the Faculty of Silviculture in Brașov, were emphasized as an invaluable resource for the study of historical biodiversity and regional faunal change.

**Key words:** Friedrich Deubel, Brașov, lepidoptera collection, Saxon Museum of Bârsa Country

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# The genus *Phengaris* in north-western Romania

Emanuel Enghiş*[1], Gheorghe Ardeleanu[2], Adrian Ardeleanu[2], Bryan Mărcuş[3], Alina Iacob[1]

[1]*Independent Researcher, Satu Mare, Romania,* [2]*Independent Researcher, Baia Mare, Romania,*
[3]*Independent Researcher, Oradea, Romania*

**Corresponding author, E-mail: vaemen1@yahoo.com*

**Abstract**: All four butterfly species of the genus *Phengaris* are protected under Annex II and Annex IV of the Habitats Directive 92/43/EEC and are also listed in the annexes of the Romanian Government Emergency Ordinance (GEO) 57/2007. These legal frameworks require the designation of Sites of Community Importance (SCI), or protected areas to ensure their long-term survival. However, in Romania significant gaps still exist regarding the precise distribution of these species. The present study aims to address some of these gaps by combining data from the literature with field observations carried out by the authors in recent years in north-western Romania.

The study area covers Bihor, Satu Mare, Maramureș, and Sălaj counties. The investigations led both to the reconfirmation of historical records and to the discovery of new populations, as follows: *Phengaris teleius* – 16 localities (including new records), *P. alcon* – 4 localities, *P. arion* – 12 localities, while *P. nausithous* showed no recent confirmed occurrences. Within the Tășnad Hills, suitable habitats were identified for three of these species (*P. teleius, P. alcon, P. arion*), which makes this area eligible for designation as a Natura 2000 site.

Key habitats are represented by traditionally managed wet meadows, extensive *Quercus cerris* forests, and semi-steppe hills, ecosystems that retain a semi-natural character due to limited human impact. Nevertheless, the recent degradation and disappearance of these meadows represent a major threat to the species that depend on them.

The results highlight the urgent need to integrate these habitats into conservation programs, in accordance with European and national legislation, to prevent further declines of *Phengaris* populations. At the same time, the proximity to the Tășnad Tourist Resort offers opportunities for developing ecotourism trails, generating benefits for both biodiversity conservation and local rural communities.

**Keywords**: *Phengaris*, Romania, species distribution, Natura 2000, habitat conservation, biodiversity monitoring, Carpathians

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# How many mole-crickets are in Romania? The revision of genus *Gryllotalpa* (Orthoptera: Gryllotalpidae)

Elena Iulia Iorgu, Ionela Țîrdea, Ionuț Ștefan Iorgu

*"Ștefan cel Mare" University, Faculty of Medicine and Biological Sciences, Universității 13, Suceava, Romania.*
*Corresponding author, E-mail: elena.iorgu@usm.ro*

**Abstract:** The family Gryllotalpidae comprises approximately 100 species worldwide, grouped into eight genera. These insects are specially adapted to subterranean environments, with their anterior legs modified for excavation. They utilize these adaptations to construct intricate burrows consisting of an elaborate network of underground tunnels and chambers. In Romania, three species of the genus *Gryllotalpa* have been identified. These species are difficult to distinguish due to their subtle and unreliable morphological differences. Alternative methods for identifying *Gryllotalpa* species include acoustic techniques based on stridulation and molecular techniques utilizing the COI DNA barcoding method. The present study estimated the genetic diversity of the genus *Gryllotalpa* in Romania using the mitochondrial COI marker. High haplotype diversities were obtained, with values ranging between 0.491 and 1 for the three species. The inferred phylogenies grouped our samples with the typical species identified morphologically, demonstrating the utility of the COI marker as an easy and reliable molecular method for taxonomic identification of mole cricket species.

**Keywords:** integrative taxonomy, DNA barcoding, mitochondrial marker.

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# Lepidoptera species observed in Bucharest, between 2018-2025

Eugenia Petrescu*[1], Alexandru Aurel Ștefan-Fotin[2]

[1] *Administrația Parcul Natural Văcărești, 3 Uioara Avenue, Sector 4, Bucharest, Romania*
[2] *S.O.S. URGENTVET SRL, 19 Dimitrie Cantemir Boulevard, Sector 4, Bucharest, Romania*

**Corresponding author, E-mail: petrescu_eugenia@yahoo.com*

**Abstract**: Between 2018-2025, we have observed and identified over 120 species of Lepidopterans in Bucharest. Most of the sightings consisted of butterflies (members of the families Hesperiidae, Papilionidae, Pieridae, Lycaenidae, Nymphalidae).
In order to achieve this, we visited parks and other green spaces from the 6 sectors of Bucharest, during the warmer days. Butterflies, especially belonging to the harder to identify species, were photographed. In some cases, we turned to specialists' help in identifying species. In this time period, we have identified more than 50 species of butterflies. The butterflies were observed flying or sitting on flowers between February to November. Sometimes in the wintertime, there can be seen butterflies like *Vanessa atalanta*, flying in the warmer days of January, like it happened in 2025. The most common species is *Pieris rapae*, a migratory butterfly. Regarding endangered species protected by the national legislation (OUG 57/2007) and by the EU legislation (the Habitats Directive), we have identified: *Zerynthia polyxena*, *Lycaena dispar*, *Cupido alcetas*, *Neptis sappho*. Among the species deemed as threatened to a certain degree by Romanian specialists, we came across: *Nymphalis xanthomelas*, *Nymphalis polychloros*, *Lycaena thersamon*, *Favonius quercus*, *Carcharodus floccifera*, *Iphiclides podalirius* and *Pieris brassicae*. Some years were good for certain species, like it was 2019 for *Vanessa cardui* or 2024 for *Leptotes pirithous*. Specimens of *Lampides boeticus*, a migratory butterfly of subtropical origin, that shows up rarely in Romania, were observed in 2024 in all the 6 sectors of Bucharest.
There were also identified moth species belonging to families like: Hepialidae, Gracillariidae, Plutellidae, Scythrididae, Pterophoridae, Tortricidae, Sesiidae, Zygaenidae, Pyralidae, Crambidae, Geometridae, Sphingidae, Erebidae, Noctuidae.
These moth species were observed not just in the daytime in the green spaces but also by night and in the morning, on building walls, inside buildings, in subway stations, on fences or other supports.
Mowing of the vegetation and the use of pesticides, along with habitat fragmentation caused by the urban development, lead to the decline in butterfly populations, a fact noticed in the threatened species but also in once considered common species, such as *Papilio machaon*, *Aglais io*, *Maniola jurtina.*
There is a close connection between the larval host plants and the presence of the adult butterflies in certain green fields; repeated mowing for example, may lead to the disappearance of the butterfly species in that space. Thus, in order to maintain a healthy butterfly biodiversity, we encourage the expansion of the already existing green spaces, the rational use of pesticides and, besides planting butterfly attractive flowers, the decrease in the mowing frequency and keeping pastures in parks consisting of spontaneous plants.

**Key words**: Lepidoptera, protected species, biodiversity

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# The fine structure of the antennae in *Capnodis cariosa* (Coleoptera: Buprestidae) and their role in populational distribution.

Adrian Ruicănescu*[1], Cristian Sitar[2], Lucian Barbu-Tudoran[3], Amalia Dumbravă[4]

*[1]Național Institute of Research and Development for Biological Sciences, branch of Cluj-Napoca; [2]Babeș Bolyai University of Cluj-Napoca, Museum of Zoology; [3]Babeș Bolyai University of Cluj-Napoca, Faculty of Biology and Geology; [4]N.F.A. Romsilva, Iron Gates Natural Park Administration R.A.*

**Corresponding author, E-mail: adrian.ruicanescu@icbcluj.ro*

**Abstract:** *Capnodis cariosa* represents the largest buprestid beetle in Europe. Historically recorded in Romania, specifically in Southern Dobrogea (Southeastern Romania) until 1967, after which it was presumed extinct within the region. However, a subsequent observation in 2015 indicated its presence in Southwestern Romania, specifically within the Danube Defilee. A stable population was identified and monitored between 2023 and 2024 in this locale. Furthermore, it was noted that the beetles cohabitated with their host plant, *Cotinus coggygria*, within the same bushes during these investigations. Consequently, the study involved a detailed examination of the antennae from both male and female specimens, focusing on their ultramicrostructure and the arrangement and types of sensilla present, which allowed for conjecture regarding the role of the antennae in group dynamics of the species.

**Keywords:** Antennae, *Capnodis cariosa*, distribution, sensilla

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***Pochazia shantungensis* (Hemiptera-Ricaniidae) - first report of a potentially invasive new species in Romania**

Alexandru Cazacu[1], Adrian Ruicănescu*[2]

*[1]Flower Time, Strada Avram Iancu 492-500, Florești 407280; [2]Național Institute of Research and Development for Biological Sciences, branch of Cluj-Napoca.*
**Corresponding author, E-mail: adrian.ruicanescu@icbcluj.ro*

**Abstract**: A new allogenic, possible invasive species has been recorded in Romania, Cluj-Napoca, 46.752611 / 23.536216, 364 m, 29 August 2024. This species is also recorded in 23 locations in Europe. The description of the adult and preimago stages, also the biology and distribution are given.

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# Natura 2000 Lepidoptera species in Maramureș County: distribution and conservation

Cristian Sitar*[1,2], Gheorghe Ardeleanu[3], Adrian Ardeleanu[3], Geanina Magdalena Sitar[4]

*[1]Zoological Museum, Babeș-Bolyai University, Cluj-Napoca, Romania, [2]Department of Cluj, Emil Racoviță Institute of Speleology, Cluj-Napoca, Romania, [3]Independent Researcher, Baia Mare, Romania*
*[4]Doctoral School "Education, Reflection, Development", Faculty of Psychology and Educational Sciences, Babeș-Bolyai University, Cluj-Napoca, Romania*
**Corresponding author, E-mail: cristian.sitar@ubbcluj.ro*

**Abstract**: This study presents the distribution and conservation status of Lepidoptera species of community interest in Maramureș County, a region characterized by a high diversity of habitats and significant ecological value. Field surveys and entomological observations have documented the presence of several species listed in the Habitats Directive 92/43/EEC and within the Natura 2000 network, highlighting the importance of natural areas in Maramureș for the conservation of this faunal group.
The species for which distribution data are provided include: *Proserpinus proserpina* (Pallas, 1772), *Calimorpha quadripunctaria* (Poda, 1761), *Zerynthia polyxena* ([Denis & Schiffermüller], 1775), *Parnassius mnemosyne* (Linnaeus, 1758), *Euphydryas aurinia* (Linnaeus, 1758), *Lopinga achine* (Scopoli, 1763), *Lycaena helle* ([Denis & Schiffermüller], 1775), *Lycaena dispar* (Haworth, 1802), as well as species of the genus *Phengaris* (*P. arion, P. teleius,* and *P. alcon*, with the subspecies *P. alcon alcon* and *P. alcon xerophita*). *Phengaris teleius* is known in Maramureș from the areas of Seini and Ilba. *Phengaris alcon* was recorded in the Igniș Mountains (Runc Dam) and at Preluca Veche, confirming the persistence of populations in their characteristic habitats. The strongest populations of *P. arion* in Maramureș occur in the Igniș and Gutâi Mountains.
Additional species of high conservation interest were also documented: *Argynnis laodice* (Pallas, 1771), recorded in the Prislop Pass area, and *Pyrgus sidae* (Esper, 1784), present at Preluca Veche. Furthermore, the potential occurrence of *Eriogaster catax* (Linnaeus, 1767) in Maramureș County is discussed.
The results emphasize the importance of continuous monitoring of Lepidoptera species of community interest in Maramureș, where mountain, hill, and meadow habitats provide essential conditions for maintaining biodiversity. The data obtained represent a significant contribution to updating knowledge on the distribution and conservation status of these protected species and constitute a solid basis for developing regional management and conservation measures.

**Keywords:** Lepidoptera, community interest species, Natura 2000, Maramureș, distribution, habitats, conservation management.

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# New contributions to the knowledge of the Lepidoptera fauna of Romania: first record of *Athetis hospes* (Freyer, 1831), new distribution data for *Dioszeghyana schmidtii* Diószeghy, 1935 and *Polymixis flavicincta* (Denis & Schiffermüller, 1775)

Cristian Sitar*[1,2], Brian Mărcuş[3], Cosmin Ovidiu Manci[4], Viorel Olteanu[5], Emanuel Enghiş[6], Amalia Dumbravă[7,8], Geanina Magdalena Sitar[9]

*[1]Zoological Museum, Babeș-Bolyai University, Cluj-Napoca, Romania, [2]Department of Cluj, Emil Racoviță Institute of Speleology, Cluj-Napoca, Romania, [3]Independent Researcher, Oradea, Romania, [4]"Oceanic-Club" Oceanographic Research and Marine Environment Protection Society, Constanța, Romania, [5]Independent Researcher, Bucharest, Romania, [6]Independent Researcher, Satu Mare, Romania, [7]N.F.A. Romsilva, Iron Gates Natural Park Administration R.A., Orșova, Romania, [8]University of Oradea, Doctoral School of Biomedical Sciences, Domain: Biology, Oradea, Romania, [9]Doctoral School "Education, Reflection, Development", Faculty of Psychology and Educational Sciences, Babeș-Bolyai University, Cluj-Napoca, Romania*

**Corresponding author, E-mail: cristian.sitar@ubbcluj.ro*

**Abstract**: This study provides significant contributions to the knowledge of the Lepidoptera fauna of Romania by reporting species newly recorded for the national fauna, as well as by adding distributional data for already known taxa.

We report the first record of *Athetis hospes* (Freyer, 1831) (Lepidoptera: Noctuidae) in Romania, based on observations carried out in several localities in the western and south-western parts of the country: Cefa Nature Park (Bihor County), Sfânta Elena (Caraș-Severin County, within the Iron Gates Natural Park), and the Foieni sand dunes (Satu Mare County). This finding represents a notable extension of the known distribution range of the species at the European level.

For *Dioszeghyana schmidtii* Diószeghy, 1935, a Natura 2000 species listed in Annex II of the Habitats Directive (92/43/EEC), new distribution data were presented from several sites in Bihor County (Cefa, Betfia, Cetariu) and Satu Mare County (Chegea). These results confirm the persistence and possible expansion of its populations in north-western Romania and emphasize the importance of maintaining conservation measures for this species at both national and European levels. Furthermore, the presence of *Polymixis flavicincta* (Denis & Schiffermüller, 1775) in Dobrogea is discussed, highlighting a broader distribution than previously known for Romania. In addition to morphological identification and genitalia dissection, the authors recommend complementary genetic analyses to strengthen taxonomic and distributional assessments.

The study also reports the first record of *Pancalia nodosella* Mann, 1854 (Lepidoptera: Cosmopterigidae) in the Romanian fauna, identified in 2012 in Babadag Forest (Tulcea County). This discovery places Romania within the wide European and Eurasian distribution range of the species. Additional noteworthy observations include *Callopistria latreillei* (Duponchel, 1827) and *Dasycorsa modesta* (Staudinger, 1879), which further contribute to updating the knowledge of the national Lepidoptera diversity and their distribution.

The results underline the importance of field entomological surveys in updating our knowledge of Romania's lepidopterological biodiversity. The newly reported species and additional distributional data confirm the essential role of protected natural areas, such as Cefa Nature Park, the Iron Gates Natural Park, the Foieni sand dunes, and Babadag Forest, in safeguarding species diversity. Moreover, these findings provide a solid foundation for future taxonomic, ecological, and applied research, with direct implications for the management and conservation of Romania's Lepidoptera fauna.

**Keywords:** Lepidoptera, species distribution, new records, biodiversity, Romania, Natura 2000, conservation.

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**The moths from the Vasile Vicol Collection at the Zoological Museum of Babeș-Bolyai University**

Renata-Ioana Șerban[1], Geanina Magdalena Sitar[2], Cristian Sitar*[3,4]

[1]*Department of Taxonomy and Ecology, Faculty of Biology and Geology, Babeș-Bolyai University, Cluj-Napoca, Romania*
[2]*Doctoral School "Education, Reflection, Development", Faculty of Psychology and Educational Sciences, Babeș-Bolyai University, Cluj-Napoca, Romania,* [3]*Zoological Museum, Babeș-Bolyai University, Cluj-Napoca, Romania*
[4]*Department of Cluj, Emil Racoviță Institute of Speleology, Cluj-Napoca, Romania*
**Corresponding author, E-mail: cristian.sitar@ubbcluj.ro*

**Abstract**: The Lepidoptera collection of Professor Vasile Vicol, preserved at the Zoological Museum of Babeș-Bolyai University, represents a valuable scientific legacy for the study of moth biodiversity in Romania. Compiled between 1975 and 2001, the collection comprises 3,247 specimens of moths belonging to 491 species, with strong representation from Mureș County and adjacent regions. In this study, the authors present the continuation of digitization efforts of the collection, following previous work on the butterflies. This assemblage complements an earlier collection (1957–1973, ~13,000 specimens) currently housed at the Museum of Natural Sciences in Târgu Mureș, reflecting more than four decades of dedicated entomological activity.

The collection covers a wide ecological and zoogeographical range, from mesophilous and mesohygrophilous species to xerothermophilous taxa recorded on the southern slopes near Sânmărghita and Iernut. Zoogeographically, Eurasian, West Asian–Mediterranean, and Holarctic elements are predominant, with additional representation from Ponto-Mediterranean taxa. Several rare and protected species are included, such as *Eriogaster catax* (Linnaeus, 1758), *Proserpinus proserpina* (Pallas, 1772), *Conisania poelli ostrogovich* (Draudt, 1933), *Drasteria caucasica* (Ménétriés, 1832), *Watsonarctia deserta* (Bartel, 1906), and *Periphanes cora* (Eversmann, 1837), some of which were collected in habitats with particular ecological sensitivity.

The development of the collection reflects both Professor Vicol's lifelong dedication to entomology and the broader trends of faunistic research in Romania during the late 20th century. Safeguarded today within an academic institution, it continues to serve as a key reference for taxonomy, ecology, and conservation.

This study highlights the significance of legacy entomological collections as both cultural heritage and essential resources for contemporary biodiversity research, bridging historical data with present-day conservation needs.

**Keywords:** Lepidoptera, moths, entomological collections, biodiversity, taxonomy, digitization, Romania.

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# The Vasile Vicol Carabidae (Coleoptera) Collection at the Zoological Museum of Babeş-Bolyai University

Nica Ivanuş[1], Geanina Magdalena Sitar[2], Cristian Sitar*[3, 4]

[1]*Department of Taxonomy and Ecology, Faculty of Biology and Geology, Babeş-Bolyai University, Cluj-Napoca, Romania*
[2]*Doctoral School "Education, Reflection, Development", Faculty of Psychology and Educational Sciences, Babeş-Bolyai University, Cluj-Napoca, Romania,* [3]*Zoological Museum, Babeş-Bolyai University, Cluj-Napoca, Romania*
[4]*Department of Cluj, Emil Racoviță Institute of Speleology, Cluj-Napoca, Romania*
**Corresponding author, E-mail: cristian.sitar@ubbcluj.ro*

**Abstract**: The Carabidae (Coleoptera) collection established by Professor Vasile Vicol and preserved at the Zoological Museum of Babeş-Bolyai University represents a comprehensive faunistic archive for ground beetles in Romania. Comprising 1,392 specimens belonging to 120 taxa, the collection provides valuable information on the diversity and distribution of Romanian Carabidae, with a particular emphasis on Transylvania. High specimen richness is documented in the counties of Mureș, Sălaj, Cluj, and Sibiu, with the locality of Panic (Sălaj) being especially well represented. The material also includes taxa obtained through specimen exchanges, adding rare and exotic species from several European countries as well as material from Japan.
Professor Vasile Vicol (1933–2010), a graduate of Babeş-Bolyai University, dedicated his career to teaching biology and geography in Mureș County while cultivating a lifelong passion for entomology. A founding member of the Romanian Lepidopterological Society (1990), he actively contributed to national entomological research and events. His collections remain an important scientific legacy for the study and conservation of Romanian biodiversity.
The chronological span of the collection (1955–1998) reflects two major periods of intensified field activity, coinciding with a broader wave of faunistic exploration in Romania. Several emblematic species of the genus *Carabus* (*C. hampei, C. variolosus, C. gigas, C. coriaceus banaticus*) are included, along with rare or regionally endemic taxa. The digitization process also revealed taxonomic inaccuracies, such as misidentifications between *Carabus hungaricus* and *C. glabratus*, which were corrected through detailed morphological analysis.
Digitized datasets enable the reconstruction of past species distributions, identification of population trends, and improved understanding of habitat requirements. Moreover, integration into global platforms such as GBIF ensures the accessibility of this information and facilitates its use in conservation planning.
This case study highlights the importance of legacy entomological collections not only for taxonomy and biogeography but also as a foundation for evidence-based biodiversity conservation. Preserving and valorizing such collections helps bridge historical data with present-day ecological and conservation challenges.

**Keywords:** Carabidae, entomological collections, taxonomy, digitization, GBIF, biodiversity, Romania.

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**Synecological analysis of the mining insect species identified on the *Quercus robur* species from the Hârboanca Reserve, Vaslui**

Alina Maria Stolnicu

*Independent researcher, Vaslui, Romania*
*E-mail: alina_stolnicu@yahoo.com*

**Abstract**: The Hârboanca Forest Reserve is a typical island from the former forest-steppe of the Central Moldavian Plateau and is a note of originality through the interesting phenomenon of hybridogenesis in oak: *Quercus speciosa*, *Q. pseudopubescens*, *Q. pudesis* var. *vasluiensis* and rare subunits: *Q. pubescens* var. *macrocarpa*, *Q. virgiliana* f. *cuneata*.

On the species *Quercus robur* from the Hârboanca Reserve, between 2005 and 2006, we analyzed 14 samples, collected annually, from the fifth month to the ninth month, from which we obtained 775 individuals belonging to 16 species of mining insects. Among these, two eudominant species, *Tischeria ekebladella* and *Phyllonorycter roboris* and 6 species are euconstants - *Phyllonorycter roboris*, *Tischeria ekebladella*, *Profenusa pygmaea*, *Phyllonorycter quercifoliella*, *Phyllonorycter heegeriella* and *Stigmella ruficapittella*.

As for the dynamics of mining insect species, the first mining adults appear in mid-May and the staggered appearance of the species is correlated with the climatic factor. The most abundant species is *Tischeria ekebladella*, followed by the species *Phyllonorycter roboris*, followed by the other less represented species.

As the main negative actions on this reserve are due to anthropogenic activities and the area of the reserves has been reduced over time due to the need for arable areas, grazing in the neighboring areas, as well as illegal tree cutting, this year and the following year we will resume research in this area to identify the dynamics of the species over time.

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# Uncertain and problematic data in the lepidoptera fauna of Romania (Insecta: Lepidoptera).

Levente Székely

*Independent researcher, Săcele, Brașov, Romania.*
*E-mail: levi.szekely@gmail.com*

**Abstract:** The purpose of this article is less scientific! Erroneous data about the lepidopteran fauna of Romania is presented based on specimens existing in different collections (with possible mislabeling, misdeterminations, lost collections) and also data about species that were once published in different journals. The possible causes of these erroneous data are that many old collections were lost in destroyed cases. In the 20th century there were two world wars, changes of political regimes, etc., which brought irreparable losses to entomology in the country. Several old collections from the 19th century and the first part of the 20th century were lost. In the past, especially in the 19th century, entomology was somewhat different from today's, but entomologists were also more multilateral as many dealt with two or three orders of insects at once and for this reason they probably sometimes published erroneous data or incorrectly determined species! Data on a series of old collections (some lost), with biographical data on those who compiled them are presented. The status of species removed from the faunal list of Romania is discussed, such as: *Polyommatus eros, Aricia hyacinthus (? nicias), Hipparchia alcyone* etc., existing in different collections, but also species that have never been included in the list of Romanian lepidoptera, being considered totally erroneous data, such as: *Papilio alexanor, Zerynthia rumina, Euphydrias cynthia, Colias phicomone, Zygaena fausta, Eriogaster neogena, Chelis dahurica* etc. Nevertheless, they were published in the literature and should be known as curiosities! As well as some exaggerations, such as the false publication of a species as new to science as *Latoia romaniae!* We also include data on species present in Romania, but with very unlikely locations published in the literature. Data on little-known collections in the country is also included, such as the Temessy Milán collection from Zagon, Covasna. There is also unknown data in the literature of extinct species from the Romanian fauna, *Parnassius apollo*.

**Key words:** Lepidoptera, Romania, old unknown collections, causes of uncertain data, biography, uncertain data, uncertain publications, *Parnassius apollo* new data, etc.

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# Weevils (Coleoptera, Curculionoidea) found in several green spaces from Cluj-Napoca (Romania)

Lucian Alexandru Teodor*[1], Dragomir Cosmin David[2]

*[1, 2] Department of Ecology and Taxonomy, Faculty of Biology and Geology, Babes-Bolyai University, 5-7 Clinicilor Street, Cluj-Napoca, Romania*
**Corresponding author, E-mail: lucian.teodor@ubbcluj.ro*

**Abstract:** In the area of Cluj-Napoca, so far have been reported 174 weevils species, of which only 18 have been reported within the locality. Weevils were collected in 2012, 2014-2015 and sporadically in 2009-2010 and 2013, with entomological nets, umbrella nets, the leaf sieve and by hand, directly from plants and soil, in Iuliu Haţieganu Park, Rozelor Park, Colina Park (Polus), green spaces in the Zorilor District and the green area near the Faculty of Biology, 5-7 Clinicilor Street. We collected and identified individuals from 72 species belonging to 11 subfamilies of the superfamily Curculionidea. Of these 72 species, 32 were refound by us, and the other 40 are at their first reporting in the Cluj-Napoca area. The best represented was the subfamily Entiminae (23 species), followed by the subfamilies Apioninae (14 species) and Conoderinae (11 species). *Otiorhynchus* (*Podoropelmus*) *rotundus* Mars. and *O.* (*s.str.*) *armadillo* Ros. are characteristic only of urban green spaces. We note the presence of species *Rhopalapion longirostre* Oliv. and *Alocentron* (s.str.) *curvirostre* Gyll. on *Alcea rosea* L. and the presence on *Aegopodium podagraria* L. of 3 *Liophloeus* species: *L.* (*Liophloeodes*) *lentus* Germ., *L.* (*s.str.*) *tessulatus* O. F. Müller and *L.* (*Liophloeodes*) *liptoviensis* Weise., the latter being endemic to the Carpathians. Besides common species: *Sciaphobus* (*Neosciaphobus*) *squalidus* Gyll., *Eusomus ovulum* Germ., *Phyllobius* (*Metaphyllobius*) *pomaceus* Gyll., *P.* (*s.str.*) *betulinus betulinus* Bech., *P.* (*Nemoicus*) *oblongus* L., *Nedyus quadrimaculatus* L. etc, 4 species considered rare were also present: *Omphalapion dispar* Germ., *Ceutorhynchus puncticollis* Boh. *Polydrusus (Eustolus) corruscus* Germ. and *P. (Eustolus) flavipes* De Geer. Through our contribution, we raise the number of weevil species in and around of Cluj-Napoca to 214, of which 86 within the locality. The weevils present in the green spaces within the city of Cluj-Napoca highlight the importance of these spaces as a refuge for this group of insects, compensating for the disappearance of some of the natural habitats in the area, in place of which housing was built.

**Key words:** city, faunal studies, diversity, first record, host plants, rare species

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# New technologies and integration of Artificial intelligence for monitoring insect pollinators

Natalia Tımuş*[1], Iulia Muntean[1] & Zoltán László[1]

*[1]Babeş-Bolyai University, Cluj-Napoca, Romania*
**Corresponding author, E-mail: natalia.timus@ubbcluj.ro*

**Abstract**: Current studies indicate that integrating Artificial Intelligence into various domains of insect science is driving notable advancements. Deep learning and computer vision technologies are already employed for the identification and classification of insect species using both visual and acoustic data, demonstrating promising prospects for incorporating these approaches into future monitoring frameworks.

The "Standardized European monitoring of plant-pollinator interactions" (SEPPI) project proposes an automated approach based on Artificial Intelligence, to facilitate data collection and analysis for plant-pollinators interactions. In 2024, the SEPPI team developed a protocol that underwent testing across eight European countries: Germany, Belgium, Hungary, Czechia, Latvia, Finland, Italy, and Romania. In this project, non-lethal technologies were implemented by deploying Insect Detect camera traps to capture images of pollinators interacting with flowers within their natural habitats. AI tools, such as YOLO object detection models were utilised to classify and identify the insect species present in the captured images.

Preliminary findings indicate that the automated pollinator monitoring method is more time-efficient than traditional techniques. This approach is straightforward to implement in the field and considerably reduces human workload. We consider that once the AI tools is fully trained to identify pollinators, they have the potential to deliver standardized methodologies that can be scaled without necessitating prior taxonomic expertise.

While artificial intelligence tools may not match human experts in species-level identification, they can exhibit considerable speed and efficiency in detecting trends among pollinators and assessing ecosystem services related to pollination, thereby facilitating prompt management interventions. Moreover, these AI tools demonstrate adaptability for various ecological research applications.

**Keywords**: Plant-pollinators interactions, automated monitoring, Artificial Intelligence, Insect Detect camera traps, YOLO object detection models.

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# Comparative phenology of two butterfly communities in Transylvania (Romania) during the period 2022–2024

Tibor-Csaba Vizauer[1,2]

[1]*Faculty of Biology and Geology, Doctoral School of Integrative Biology, Babeș-Bolyai University, Cluj-Napoca, Romania;*
[2]*Romanian Lepidopterological Society;*
*E-mail: vizauercsaba@gmail.com*

**Abstract:** Climate change is among the most pressing global issues humanity faces in the 21st century. In Romania, the past decades have witnessed a gradual increase in temperatures along with a decrease in annual precipitation. Local weather conditions influence the phenology and voltinism of butterflies, affecting both the onset and duration of the adult flight period.

Butterfly sighting data from Romania, collected and published on social media platforms, contribute to completing the national distribution records of species. These data show that the flight period of butterflies varies depending on the annual evolution of weather conditions. Empirically, an annual synchronization of flight periods can be detected, naturally influenced by the latitude and altitude of the sighting areas.

To test this hypothesis, we compared data collected during 2022–2024 from two butterfly communities in Transylvania. One dataset originates from citizen science activities published on the Facebook group *Insects of Romania and Europe* by Diana Buchilă. The species in this butterfly community were identified based on mobile phone images taken over an area of approximately 460 hectares in Valea Gârbăului, near Cluj-Napoca. The second dataset was collected in Harghita County over a larger area (approx. 130,000 hectares). In both regions, the date of the first annual sighting for each butterfly species was recorded each year. For every species and year, the number of days from January 1st to the first adult sighting was calculated.

During the study period, a total of 120 butterfly taxa were recorded, representing about 60% of Romania's butterfly fauna. Of these, 91 species were common to both regions, while 29 species differed (12 species exclusive to Cluj, 17 species exclusive to Harghita County).

At the community level, we identified a significant positive correlation ($n = 91$, $r = 0.72$, $p < 0.0001$) between the average date of the first sighting of butterfly species shared between the two regions during this period. On average, during 2022–2024, the butterfly flight period began 6–7 days earlier in Cluj compared to Harghita County (mean days = 153.66, $n = 103$ for Cluj; mean days = 160.00, $n = 111$ for Harghita). In Cluj, the average number of days decreased gradually over the three years (2022: 162.42 days; 2024: 138.85 days), a similar trend also observed in Harghita (2022: 169.59 days; 2024: 143.64 days). Thus, between 2022 and 2024, butterflies began their flight period on average approximately 24 days earlier in Cluj and 26 days earlier in Harghita.

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