TRAVAUX
DU
MUSÉUM NATIONAL D'HISTOIRE NATURELLE «GRIGORE ANTIPA»
VOL. 69
Supplement 1

ZOOLOGYCON 2026 – Book of Abstracts

SINCE 2009 ZOOLOGYCON 2026

PUBLISHED BY THE MUSEUM
BUCHAREST – 2026

TRAVAUX

DU
MUSÉUM NATIONAL
D'HISTOIRE NATURELLE
«GRIGORE ANTIPA»

VOL. 69
Supplement 1

ZOOLOGYCON 2026
Book of Abstracts

4 – 6 November 2026
BUCHAREST, ROMANIA

Editorial partner: PENSOFT

ZOOLOGYCON 2026 ORGANIZING COMMITTEE

Chair:

Luis Ovidiu POPA ("Grigore Antipa" National Museum of Natural History)

Members:

Costică ADAM ("Grigore Antipa" National Museum of Natural History)

Maxim-Jean BÂLCU ("Grigore Antipa" National Museum of Natural History)

Ioana Cristina CONSTANTINESCU ("Grigore Antipa" National Museum of Natural History)

Vlad Eugen DINCĂ ("Grigore Antipa" National Museum of Natural History)

Larisa Bianca FARCAȘ ("Grigore Antipa" National Museum of Natural History)

Ana-Maria KRAPAL ("Grigore Antipa" National Museum of Natural History)

Rozalia Magda MOTOC ("Grigore Antipa" National Museum of Natural History)

Victoria NISTREANU (Institute of Zoology, Moldova State University, Chișinău, Republic of Moldova)

Alexandra-Florina POPA ("Grigore Antipa" National Museum of Natural History)

Oana Paula POPA ("Grigore Antipa" National Museum of Natural History)

Florentina PURDESCU ("Grigore Antipa" National Museum of Natural History)

Melanya STAN ("Grigore Antipa" National Museum of Natural History)

Andrei ȘTEFAN ("Grigore Antipa" National Museum of Natural History)

ZOOLOGYCON 2026 SCIENTIFIC COMMITTEE

Nesrine AKKARI
Curator of the Myriapoda collection / staff scientist, Natural History Museum Vienna, Austria
International Commission on Zoological Nomenclature (ICZN)

Traian BRAD
Senior Researcher Grade II, Head of Department, "Emil Racoviță" Institute of Speleology, Cluj-Napoca, Romania

Liliana BURLIBAȘA
Professor, Dean, Faculty of Biology, University of Bucharest, Bucharest, Romania

Mariana-Carmen CHIFIRIUC
Professor, Vice-Rector, University of Bucharest, Bucharest, Romania

Vlad A. CODREA
Professor, "Babeș-Bolyai" University, Cluj-Napoca, Romania

Dan COGĂLNICEANU
Professor, "Ovidius" University, Constanța, Romania

Voichița GHEOCA
Associate Professor, "Lucian Blaga" University of Sibiu, Sibiu, Romania

Ionuț GRĂDIANU
Head of Department, National Museum Complex Neamț, Piatra Neamț, Romania

Gabriela GURĂU
Manager, "Ion Borcea" Natural Sciences Museum Complex, Bacău, Romania

Boris KRYŠTUFEK
Principal Research Associate, Mediterranean Institute for Environmental Studies, Koper, Slovenia

Andrei Daniel MIHALCA
Professor, University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca, Cluj-Napoca, Romania

Oana MOLDOVAN
Senior Researcher Grade I, "Emil Racoviță" Institute of Speleology, Cluj-Napoca, Romania

Dumitru MURARIU
Vice-President, Romanian Academy, Bucharest, Romania

Lucian PÂRVULESCU
Professor, West University of Timișoara, Timișoara, Romania

Lyubomir PENEV
Pensoft Publishers, Sofia, Bulgaria

Luis Ovidiu POPA
Senior Researcher Grade I, General Director, "Grigore Antipa" National Museum of Natural History, Bucharest, Romania

László RÁKOSY
Professor, "Babeș-Bolyai" University, Cluj-Napoca, Romania

Geta RÎȘNOVEANU
Professor, University of Bucharest, Bucharest, Romania

Laurențiu ROZYLOWICZ
Professor, University of Bucharest, Bucharest, Romania

Cristina STAICU
Associate Professor, University of Bucharest, Bucharest, Romania

Victor SURUGIU
Associate Professor, "Alexandru Ioan Cuza" University, Iași, Romania

Laurența UNGUREANU
Director, Institute of Zoology, Chișinău, Republic of Moldova

Dorel URECHE
Associate Professor, "Vasile Alecsandri" University, Bacău, Romania

Ștefan R. ZAMFIRESCU
Professor, "Alexandru Ioan Cuza" University, Iași, Romania

Travaux du Muséum National d'Histoire Naturelle "Grigore Antipa"
is a biannual peer-reviewed scientific journal

ISSN (print edition): 1223-2254
ISSN (on-line edition): 2247-0735

ZOOLOGYCON 2026
4 – 6 November 2026
BUCHAREST, ROMANIA

Organizer:
"Grigore Antipa" National Museum of Natural History, Bucharest, Romania

Partners:
The Romanian Academy, Bucharest, Romania
University of Bucharest, Bucharest, Romania

Editorial partner:
Pensoft Publishers, Sofia, Bulgaria

ZoologyCon 2026 - Book of Abstracts. Travaux du Muséum National d'Histoire Naturelle "Grigore Antipa", 69, Supplement 1.
DOI: 10.3897/travaux.69.e221396

Cover photo: Claudiu Ion Mihai

© 2026, "Grigore Antipa" National Museum of Natural History, Bucharest, Romania

Printed by S.C. "INTERBRAND IMPEX" S.R.L.
Str. Oboga, nr. 19-23, sector 6, Bucureşti, România,
Tel.: 004/031/401.61.62; 004/031/401.61.63; 004/073/308.74.58
e-mail: contact@digitalprints.ro; digitalprint.ro@gmail.com

Summary

ZOOLOGYCON 2026 PROGRAMME **21**

Invited speakers

Sérgio P. ÁVILA - Forging a theory of Marine Island Biogeography: Merging geology, fossils, and life on oceanic islands 41

Anders BACHE - Curating Roald Amundsen 42

Zoltán CSIKI-SAVA - Not just a strange menagerie – lessons from a century and a half of exploring Europe's dinosaur islands 43

Rafael MÁRQUEZ - Sounds and vibrations in the biology of Anurans 44

Dumitru MURARIU - The Romanian Academy – Romania's highest institution for the recognition of intellectual excellence, conducting internationally recognized scientific research and creative activities 45

Lyubomir PENEV - FAIR at the start, FAIR at the end: Biodiversity publishing in the AI era 47

Victor SURUGIU - Prof. Dr. Ioan Borcea – "The Titan" of Romanian zoology 49

Zoltán VARGA - Mountains of Central and Inner Asia – core areas of cutworm moths (Noctuidae, Noctuinae) 51

Oral presentations

Biodiversity and Biogeography of Native and Non-native Faunas

Khatia BIRKAIA, Nana BAKHTADZE - The earthworms (Oligochaeta: Lumbricidae) of the Ajameti Managed Reserve (Georgia, Caucasus) 57

Andrei ȘTEFAN, Maxim-Jean BÂLCU, Rozalia Magda MOTOC, Dumitru MURARIU, Oana Paula POPA - The tale of a successful invader: the tanaid *Sinelobus vanhaareni* reaches the Black Sea 58

Iulian FOMICI, Ovidiu DRĂGAN, Aurel NĂSTASE - The rapid expansion of the Oriental river prawn – *Macrobrachium nipponense* (Decapoda) in the Danube Delta Biosphere Reserve from 2021 to 2026 59

Boris R. KRASNOV - Latitudinal variation of the species richness, phylogenetic diversity, and functional diversity of fleas and their small mammalian hosts in four geographic quadrants 60

Rusudani TSIKLAURI, Nana BAKHTADZE, Levan MUMLADZE - Invasive buprestid species in Georgia (Caucasus) 61

Eugen NITZU - From surface to depth: alpha- to gamma-level diversity of edaphic and subterranean Coleoptera in the Romanian karst system 62

Ioan TĂUȘAN, Robert Andrei VLAD, Bianca Elena STROESCU, Diana Monica ENEA, Silviu Giorgian ȚICU, Ágota SZABÓ, Bálint MARKÓ - Mount building *Formica* (Hymenoptera: Formicidae) in Romania – distribution, conservation and citizen science 63

Charikleia-Foteini PANTAGAKI, Emmanouil STRATAKIS - KladiSOS: the challenging eradication of the invasive Italian wall lizard, *Podarcis siculus*, from Chania, Crete, Greece 65

Cristina PREDA, Carla F. GAVRILESCU, Daniyar MEMEDEMIN, Lucian M. PĂTRAȘCU, Marius SKOLKA, Laurențiu ROZYLOWICZ - Invasion pressure in Romanian protected areas 66

Galina BUȘMACHIU - An urban pond in Chișinău: potential protected site in the Emerald Network? 67

Evolution, Systematics and Integrative Taxonomy

Octavian PACIOGLU, Corina IȚCUȘ, Iris M. TUȘA, Ionuț POPA, Ștefan Cătălin BABA - Microhabitats constraints on *Niphargus pannonicus* ecology in Gaura cu Muscă Cave (Romania) 71

Ana-Maria KRAPAL, Andrei ȘTEFAN, Elena Iulia IORGU, Maxim-Jean BÂLCU, Alexandra-Florina POPA, Rozalia Magda MOTOC, Oana Paula POPA - The enigmatic snail from the Apuseni Mountains (Romania) – Is *Drobacia maeotica* (Wenz, 1926) a valid species? Insights from molecular markers 72

Antonio-Marian DONCEA, Teodora COZMA, Alexandru-Mihai PINTILIOAIE, Mădălina-Ionela VICIRIUC, István URÁK, Gábor KOVÁCS - Tracing the threads: An integrative approach confirms *Eresus hermani* in Romania (Araneae: Eresidae) 73

Simeon BORISSOV, Tsvetan TSVETKOV, Boyan ZLATKOV, Vladislav VERGILOV, Dragan CHOBANOV - Comparative anatomy and functional morphology of the orthopteran ovipositor – a case study on the genus *Isophya* Brunner von Wattenwyl, 1878 74

Ana-Maria CHIOSA, Carmen NEUNER, Anna HAUPRICH, Ovidiu-Alin POPOVICI, Cristina LUPAȘCU-VASILIȚA, Lars KROGMANN - Accelerating biodiversity research in the digital era: a case study on Platygastroidea (Hymenoptera) 75

Andrada JUGARIU-VICOLEANU, Lucian FUSU - DNA barcoding of the family Encyrtidae (Hymenoptera, Chalcidoidea) in Romania 76

Lucian FUSU, Antonia-Elena BEREŞ, Florina-Georgiana CABA, Maria-Magdalena DASCĂLU, Lucian HĂNCEANU, Andrada JUGARIU-VICOLEANU, Marius MIHĂŞAN, Mircea-Dan MITROIU, Andreea OPĂRIUC, Ovidiu-Alin POPOVICI - Harnessing molecular tools for the assessment of cryptic species prevalence in parasitoid wasps 77

Milica ANĐELKOVIĆ, Vladimir ŽIKIĆ, Maja LAZAREVIĆ - Does sexual dimorphism affect species delimitation within the *Cotesia tibialis* species complex (Insecta: Hymenoptera: Braconidae: Microgastrinae)? 78

Nok Ting LAM, Vladislav IVANOV, Lola STEBLER, Claudia BRUSCHINI, Jan KOLLROSS, Pável MATOS-MARAVÍ, Irena KLEČKOVÁ, Sylvain CUVELIER, Marko MUTANEN, Leonardo DAPPORTO, Roger VILA, Kay LUCEK, Vlad DINCĂ - Cryptic diversity strikes again: the story of European endemic butterflies of the *Erebia melampus* complex 79

Ebru Ceren FİDAN, Sarp KAYA, Huriye DOĞRU, Davut Ümit ŞİRİN - Investigating the effects of global warming on wetland-dependent populations with fragmented distribution in Anatolia using genome-wide SNP data from the *Simulium bezzii* (Diptera: Simuliidae) metapopulation 81

Tiberiu Constantin SAHLEAN, Ryan Andrew MARTIN - Context-dependent trait evolution: is there evidence for an elevational pace of life syndrome in squamates? 82

Ecology, Behaviour and Conservation under Global Change

Adrian TEACĂ, Tatiana BEGUN, Selma MENABIT, Ana-Bianca PAVEL, Adrian POPA, Cătălina GAVRILĂ - From habitat mapping to ecosystem functioning: benthic habitat heterogeneity drives functional diversity patterns in a Romanian Black Sea Marine Protected Area 85

Antonio V. LAZA, Kristian MIOK, David LIVADARIU, Lucian PÂRVULESCU - Population size challenge in endemic freshwater species: field and spatial modelling of the idle crayfish 87

Marius SKOLKA, Cristina CRAIU - *Tomares nogelii dobrogensis* (Caradja, 1895), a taxon requiring strict protection 88

Kiril ARSOVSKI PRZO - The cryptic pollination role of social wasps in the Palaearctic: a systematic review of plant-wasp interactions 89

Teodora L. TĂNASE, Florina STĂNESCU, Sabina Elena VLAD, Diana SZÉKELY, Dan COGĂLNICEANU - Age and growth research in neotropical amphibians and reptiles: a critical review of skeletochronology use 90

César A. DÍAZ-MARÍN, Aurelio RAMÍREZ-BAUTISTA - Ectoparasitism in a widespread spiny lizard of Mexico: effect of habitat and host phenotype ... 91

Kimberley HANNA, Yosef KIAT - Timing matters: sexual dichromatism and sex-specific moult investment across the annual cycle 92

Steluța MANOLACHE, Teodora SIN, Lavinia C. PÎNDARU, Viorel D. POPESCU, Mihai I. POP - Intraspecific spatio-temporal segregation in brown bears (*Ursus arctos*) in the South-Eastern Carpathians 93

Carolina MICHELOTTO, Alex BELLAN, Teodora SIN, Ilenia MAROCCO, Bogdan KRAFT, Andrei DINU, Yon HALOTEL, Naima DALPIAZ, Paola ANTONINI, Alexis PINZIO, Marco FILZ, Leonas DINU, Andrea GAZZOLA - A preliminary analysis of coat pattern variation in the Eurasian lynx (*Lynx lynx*) from the eastern Romanian Carpathians 94

Mihail ȘCERBLIUC, Anatolie SAVIN, Victoria NISTREANU, Alina LARION - Current status of golden jackal (*Canis aureus*) in the Republic of Moldova 96

Laurențiu ROZYLOWICZ, Steluța MANOLACHE, Andra Claudia NEAGU, Andreea NIȚĂ, Iulian M. NICULAE, Cristian IOJA, Mihai R. NIȚĂ, Viorel D. POPESCU - Evidence, gaps, and priorities in European research on human-large carnivore coexistence 97

Zoological Collections, Museums and Research Infrastructures

Constanța-Mihaela ION, Lucian PÂRVULESCU - Building World of Crayfish®: from a continental pathogen question to a global portal 101

Beatrice SPENCE, Arissa-Elena ROTUNJANU, Nga Ting Anna YIU, Tiffany KI, Anil MADHAVAPEDDY, Edgar TURNER - DoME - a low cost and high throughput solution for 3D digitisation of insect collections 102

Marine DALLAKYAN, Vardan ASATRYAN, Liana POGHOSYAN, Jana THORMANN, Laura VON DER MARK, Jonas J. ASTRIN - The first DNA reference library of macroinvertebrates in Armenia 103

Alexandru IFTIME - Preliminary data on the Bănărescu-Nalbant ichthyological collection ("Grigore Antipa" National Museum of Natural History) 104

Poster presentations

Biodiversity and Biogeography of Native and Non-native Faunas

Elena IURCU-STRĂISTARU, Alexei BIVOL, Ştefan RUSU, Viorelia RUSU - Nematological research on plant-parasitic and virus-vector species associated with apple crops under intensive production systems 109

Andrei GIURGINCA, Ştefan Cătălin BABA, Augustin NAE - New species of Oniscidea (Isopoda, Crustacea) from Dobrogea (Romania) 110

Teona-Alexa CÂRCIOIU - Barcodes and biases in the Black Sea: a regional reference database for Copepoda 111

Maria NĂSTASE, Ștefan Cătălin BABA - Reassessment of *Strigamia* Gray, 1843 (Chilopoda: Geophilomorpha) in Romania: species diversity, morphological variation and distribution 112

Florina-Georgiana CABA, Tony Alexandra TICU, Alexandru-Mihai PINTILIOAIE, Emanuel-Ștefan BALTAG, Lucian FUSU, Maria-Magdalena DASCĂLU - Know your enemy: DNA barcoding ticks associated with birds and other hosts 113

Livia CALESTRU - Myrmecophilous Chrysomelidae of the Republic of Moldova 114

Denis-Gabriel SPASENI, Alexandru-Mihai PINTILIOAIE, Petronel SPASENI, Emanuel-Ștefan BALTAG, Ana JURJESCU, Paul-Cristian DINCĂ - Sedentary but spreading: radio telemetry shows limited movement in the invasive Asian praying mantis 115

Silviu Giorgian ȚICU, Simona Dumitrița CHIRILĂ, Robert Andrei VLAD, Bianca Elena STROESCU, Diana Monica ENEA, Andrei Vasile POPESCU, Dumitru MURARIU, Ioan TĂUȘAN - Habitat-specific differences in ant community structure in a post-mining landscape: open grassland versus woodland at Roșia Montană, Romania 116

Ovidiu-Andrei GEORGESCU, Lucian FUSU - Updating the distribution and occurrence of harvester ants (genus *Messor*) in Romania and the Republic of Moldova 118

Antonia-Elena BEREȘ, Ovidiu-Alin POPOVICI - Contributions to the study of microhymenopterans (Insecta: Hymenoptera) from Ceahlău National Park in 2024 119

Lucian HĂNCEANU, Maria-Magdalena DASCĂLU, Lucian FUSU - Study on the morphometrics of mandibles in *Lucanus cervus* (Linnaeus 1758) across a north-south transect in Eastern Romania 120

Iulia V. MIU, Marian D. MIREA, Lavinia C. PÎNDARU, Steluța MANOLACHE, Laurențiu ROZYLOWICZ - Shared allometric trajectories but contrasting sexual size dimorphism in *Osmoderma barnabita* and *Rosalia alpina* from the Eastern Carpathians, Romania 121

Ștefan AILINCUȚEI, Antonio-Marian DONCEA, Alexandru-Mihai PINTILIOAIE, Mădălina-Ionela VICIRIUC - A hidden pebble in the sand: first record of *Philopedon plagiatum* (Schaller, 1783) (Coleoptera: Curculionidae) from Romania 122

Marian D. MIREA, Iulia V. MIU, Lavinia C. PÎNDARU, Steluța MANOLACHE, Viorel D. POPESCU, Silviu CHIRIAC, Laurențiu ROZYLOWICZ - Community composition, occupancy and abundance of saproxylic beetles along an altitudinal transect in Vrancea County, Romania 123

Andreea OPĂRIUC, Ovidiu-Alin POPOVICI - The diversity of longhorn beetles (Coleoptera: Cerambycidae) from Natura 2000 Site Pădurea Tătărași 124

Svetlana BACAL, Galina BUȘMACHIU, Alexandra-Florina POPA, Ana-Maria KRAPAL - First record of the weevil species *Acallocrates colonnellii* Bahr, 2003 (Coleoptera: Curculionidae) from the Republic of Moldova 125

Miruna-Ioana ȘPAC, Ovidiu-Alin POPOVICI - Contributions to the knowledge of coleopterans (Insecta, Coleoptera) from Dornești commune (Suceava County), under the conditions of the year 2025 126

Sorina ISTRATI, Anna MOLDOVAN - Assessing the state of steppe ecosystems in central part of the Republic of Moldova using beetles as bioindicators 127

Marius SKOLKA - *Leptotes pirithous* (Linnaeus, 1767), a constant presence in the coastal area of Dobrogea (Romania) 128

Cristina ȚUGULEA - *Kretania sephirus* (Frivaldszky, 1835) (Lepidoptera: Lycaenidae) - new species and genus in the fauna of the Republic of Moldova .. 129

Andrei MĂDULARU, Ovidiu-Alin POPOVICI - Contributions to the knowledge of moths (Lepidoptera, Insecta) from the Măcin Mountains National Park in the year 2025 130

Sergiu TÖRÖK, Ioan TĂUȘAN, Cosmina MOLDOVAN - Contributions to the study of the Macrolepidoptera (Lepidoptera) from the northern part of Sibiu County 131

Nadejda MOCREAC, Chirag Prabhakar PADUBIDRI, Andreas KAMILARIS, Elizabeth BUCKHAM, Helen TOKAIQALI, Mihail GURIȚĂ, Angeliki F. MARTINOU - Preliminary assessment of mosquito species diversity using community surveillance traps in Akrotiri, Cyprus 132

Oxana MUNJIU, Igor ȘUBERNEȚKII - Benthic macroinvertebrates of the Cahul Lake on the territory of the Republic of Moldova 133

Maria NAUMOVA, Boyan VAGALINSKI, Vassil VASSILEV, Vera ANTONOVA, Ivaylo GEORGIEV, Teodor TRIFONOV, Simeon INDZHOV, Teodora MARIUS TEOFILOVA - Moving north – monitoring the effects of global climate change through model groups of arthropods in natural corridors for migration of thermophilous fauna in Bulgaria 134

Maria-Magdalena DASCĂLU, Emanuel-Ștefan BALTAG, Florina-Georgiana CABA, Lucian FUSU, Lucian HĂNCEANU, Marius MIHĂȘAN, Mircea-Dan MITROIU, Ionuț PAVEL, Ovidiu-Alin POPOVICI, Cosmin Teodor MIHAI, Adriana MELEN, Irina NUCĂ - Expanding species coverage and genetic diversity of Romanian invertebrate fauna through DNA Barcoding 135

Teodora POPOVA, Simona GEORGIEVA, Simeon BORISSOV - Endosymbiotic relationships across scales and taxa - extreme and temperate assemblages 136

Naima BENKENANA, Imen GUERFI, Abir ABED, Chahinez DEROUICHE - Insect diversity and environmental gradients in urban, agricultural and natural habitats of Constantine (Algeria) 137

Irinel Eugen POPESCU - The fourth site in Romania in terms of invertebrate species of community importance: ROSCI0135 Bârnova-Repedea Forest 138

Louana-Paraschiva COJANU, Mircea-Dan MITROIU - Entomofauna associated with *Rattus norvegicus* carcasses: a comparative study from north-eastern Romania 139

Mohammad Sadegh ALAVI-YEGANEH, Lasse MAROHN, Matthias FRISCHE, Reinhold HANEL - Out of place: tracing the unnatural occurrence of *Anguilla anguilla* in the Southern Caspian 140

Teodora TRICHKOVA, Polina NIKOVA, Milcho TODOROV, Luchezar PEHLIVANOV, Stefan KAZAKOV, Tihomir STEFANOV, Lyubomir KENDEROV, Michal HNILIČKA, Pavel JURAJDA - Range expansion of *Ameiurus melas* (Rafinesque, 1820) (Ictaluridae) in Bulgarian inland water bodies 141

Ionuț Dănuț COSTACHE, Mircea Nicușor NICOARĂ, Dorel URECHE - Fish species diversity in the Râmnicu Sărat River Basin (Romania) 142

Mădălina-Iuliana FRANC, Iulian GHERGHEL, Ștefan Remus ZAMFIRESCU - Occurrence and ecological characteristics of fire-bellied toads (*Bombina bombina* and *Bombina variegata*) in the Bârnova Forest, Iași County 143

Eusebiu ROȘCA, Ionuț-Cătălin PETREANU, Dragoș-Lucian GORGAN - Unraveling the origin of Romania's only known gecko population through mitochondrial and nuclear genetic markers 144

César A. DÍAZ-MARÍN, Aurelio RAMÍREZ-BAUTISTA - Disparity in taxonomic and functional diversities of tropical herpetofauna from Central Mexico 145

Luca-Mátyás SZABÓ, Ana-Maria BUZEA, István KOVÁCS, Mátyás CSONT-KELEMEN, Dávid MÉSZÁROS, József SZABÓ, Ciprian FÂNTÂNĂ, Zoltán BENKŐ, Zsolt KOVÁCS, Sándor D. ATTILA, Gergely OSVÁTH - The Lesser Kestrel *Falco naumanni* in Romania: historical status and the first breeding record in nearly 100 years 146

Florinel-Dănuț DRĂGAN, Mihail GHILAN - Breeding evidence and nest-site preferences of rose-ringed parakeet *Alexandrinus krameri* in Romania 147

Matei FLOREA, Liviu OLARIU, Carmen GACHE - Diversity and seasonal dynamics of avifauna in the confluence area of Siret and Moldova rivers (Romania) 148

Natalia DIBOLSCAIA, Vladislav CALDARI, Victoria NISTREANU, Alina LARION, Victor SÎTNIC - New bat underground sites in the central part of the Republic of Moldova 149

Arezoo SANEI, Fidelma BUTLER, Mohamad Reza BESMELI, Morteza GHEYSOURI, Aileen TENNANT, Shirin HERMIDAS - Structural connectivity of a recently identified landscape corridor for the Persian leopard with implications for the Asiatic cheetah conservation in Eastern Iran 150

Elena Iulia IORGU, Răzvan ZAHARIA, Eliana SEVIANU, Ioan Alexandru RĂDAC, Oana Paula POPA, Dumitru MURARIU, Gabriel Bogdan CHIȘAMERA, Ioana COBZARU, Ramona-Andreea BIVOLEANU - Cytochrome *b* reveals hidden diversity in *Glis glis* populations from Romania 151

Zsolt HEGYELI, Ovidiu-Sebastian ȘTEFÎRCĂ, Zsuzsanna ACZÉL-FRIDRICH - Improving knowledge of small mammal distribution in Moldavia (Eastern Romania) 152

David LIVADARIU, Lucian PÂRVULESCU - Bridging the gap between occurrence data and conservation action: automated workflows, temporal awareness, and AI-ready evidence 153

Cristina PREDA, Laurențiu ROZYLOWICZ, Costică ADAM, Paulina ANASTASIU, Gabriel Bogdan CHIȘAMERA, Dan COGĂLNICEANU, Ioana Cristina CONSTANTINESCU, Carla F. GAVRILESCU, Quentin GROOM, Nicolae MANTA, Daniyar MEMEDEMIN, Lucian M. PĂTRAȘCU, Oana Paula POPA, Lien REYSERHOVE, Culiță SÎRBU, Ioana M. SÎRBU, Florina STĂNESCU, Marian TUDOR, Mihaela M. URZICEANU, Marius SKOLKA - Checklist of alien taxa in Romania 154

Valentina IORDOSOPOL, Alexei BIVOL, Mihail GURIȚĂ, Nadejda MOCREAC - Abandoned vineyards as potential phytosanitary reservoirs: a comparative field survey in the Republic of Moldova 156

Ștefan RĂILEANU, Simona Dumitrița CHIRILĂ, Livia Oana DAVID - Spatiotemporal variation in gastrointestinal parasite positivity among grazing livestock in the Danube Delta Biosphere Reserve, Romania 157

Iasemin SULIMAN, Iuliana-Mihaela TUDOR, Orhan IBRAM - Seasonal biodiversity patterns of zooplankton communities in Danube Delta lakes (Romania) 158

Evolution, Systematics and Integrative Taxonomy

Nana BAKHTADZE, Levan MUMLADZE - The chromosome numbers and evolution of the family Hygromiidae Tryon, 1866 (Gastropoda, Stylommatophora) 161

Irina Neta GOSTIN, Irinel Eugen POPESCU - Histochemical analysis: an important tool for understanding the structure of insect-induced galls 162

Sirikamon PHLAINGAM, Tosaphol Saetung KEETAPITHCHAYAKUL - Towards an integrative taxonomic understanding of *Baetiella* (Ephemeroptera: Baetidae) in Indochina 163

Tosaphol Saetung KEETAPITHCHAYAKUL, Sirikamon PHLAINGAM - Integrative taxonomy of damselflies in the subfamily Agriocneminae (Zygoptera: Coenagrionidae) in mainland Southeast Asia 164

Gavril Marius BERCHI, Ioan Alexandru RĂDAC, Jakob DAMGAARD, Aura Ștefania JILCOVICI, Laura Elena JIVULESCU, Alexandra Ioana SABĂU, Petr KMENT, Denis COPILAȘ-CIOCIANU - Linking wing polymorphism and genetic diversity in water crickets (Insecta: Heteroptera: Gerromorpha: Veliidae) 165

Tony Alexandra TICU, Alexandru-Mihai PINTILIOAIE, Laura-Elena TOPALĂ, Emanuel-Ștefan BALTAG, Costică ADAM, Lucian FUSU - New host-parasite associations and diversity of avian chewing lice (Phthiraptera: Amblycera, Ischnocera) from south-eastern Romania 166

Mădălina-Elena ROȘU, Mircea-Dan MITROIU - Tiny mutants: Morphological abnormalities in *Systasis* Walker (Hymenoptera: Systasidae: Systasinae) 167

Maja LAZAREVIĆ, Milica ANĐELKOVIĆ, Darija MILENKOVIĆ, Vladimir ŽIKIĆ - Taxonomic utility of forewing shape among closely related genera of the *Cotesia* group (Hymenoptera: Braconidae: Microgastrinae) 168

Ruxandra NIȚESCU, Raluca Ioana BĂNCILĂ - Interspecific variation in skull and mandible shape and size within Rhinolophidae: a 3D geometric morphometric approach 169

Paleoecology, Paleobiology and Historical Biogeography

Enoh CONSTANTINESCU, Ionuț-Cornel MIREA, Marius ROBU, Maria-Laura TÎRLĂ, Luchiana-Maria FAUR, Daniel VEREȘ, Marius KENESZ, Răzvan ARGHIR, Marian COSAC, Alexandru PETCULESCU, Silviu CONSTANTIN - Preliminary data on a Late Pleistocene faunal assemblage from Bisericuța Cave (Trascău Mountains, NW Romania) 173

Marius ROBU, Ionuț-Cornel MIREA, Daniel VEREȘ, Sébastien OLIVE, Marius VLAICU, Phillipe TELOUK, Jeremy E. MARTIN - Palaeoecological evidence of anthropogenic heavy metal contamination in medieval European wildlife 174

George-Ioan MERLUȘCĂ, Paul-Iulian DONCIU, Aurel-Daniel STĂNICĂ, Ozana-Maria CIORPAC-PETRARU, Luminița BEJENARU - Dental and skeletal indicators of health and diet-related physiological stress in a human population from southeastern Romania (15th–19th centuries): a preliminary study 175

Maria Cristina CIMPOEȘU, Ionuț GRĂDIANU, Nicușor NECULA, Ciprian CHELARIU, Dorin Sorin BACIU, Adrian GROZAVU - Changing world, vulnerable heritage: an interdisciplinary assessment of the value and vulnerability of Neamț county's geosites 176

Ecology, Behaviour and Conservation under Global Change

Andrei Robert ÁCS, Constanța-Mihaela ION, Lucian PÂRVULESCU - From evidence to action: integrated conservation assessment and management of *Austropotamobius bihariensis* 179

Victor SURUGIU - The curious recovery of *Clibanarius erythropus* (Latreille, 1818) (Decapoda, Anomura, Diogenidae) populations at the Romanian coast of the Black Sea 180

Ioana Cristina CONSTANTINESCU, Minodora MANU, Raluca Ioana BĂNCILĂ, Andreea-Cătălina DRĂGHICI, Rozalia Magda MOTOC, Costică ADAM, Laura Mihaela ȘTEFAN - *Varroa destructor* infestation rates in S-E Romanian apiaries 181

Simona Dumitrița CHIRILĂ, Ovidiu-Andrei GEORGESCU, Nicu Alexandru GÎLEA, Ana-Maria CHIOSA, Nikolay VELEV, Adina Camelia POPOVICI, Ana Mariana CHIRILĂ, Ioan TĂUȘAN - Ants, habitat and climate: distribution and ecology of the rare forest-steppe species *Iris brandzae* in Romania 182

Simona Dumitrița CHIRILĂ, Silviu Giorgian ȚICU, Dumitru MURARIU, Ioan TĂUȘAN - Ant assemblages and vegetation structure across an age gradient of mine spoil heaps in Roșia Montană, Romania 184

Bianca Elena STROESCU, Robert Andrei VLAD, Ioan TĂUȘAN - First observation of nest protection and ant consumption by domestic horses at a *Formica pratensis* colony 185

Ioan TĂUȘAN, Robert POPA - Climate change reorganizes the pollinator community spatially co-occurring with invasive *Solidago canadensis* in Romania 186

Simona Dumitrița CHIRILĂ, Ana Mariana CHIRILĂ, Nikolay VELEV, Adina Camelia POPOVICI, Teodora COZMA, Silviu Giorgian ȚICU, Ana-Maria CHIOSA, Alexandru-Mihai PINTILIOAIE - Variation in *Tropinota* (*Epicometis*) *hirta* abundance and floral damage among five rare plant species 188

Ebru Ceren FİDAN, Hülya ALTUNTAŞ, Belma NURAL YAMAN, Davut Ümit ŞİRİN, Ahmet ÇABUK, Pınar AYTAR ÇELİK - The effect of feeding types on the gut microbiota of *Tenebrio molitor* (Coleoptera: Tenebrionidae) 190

Elena Iulia IORGU, Andreia TOPĂLESCU, Alina Gabriela ȘTEFAN, Irina BOZ, Roxana COJOCARIU, Narcis IFTIMESCU, Andrei LOBIUC, Ionuț Ștefan IORGU - Same plant, different potency: insecticidal activity of four commercial basil essential oils against *Drosophila melanogaster* and *Tenebrio molitor* 191

Andreea-Cătălina DRĂGHICI, Melanya STAN, Costică ADAM, Ioana Cristina CONSTANTINESCU, Minodora MANU - Habitat characterization and confirmation of the persistence of *Pseudogaurotina excellens* (Brancsik, 1874) in the Retezat Mountains, Romania (ROSCI0217) 192

Parinita SINGH, Bhupendra KUMAR - Metabolomics profiling of the parthenium beetle, *Zygogramma bicolorata* to thermal stress 193

Eugenia PETRESCU, Alexandru-Cătălin BIRĂU - Three years of monitoring the Southern Festoon (*Zerynthia polyxena* Denis & Schiffermüller, 1775) in Văcărești Natural Park, Romania's first natural park in an urban area 194

Marius SKOLKA, Daniyar MEMEDEMIN, Dan COGĂLNICEANU - Entomofauna of the Retezat Face – case study under climate change conditions 195

Tamal DAS, Bhupendra KUMAR - Thermal stress-induced changes in growth, silk productivity, and reproductive performance of the mulberry silkmoth, *Bombyx mori* L. 196

Prema HALDHAR, Bhupendra KUMAR - Climate change and gut microbiota: responses of silkmoth *Bombyx mori* to thermal stress 197

Nikolay DIMITROV, Nikola TODOROV - Effects of short-term air–water temperature dynamics on conditions for mosquito larval development under warming scenarios 198

Mihael Cristin ICHIM, Mădălina Oana POPA, Ancuța Cristina RACLARIU-MANOLICĂ, Alecu DIACONU - Arthropod biomass and taxonomic composition in the predeltaic Somova-Parcheș lake complex of the Danube Delta 199

Alexandru BĂNESCU, Simona Dumitrița CHIRILĂ, Aurel NĂSTASE - Fish assemblages and macrophytes as indicators of ecological responses to canal desilting in the Danube Delta Biosphere Reserve, Romania 200

Valeriu BRAȘOVEANU, Ala DONICA, Alexandru-Mihai PINTILIOAIE, Emanuel-Ștefan BALTAG - Heavy metal contamination in the Republic of Moldova: A systematic literature review with emphasis on wildlife bioindicators 201

Ionuț-Alexandru CHELARU, Ramona-Alexandra CIAUȘU, Camelia URECHE, Dorel URECHE, Alin Stelian CIOBÎCĂ, Mircea Nicușor NICOARĂ - Combined pharmaceutical stressors in aquatic environments: behavioral disruption induced by ibuprofen and valproic acid in zebrafish larvae 203

Ramona-Alexandra CIAUȘU, Ionuț-Alexandru CHELARU, Dorel URECHE, Camelia URECHE, Alin Stelian CIOBÎCĂ, Mircea Nicușor NICOARĂ - Behavioral alterations induced by ceftazidime and polystyrene microplastics in zebrafish (*Danio rerio*) larvae, assessed by the light-dark test 204

Ioana-Georgia ANDREI, Iulian GHERGHEL, Ștefan Remus ZAMFIRESCU - Comparative courtship behavior in newts: a quantitative focus on tail fanning dynamics 205

Ana-Maria DRĂGAN, Rafael MÁRQUEZ, Valentina ZAFFARONI-CAORSI, Diego LLUSIA, Peter NARINS, Jakob CHRISTENSEN-DALSGAARD, Dan COGĂLNICEANU, Geanina FĂNARU, Florina STĂNESCU - Effects of substrate-borne vibrations on advertisement calls in the European fire-bellied toad (*Bombina bombina*) 206

Ionuț-Cătălin PETREANU, Gabriel MANOLE, Benoni CHINDRIȘ, Nicoleta-Petronela CIOBANU, Paul-Cristian DINCĂ, Oana ZAMFIRESCU, Ștefan Remus ZAMFIRESCU - Artificial refugia: an efficient method for monitoring amphibians and reptiles in Romania? -preliminary results- 208

Ionuț-Cătălin PETREANU, Gabriel MANOLE, Lekshmi B. SREELATHA, Miguel Angel CARRETERO - One habitat, two species, multiple receivers: perception of dorsal colouration in sympatric wall lizards 209

Gabriel MANOLE, Ștefan Remus ZAMFIRESCU, Alexandru STRUGARIU - Preliminary data on behavioral responses and microhabitat selection of lizards (Lacertidae) under anthropization pressure 210

Georgiana ȚARANU, Ștefan Remus ZAMFIRESCU, Alexandru STRUGARIU - The influence of captive habitat diversification on the behavior of juvenile *Pantherophis guttatus* 211

Viorica PALADI, Ala DONICA, Petronel SPASENI, Emanuel-Ștefan BALTAG - Shifting Waters: Long-term responses of waterbird communities to climate change and habitat modification in a Moldavian Emerald Network wetland 212

Andrei COTOARĂ, Relu GIUCĂ, Emil TODOROV, Alexandru-Cătălin BIRĂU, Gergely OSVÁTH - Spatio-temporal dynamics of the breeding population of the Whiskered Tern (*Chlidonias hybrida* Pallas, 1811) in Văcărești Natural Park (2022–2025) 213

Mihail GHILAN, Yuriy KODRUL, Alexandru ȚURCAN, Vitalie AJDER - On the edge of the breeding range: conservation efforts for the expanding Ural owl (*Strix uralensis* Pallas, 1771) in the Republic of Moldova 214

Anastasiia PORTARESCU, Viorica PALADI, Ala DONICA, Emanuel-Ștefan BALTAG, Petronel SPASENI - Woodpeckers as bioindicators of forest quality in the Republic of Moldova: a literature-based assessment of historical and contemporary distribution 215

Alexandra ALECSA, Ioana Daniela SLIMNICEAN, Ana Maria BENEDEK - Seasonal shifts in small mammal communities across a low-intensity agricultural landscape 216

Mirela GEORGIEVA, Venislava SPASOVA, Daniela SIMEONOVSKA-NIKOLOVA, Krastio DIMITROV, Simeon HADJIKOSSEV, Bozhidar SAMARDZHIEV - Application of survey techniques for the northern white-breasted hedgehog (*Erinaceus roumanicus*) in Bulgaria 217

Edoardo VERNIER - *Miniopterus schreibersii* (Kuhl, 1817) a cave dwelling bat exploring new shelters and new habitats in different directions (in N.E. Italy) 218

Alex BELLAN, Teodora SIN, Alexis PINZIO, Marco FILZ, Giacomo SERAFINI, Leonas DINU, Andrea GAZZOLA - Seasonal activity patterns of the Eurasian lynx (*Lynx lynx*) and temporal overlap with wild ungulates, large carnivores, and humans in the eastern Carpathian Mountains, Romania 219

Alex BELLAN - Hidden in plain sight: revisiting the function of white occipital ear spots in the genus *Lynx* 220

Desamarie Antonette P. FERNANDEZ, Géraldine VERON, Pierre-Michel FORGET - Ecological niche partitioning of carnivorans in Palawan Island, Philippines 221

Răzvan ZAHARIA, Ramona-Andreea BIVOLEANU, Ioana COBZARU, Cătălin Răzvan STANCIU, Viorel Dumitru GAVRIL, Răzvan Valentin POPESCU-MIRCENI, Dumitru MURARIU, Gabriel Bogdan CHIȘAMERA - Road mortality of wildlife in southeastern Romania: species composition, traffic influence, and temporal distribution 222

Bogdan DOLGHIER, Laura-Elena TOPALĂ, Emanuel-Ștefan BALTAG - Microplastics in mammals: a synthesis of the scientific literature 223

Andrei DINU, Mahdieh TOURANI, Viorel D. POPESCU, Teodora SIN, Andrea GAZZOLA, Mihai I. POP, Mark HEBBLEWHITE - Spatiotemporal responses of a mammal community to human disturbance in the Romanian Carpathians 224

Zoological Collections, Museums and Research Infrastructures

Valentin Ioan Remus NICULESCU, Ștefan STEBLEA - Helicidae paleontologic site: descriptive statistics 227

Ana-Maria PETRESCU - Half a century of Romanian research in African waters through the lens of the crustacean collection of the "Grigore Antipa" National Museum of Natural History 228

Mihai STĂNESCU, László RÁKOSY - The ringlets and arguses of Marin Goia - The species of the genus *Erebia* Dalman, 1816 in the eng. Marin Goia collection 230

Ianula DUȚĂ, Emanuel-Ștefan BALTAG, Paul SZÉKELY, Leonardo ORDÓÑEZ DELGADO, Florina STĂNESCU - Anthropogenic materials in avian nest architecture: insights from an ecuadorian museum collection 231

Liviu-Mircea CIOBANU - The importance of anatomical study in bird taxidermy 233

Raluca-Silvia STANCU - Restoration interventions on the Mallard (*Anas platyrhynchos*) ♂ specimen 234

Paul PLOȘTINARU - Methodology for preparing and reconstructing the skull of the Long-eared Owl (*Asio otus*) in taxidermy 235

Gergely OSVÁTH, Avar-Lehel DÉNES, Zsolt KOVÁCS, Alexandru-Cătălin BIRĂU, Edgár PAPP, Gabriella-Veronka JÁKÓ, Róbert ZEITZ - The lost vultures of Romania: two centuries of decline reconstructed from historical records and citizen-science data 236

Bogdan Andrei MIU, Ioana-Francesca BADEA, Maria-Alexandra CALIMENT, Andrea-Cristina STAICU - An overview of the rodents (Mammalia: Rodentia) preserved in the "Alexandrina Popescu" Mammalian Collection from the Faculty of Biology, University of Bucharest (Romania) ... 237

Zoology, Society and Citizen Science

George-Ioan MERLUȘCĂ, Andrei MĂDULARU, Teodora COZMA, Ștefan AILINCUȚEI, Ștefan HUȚANU, Bogdan DOLGHIER, Dragoș DASCĂLU, Andrada JUGARIU-VICOLEANU, Maria-Isabella GRĂDINARU, Anubis-Claudia STONESCU, Ovidiu-Andrei GEORGESCU, Antonio-Marian DONCEA - From Curiosity to Research: The Eresus Project – A Student-Led Initiative for the Study of Velvet Spiders (Eresidae) in Southeastern Romania 241

Alina Maria STOLNICU - Lepidoptera fauna of the Capidava area (Constanța County, Romania) 242

Maria-Alice ION, Ionuț-Cătălin PETREANU - Hybridization in wild-ranging Romanian waterfowl: an analysis based on citizen science and field observations 243

Desislava GENEVA, Svetla DALAKCHIEVA, Nikola TODOROV - Urban ground-nesting in the Yellow-legged Gull (*Larus michahellis*): an emerging breeding strategy on the Bulgarian Black Sea coast? 244

Anna-Maria-Iulia DUMITRU, Andrea-Cristina STAICU - The importance of engaging high school students in urban avifauna monitoring activities for developing ecological behaviour 245

Analisa Liana ACHIM, Andra Claudia NEAGU, Laurențiu ROZYLOWICZ - Stakeholder perceptions of brown bear management in Mureș County, Romania 246

Andra Claudia NEAGU, Steluța MANOLACHE, Laurențiu ROZYLOWICZ - Patterns of wildlife poaching in Romania: Insights from mass media reports 247

Alexandru Filip VLADIMIRESCU, Florian-Liviu PRIOTEASA, Aurelian PINTILIESCU Ștefan COȘA, Valeria CIULACU - The area-wide integrated pest management (AW-IPM) for Bucharest and surroundings: A proposed approach for vector insects control 248

Diana-Măriuca SCÎNTEIANU, Camelia NIȚĂ, Alina MOLDOVEANU, Cornelia ȚOLEA, Maria BLIDERIȘANU, Luis Ovidiu POPA - Assessing content-specific knowledge before and after children's workshops in a natural history museum: A pilot study 250

Author index 251

ZOOLOGYCON 2026 PROGRAMME

WEDNESDAY, THE 4th OF NOVEMBER 2026

10:00–10:30
<u>Opening Ceremony</u>

Invited talk

10:30–11:15
Dumitru MURARIU - The Romanian Academy – Romania's highest institution for the recognition of intellectual excellence, conducting internationally recognized scientific research and creative activities

Regular talk

11:15–11:30
Eugen NITZU - From surface to depth: alpha- to gamma-level diversity of edaphic and subterranean Coleoptera in the Romanian karst system

11:30–12:00
Coffee break

Invited talk

12:00–12:45
Victor SURUGIU - Prof. Dr. Ioan Borcea – "The Titan" of Romanian zoology

Regular talks

12:45–13:00
Adrian TEACĂ, Tatiana BEGUN, Selma MENABIT, Ana-Bianca PAVEL, Adrian POPA, Cătălina GAVRILĂ - From habitat mapping to ecosystem functioning: benthic habitat heterogeneity drives functional diversity patterns in a Romanian Black Sea Marine Protected Area

13:00–13:15
Andrada JUGARIU-VICOLEANU, Lucian FUSU - DNA barcoding of the family Encyrtidae (Hymenoptera, Chalcidoidea) in Romania

13:15–13:30
Iulian FOMICI, Ovidiu DRĂGAN, Aurel NĂSTASE - The rapid expansion of the Oriental river prawn – *Macrobrachium nipponense* (Decapoda) in the Danube Delta Biosphere Reserve from 2021 to 2026

13:30–14:30
Lunch

Invited talk

14:30–15:15
Lyubomir PENEV - FAIR at the start, FAIR at the end: Biodiversity publishing in the AI era

Regular talks

15:15–15:30
Antonio-Marian DONCEA, Teodora COZMA, Alexandru-Mihai PINTILIOAIE, Mădălina-Ionela VICIRIUC, István URÁK, Gábor KOVÁCS - Tracing the threads: An integrative approach confirms *Eresus hermani* in Romania (Araneae: Eresidae)

15:30–15:45
Beatrice SPENCE, Arissa-Elena ROTUNJANU, Nga Ting Anna YIU, Tiffany KI, Anil MADHAVAPEDDY, Edgar TURNER - DoME - a low cost and high throughput solution for 3D digitisation of insect collections

15:45–16:00
Ana-Maria CHIOSA, Carmen NEUNER, Anna HAUPRICH, Ovidiu-Alin POPOVICI, Cristina LUPAȘCU-VASILIȚA, Lars KROGMANN - Accelerating biodiversity research in the digital era: a case study on Platygastroidea (Hymenoptera)

16:00–17:30
Poster session + coffee

Regular talks

17:30–17:45
Alexandru IFTIME - Preliminary data on the Bănărescu-Nalbant ichthyological collection ("Grigore Antipa" National Museum of Natural History)

17:45–18:00
Constanța-Mihaela ION, Lucian PÂRVULESCU - Building World of Crayfish®: from a continental pathogen question to a global portal

19:00
*Opening of "**Illustratorium.RO**", an exhibition by scientific illustrator **Denitsa Peneva** and launch of the "**Prehistoric Animals**" postage stamp issue*

THURSDAY, THE 5th OF NOVEMBER 2026

Invited talk

10:00–10:45
Rafael MÁRQUEZ - Sounds and vibrations in the biology of Anurans

Regular talks

10:45–11:00
Teodora L. TĂNASE, Florina STĂNESCU, Sabina Elena VLAD, Diana SZÉKELY, Dan COGĂLNICEANU - Age and growth research in neotropical amphibians and reptiles: a critical review of skeletochronology use

11:00–11:15
César A. DÍAZ-MARÍN, Aurelio RAMÍREZ-BAUTISTA - Ectoparasitism in a widespread spiny lizard of Mexico: effect of habitat and host phenotype

11:15–11:30
Kimberley HANNA, Yosef KIAT - Timing matters: sexual dichromatism and sex-specific moult investment across the annual cycle

11:30–12:00
Coffee break

Invited talk

12:00–12:45
Zoltán CSIKI-SAVA - Not just a strange menagerie – lessons from a century and a half of exploring Europe's dinosaur islands

Regular talks

12:45–13:00
Tiberiu Constantin SAHLEAN, Ryan Andrew MARTIN - Context-dependent trait evolution: is there evidence for an elevational pace of life syndrome in squamates?

13:00–13:15
Ana-Maria KRAPAL, Andrei ŞTEFAN, Elena Iulia IORGU, Maxim-Jean BÂLCU, Alexandra-Florina POPA, Rozalia Magda MOTOC, Oana Paula POPA - The enigmatic snail from the Apuseni Mountains (Romania) – Is *Drobacia maeotica* (Wenz, 1926) a valid species? Insights from molecular markers

13:15–13:30
Simeon BORISSOV, Tsvetan TSVETKOV, Boyan ZLATKOV, Vladislav VERGILOV, Dragan CHOBANOV - Comparative anatomy and functional morphology of the orthopteran ovipositor – a case study on the genus *Isophya* Brunner von Wattenwyl, 1878

13:30–14:30
Lunch

Regular talks

14:30–14:45
Milica ANĐELKOVIĆ, Vladimir ŽIKIĆ, Maja LAZAREVIĆ - Does sexual dimorphism affect species delimitation within the *Cotesia tibialis* species complex (Insecta: Hymenoptera: Braconidae: Microgastrinae)?

14:45–15:00
Lucian FUSU, Antonia-Elena BEREȘ, Florina-Georgiana CABA, Maria-Magdalena DASCĂLU, Lucian HĂNCEANU, Andrada JUGARIU-VICOLEANU, Marius MIHĂȘAN, Mircea-Dan MITROIU, Andreea OPĂRIUC, Ovidiu-Alin POPOVICI - Harnessing molecular tools for the assessment of cryptic species prevalence in parasitoid wasps

15:00–15:15
Mihail ȘCERBLIUC, Anatolie SAVIN, Victoria NISTREANU, Alina LARION - Current status of golden jackal (*Canis aureus*) in the Republic of Moldova

15:15–15:30
Marine DALLAKYAN, Vardan ASATRYAN, Liana POGHOSYAN, Jana THORMANN, Laura VON DER MARK, Jonas J. ASTRIN - The first DNA reference library of macroinvertebrates in Armenia

15:30–17:00
Poster session + coffee

Regular talks

17:00–17:15
Cristina PREDA, Carla F. GAVRILESCU, Daniyar MEMEDEMIN, Lucian M. PĂTRAȘCU, Marius SKOLKA, Laurențiu ROZYLOWICZ - Invasion pressure in Romanian protected areas

17:15–17:30
Rusudani TSIKLAURI, Nana BAKHTADZE, Levan MUMLADZE - Invasive buprestid species in Georgia (Caucasus)

FRIDAY, THE 6th OF NOVEMBER 2026

Invited talk

10:00–10:45
Anders BACHE - Curating Roald Amundsen

Regular talks

10:45–11:00
Galina BUȘMACHIU - An urban pond in Chișinău: potential protected site in the Emerald Network?

11:00–11:15
Boris R. KRASNOV - Latitudinal variation of the species richness, phylogenetic diversity, and functional diversity of fleas and their small mammalian hosts in four geographic quadrants

11:15–11:30
Kiril ARSOVSKI PRZO - The cryptic pollination role of social wasps in the Palaearctic: a systematic review of plant-wasp interactions

11:30–12:00
Coffee break

Invited talk

12:00–12:45
Sérgio P. ÁVILA - Forging a theory of Marine Island Biogeography: Merging geology, fossils, and life on oceanic islands

Regular talks

12:45–13:00
Octavian PACIOGLU, Corina IȚCUȘ, Iris M. TUȘA, Ionuț POPA, Ștefan Cătălin BABA - Microhabitats constraints on *Niphargus pannonicus* ecology in Gaura cu Muscă Cave (Romania)

13:00–13:15
Antonio V. LAZA, Kristian MIOK, David LIVADARIU, Lucian PÂRVULESCU - Population size challenge in endemic freshwater species: field and spatial modelling of the idle crayfish

13:15–13:30
Ebru Ceren FİDAN, Sarp KAYA, Huriye DOĞRU, Davut Ümit ŞİRİN - Investigating the effects of global warming on wetland-dependent populations with fragmented distribution in Anatolia using genome-wide SNP data from the *Simulium bezzii* (Diptera: Simuliidae) metapopulation

13:30–14:30
Lunch

Invited talk

14:30–15:15
Zoltán VARGA - Mountains of Central and Inner Asia – core areas of cutworm moths (Noctuidae, Noctuinae)

Regular talks

15:15–15:30
Nok Ting LAM, Vladislav IVANOV, Lola STEBLER, Claudia BRUSCHINI, Jan KOLLROSS, Pável MATOS-MARAVÍ, Irena KLEČKOVÁ, Sylvain CUVELIER, Marko MUTANEN, Leonardo DAPPORTO, Roger VILA, Kay LUCEK, Vlad DINCĂ - Cryptic diversity strikes again: the story of European endemic butterflies of the *Erebia melampus* complex

15:30–15:45
Marius SKOLKA, Cristina CRAIU - *Tomares nogelii dobrogensis* (Caradja, 1895), a taxon requiring strict protection

15:45–16:00
Charikleia-Foteini PANTAGAKI, Emmanouil STRATAKIS - KladiSOS: the challenging eradication of the invasive Italian wall lizard, *Podarcis siculus*, from Chania, Crete, Greece

16:00–16:30
Coffee break

Regular talks

16:30–16:45
Steluța MANOLACHE, Teodora SIN, Lavinia C. PÎNDARU, Viorel D. POPESCU, Mihai I. POP - Intraspecific spatio-temporal segregation in brown bears (*Ursus arctos*) in the South-Eastern Carpathians

16:45–17:00
Carolina MICHELOTTO, Alex BELLAN, Teodora SIN, Ilenia MAROCCO, Bogdan KRAFT, Andrei DINU, Yon HALOTEL, Naima DALPIAZ, Paola ANTONINI, Alexis PINZIO, Marco FILZ, Leonas DINU, Andrea GAZZOLA - A preliminary analysis of coat pattern variation in the Eurasian lynx (*Lynx lynx*) from the eastern Romanian Carpathians

17:00–17:15
Laurențiu ROZYLOWICZ, Steluța MANOLACHE, Andra Claudia NEAGU, Andreea NIȚĂ, Iulian M. NICULAE, Cristian IOJA, Mihai R. NIȚĂ, Viorel D. POPESCU - Evidence, gaps, and priorities in European research on human-large carnivore coexistence

17:15–17:30
Khatia BIRKAIA, Nana BAKHTADZE - The earthworms (Oligochaeta: Lumbricidae) of the Ajameti Managed Reserve (Georgia, Caucasus)

17:30–17:45
Ioan TĂUȘAN, Robert Andrei VLAD, Bianca Elena STROESCU, Diana Monica ENEA, Silviu Giorgian ȚICU, Ágota SZABÓ, Bálint MARKÓ - Mount building *Formica* (Hymenoptera: Formicidae) in Romania – distribution, conservation and citizen science

17:45–18:00
Andrei ȘTEFAN, Maxim-Jean BÂLCU, Rozalia Magda MOTOC, Dumitru MURARIU, Oana Paula POPA - The tale of a successful invader: the tanaid *Sinelobus vanhaareni* reaches the Black Sea

19:00
Gala Dinner (poster awards during dinner)

SATURDAY, THE 7th OF NOVEMBER 2026

Visit at the Cotroceni National Museum

Poster Presentations

Biodiversity and Biogeography of Native and Non-native Faunas

z081
Elena IURCU-STRĂISTARU, Alexei BIVOL, Ştefan RUSU, Viorelia RUSU - Nematological research on plant-parasitic and virus-vector species associated with apple crops under intensive production systems

z013
Andrei GIURGINCA, Ștefan Cătălin BABA, Augustin NAE - New species of Oniscidea (Isopoda, Crustacea) from Dobrogea (Romania)

z161
Teona-Alexa CÂRCIOIU - Barcodes and biases in the Black Sea: a regional reference database for Copepoda

z020
Maria NĂSTASE, Ștefan Cătălin BABA - Reassessment of *Strigamia* Gray, 1843 (Chilopoda: Geophilomorpha) in Romania: species diversity, morphological variation and distribution

z005
Florina-Georgiana CABA, Tony Alexandra TICU, Alexandru-Mihai PINTILIOAIE, Emanuel-Ștefan BALTAG, Lucian FUSU, Maria-Magdalena DASCĂLU - Know your enemy: DNA barcoding ticks associated with birds and other hosts

z070
Livia CALESTRU - Myrmecophilous Chrysomelidae of the Republic of Moldova

z091
Denis-Gabriel SPASENI, Alexandru-Mihai PINTILIOAIE, Petronel SPASENI, Emanuel-Ștefan BALTAG, Ana JURJESCU, Paul-Cristian DINCĂ - Sedentary but spreading: radio telemetry shows limited movement in the invasive Asian praying mantis

z093
Silviu Giorgian ȚICU, Simona Dumitrița CHIRILĂ, Robert Andrei VLAD, Bianca Elena STROESCU, Diana Monica ENEA, Andrei Vasile POPESCU, Dumitru MURARIU, Ioan TĂUȘAN - Habitat-specific differences in ant community structure in a post-mining landscape: open grassland versus woodland at Roșia Montană, Romania

z079
Ovidiu-Andrei GEORGESCU, Lucian FUSU - Updating the distribution and occurrence of harvester ants (genus *Messor*) in Romania and the Republic of Moldova

z001
Antonia-Elena BEREȘ, Ovidiu-Alin POPOVICI - Contributions to the study of microhymenopterans (Insecta: Hymenoptera) from Ceahlău National Park in 2024

z080
Lucian HĂNCEANU, Maria-Magdalena DASCĂLU, Lucian FUSU - Study on the morphometrics of mandibles in *Lucanus cervus* (Linnaeus 1758) across a north-south transect in Eastern Romania

z083
Iulia V. MIU, Marian D. MIREA, Lavinia C. PÎNDARU, Steluța MANOLACHE, Laurențiu ROZYLOWICZ - Shared allometric trajectories but contrasting sexual size dimorphism in *Osmoderma barnabita* and *Rosalia alpina* from the Eastern Carpathians, Romania

z066
Ștefan AILINCUȚEI, Antonio-Marian DONCEA, Alexandru-Mihai PINTILIOAIE, Mădălina-Ionela VICIRIUC - A hidden pebble in the sand: first record of *Philopedon plagiatum* (Schaller, 1783) (Coleoptera: Curculionidae) from Romania

z018
Marian D. MIREA, Iulia V. MIU, Lavinia C. PÎNDARU, Steluța MANOLACHE, Viorel D. POPESCU, Silviu CHIRIAC, Laurențiu ROZYLOWICZ - Community composition, occupancy and abundance of saproxylic beetles along an altitudinal transect in Vrancea County, Romania

z086
Andreea OPĂRIUC, Ovidiu-Alin POPOVICI - The diversity of longhorn beetles (Coleoptera: Cerambycidae) from Natura 2000 Site Pădurea TătărușI

z067
Svetlana BACAL, Galina BUȘMACHIU, Alexandra-Florina POPA, Ana-Maria KRAPAL - First record of the weevil species *Acallocrates colonnellii* Bahr, 2003 (Coleoptera: Curculionidae) from the Republic of Moldova

z090
Miruna-Ioana ȘPAC, Ovidiu-Alin POPOVICI - Contributions to the knowledge of coleopterans (Insecta, Coleoptera) from Dornești commune (Suceava County), under the conditions of the year 2025

z015
Sorina ISTRATI, Anna MOLDOVAN - Assessing the state of steppe ecosystems in central part of the Republic of Moldova using beetles as bioindicators

z154
Marius SKOLKA - *Leptotes pirithous* (Linnaeus, 1767), a constant presence in the coastal area of Dobrogea (Romania)

z095
Cristina ȚUGULEA - *Kretania sephirus* (Frivaldszky, 1835) (Lepidoptera: Lycaenidae) - new species and genus in the fauna of the Republic of Moldova

z082
Andrei MĂDULARU, Ovidiu-Alin POPOVICI - Contributions to the knowledge of moths (Lepidoptera, Insecta) from the Măcin Mountains National Park in the year 2025

z094
Sergiu TÖRÖK, Ioan TĂUȘAN, Cosmina MOLDOVAN - Contributions to the study of the Macrolepidoptera (Lepidoptera) from the northern part of Sibiu County

z019
Nadejda MOCREAC, Chirag Prabhakar PADUBIDRI, Andreas KAMILARIS, Elizabeth BUCKHAM, Helen TOKAIQALI, Mihail GURIȚĂ, Angeliki F. MARTINOU - Preliminary assessment of mosquito species diversity using community surveillance traps in Akrotiri, Cyprus

z085
Oxana MUNJIU, Igor ȘUBERNEȚKII - Benthic macroinvertebrates of the Cahul Lake on the territory of the Republic of Moldova

z096
Maria NAUMOVA, Boyan VAGALINSKI, Vassil VASSILEV, Vera ANTONOVA, Ivaylo GEORGIEV, Teodor TRIFONOV, Simeon INDZHOV, Teodora MARIUS TEOFILOVA - Moving north – monitoring the effects of global climate change through model groups of arthropods in natural corridors for migration of thermophilous fauna in Bulgaria

z074
Maria-Magdalena DASCĂLU, Emanuel-Ștefan BALTAG, Florina-Georgiana CABA, Lucian FUSU, Lucian HĂNCEANU, Marius MIHĂȘAN, Mircea-Dan MITROIU, Ionuț PAVEL, Ovidiu-Alin POPOVICI, Cosmin Teodor MIHAI, Adriana MELEN, Irina NUCĂ - Expanding species coverage and genetic diversity of Romanian invertebrate fauna through DNA Barcoding

z087
Teodora POPOVA, Simona GEORGIEVA, Simeon BORISSOV - Endosymbiotic relationships across scales and taxa - extreme and temperate assemblages

z068
Naima BENKENANA, Imen GUERFI, Abir ABED, Chahinez DEROUICHE - Insect diversity and environmental gradients in urban, agricultural and natural habitats of Constantine (Algeria)

z023
Irinel Eugen POPESCU - The fourth site in Romania in terms of invertebrate species of community importance: ROSCI0135 Bârnova-Repedea Forest

z072
Louana-Paraschiva COJANU, Mircea-Dan MITROIU - Entomofauna associated with *Rattus norvegicus* carcasses: a comparative study from north-eastern Romania

z151
Mohammad Sadegh ALAVI-YEGANEH, Lasse MAROHN, Matthias FRISCHE, Reinhold HANEL - Out of place: tracing the unnatural occurrence of *Anguilla anguilla* in the Southern Caspian

z168
Teodora TRICHKOVA, Polina NIKOVA, Milcho TODOROV, Luchezar PEHLIVANOV, Stefan KAZAKOV, Tihomir STEFANOV, Lyubomir KENDEROV, Michal HNILIČKA, Pavel JURAJDA - Range expansion of *Ameiurus melas* (Rafinesque, 1820) (Ictaluridae) in Bulgarian inland water bodies

z073
Ionuț Dănuț COSTACHE, Mircea Nicușor NICOARĂ, Dorel URECHE - Fish species diversity in the Râmnicu Sărat River Basin (Romania)

z078
Mădălina-Iuliana FRANC, Iulian GHERGHEL, Ștefan Remus ZAMFIRESCU - Occurrence and ecological characteristics of fire-bellied toads (*Bombina bombina* and *Bombina variegata*) in the Bârnova Forest, Iași County

z025
Eusebiu ROȘCA, Ionuț-Cătălin PETREANU, Dragoș-Lucian GORGAN - Unraveling the origin of Romania's only known gecko population through mitochondrial and nuclear genetic markers

z006
César A. DÍAZ-MARÍN, Aurelio RAMÍREZ-BAUTISTA - Disparity in taxonomic and functional diversities of tropical herpetofauna from Central Mexico

z166
Luca-Mátyás SZABÓ, Ana-Maria BUZEA, István KOVÁCS, Mátyás CSONT-KELEMEN, Dávid MÉSZÁROS, József SZABÓ, Ciprian FÂNTÂNĂ, Zoltán BENKŐ, Zsolt KOVÁCS, Sándor D. ATTILA, Gergely OSVÁTH - The Lesser Kestrel *Falco naumanni* in Romania: historical status and the first breeding record in nearly 100 years

z076
Florinel-Dănuț DRĂGAN, Mihail GHILAN - Breeding evidence and nest-site preferences of rose-ringed parakeet *Alexandrinus krameri* in Romania

z077
Matei FLOREA, Liviu OLARIU, Carmen GACHE - Diversity and seasonal dynamics of avifauna in the confluence area of Siret and Moldova rivers (Romania)

z147
Natalia DIBOLSCAIA, Vladislav CALDARI, Victoria NISTREANU, Alina LARION, Victor SÎTNIC - New bat underground sites in the central part of the Republic of Moldova

z026
Arezoo SANEI, Fidelma BUTLER, Mohamad Reza BESMELI, Morteza GHEYSOURI, Aileen TENNANT, Shirin HERMIDAS - Structural connectivity of a recently identified landscape corridor for the Persian leopard with implications for the Asiatic cheetah conservation in Eastern Iran

z172
Elena Iulia IORGU, Răzvan ZAHARIA, Eliana SEVIANU, Ioan Alexandru RĂDAC, Oana Paula POPA, Dumitru MURARIU, Gabriel Bogdan CHIȘAMERA, Ioana COBZARU, Ramona-Andreea BIVOLEANU - Cytochrome *b* reveals hidden diversity in *Glis glis* populations from Romania

z014
Zsolt HEGYELI, Ovidiu-Sebastian ȘTEFÎRCĂ, Zsuzsanna ACZÉL-FRIDRICH - Improving knowledge of small mammal distribution in Moldavia (Eastern Romania)

z017
David LIVADARIU, Lucian PÂRVULESCU - Bridging the gap between occurrence data and conservation action: automated workflows, temporal awareness, and AI-ready evidence

z088
Cristina PREDA, Laurențiu ROZYLOWICZ, Costică ADAM, Paulina ANASTASIU, Gabriel Bogdan CHIȘAMERA, Dan COGĂLNICEANU, Ioana Cristina CONSTANTINESCU, Carla F. GAVRILESCU, Quentin GROOM, Nicolae MANTA, Daniyar MEMEDEMIN, Lucian M. PĂTRĂȘCU, Oana Paula POPA, Lien REYSERHOVE, Culiță SÎRBU, Ioana M. SÎRBU, Florina STĂNESCU, Marian TUDOR, Mihaela M. URZICEANU, Marius SKOLKA - Checklist of alien taxa in Romania

z084
Valentina IORDOSOPOL, Alexei BIVOL, Mihail GURIȚĂ, Nadejda MOCREAC - Abandoned vineyards as potential phytosanitary reservoirs: a comparative field survey in the Republic of Moldova

z089
Ștefan RĂILEANU, Simona Dumitrița CHIRILĂ, Livia Oana DAVID - Spatiotemporal variation in gastrointestinal parasite positivity among grazing livestock in the Danube Delta Biosphere Reserve, Romania

z092
Iasemin SULIMAN, Iuliana-Mihaela TUDOR, Orhan IBRAM - Seasonal biodiversity patterns of zooplankton communities in Danube Delta lakes (Romania)

Evolution, Systematics and Integrative Taxonomy

z126
Nana BAKHTADZE, Levan MUMLADZE - The chromosome numbers and evolution of the family Hygromiidae Tryon, 1866 (Gastropoda, Stylommatophora)

z127
Irina Neta GOSTIN, Irinel Eugen POPESCU - Histochemical analysis: an important tool for understanding the structure of insect-induced galls

z129
Sirikamon PHLAINGAM, Tosaphol Saetung KEETAPITHCHAYAKUL - Towards an integrative taxonomic understanding of *Baetiella* (Ephemeroptera: Baetidae) in Indochina

z058
Tosaphol Saetung KEETAPITHCHAYAKUL, Sirikamon PHLAINGAM - Integrative taxonomy of damselflies in the subfamily Agriocneminae (Zygoptera: Coenagrionidae) in mainland Southeast Asia

z150
Gavril Marius BERCHI, Ioan Alexandru RĂDAC, Jakob DAMGAARD, Aura Ștefania JILCOVICI, Laura Elena JIVULESCU, Alexandra Ioana SABĂU, Petr KMENT, Denis COPILAȘ-CIOCIANU - Linking wing polymorphism and genetic diversity in water crickets (Insecta: Heteroptera: Gerromorpha: Veliidae)

z131
Tony Alexandra TICU, Alexandru-Mihai PINTILIOAIE, Laura-Elena TOPALĂ, Emanuel-Ștefan BALTAG, Costică ADAM, Lucian FUSU - New host-parasite associations and diversity of avian chewing lice (Phthiraptera: Amblycera, Ischnocera) from south-eastern Romania

z130
Mădălina-Elena ROȘU, Mircea-Dan MITROIU - Tiny mutants: Morphological abnormalities in *Systasis* Walker (Hymenoptera: Systasidae: Systasinae)

z128
Maja LAZAREVIĆ, Milica ANĐELKOVIĆ, Darija MILENKOVIĆ, Vladimir ŽIKIĆ - Taxonomic utility of forewing shape among closely related genera of the *Cotesia* group (Hymenoptera: Braconidae: Microgastrinae)

z170
Ruxandra NIȚESCU, Raluca Ioana BĂNCILĂ - Interspecific variation in skull and mandible shape and size within Rhinolophidae: a 3D geometric morphometric approach

Paleoecology, Paleobiology and Historical Biogeography

z134
Enoh CONSTANTINESCU, Ionuț-Cornel MIREA, Marius ROBU, Maria-Laura TÎRLĂ, Luchiana-Maria FAUR, Daniel VEREȘ, Marius KENESZ, Răzvan ARGHIR, Marian COSAC, Alexandru PETCULESCU, Silviu CONSTANTIN - Preliminary data on a Late Pleistocene faunal assemblage from Bisericuța Cave (Trascău Mountains, NW Romania)

z133
Marius ROBU, Ionuț-Cornel MIREA, Daniel VEREȘ, Sébastien OLIVE, Marius VLAICU, Phillipe TELOUK, Jeremy E. MARTIN - Palaeoecological evidence of anthropogenic heavy metal contamination in medieval European wildlife

z132
George-Ioan MERLUȘCĂ, Paul-Iulian DONCIU, Aurel-Daniel STĂNICĂ, Ozana-Maria CIORPAC-PETRARU, Luminița BEJENARU - Dental and skeletal indicators of health and diet-related physiological stress in a human population from southeastern Romania (15th–19th centuries): a preliminary study

z175
Maria Cristina CIMPOEȘU, Ionuț GRĂDIANU, Nicușor NECULA, Ciprian CHELARIU, Dorin Sorin BACIU, Adrian GROZAVU - Changing world, vulnerable heritage: an interdisciplinary assessment of the value and vulnerability of Neamț county's geosites

Ecology, Behaviour and Conservation under Global Change

z030
Andrei Robert ÁCS, Constanța-Mihaela ION, Lucian PÂRVULESCU - From evidence to action: integrated conservation assessment and management of *Austropotamobius bihariensis*

z153
Victor SURUGIU - The curious recovery of *Clibanarius erythropus* (Latreille, 1818) (Decapoda, Anomura, Diogenidae) populations at the Romanian coast of the Black Sea

z164
Ioana Cristina CONSTANTINESCU, Minodora MANU, Raluca Ioana BĂNCILĂ, Andreea-Cătălina DRĂGHICI, Rozalia Magda MOTOC, Costică ADAM, Laura Mihaela ȘTEFAN - *Varroa destructor* infestation rates in S-E Romanian apiaries

z104
Simona Dumitrița CHIRILĂ, Ovidiu-Andrei GEORGESCU, Nicu Alexandru GÎLEA, Ana-Maria CHIOSA, Nikolay VELEV, Adina Camelia POPOVICI, Ana Mariana CHIRILĂ, Ioan TĂUȘAN - Ants, habitat and climate: distribution and ecology of the rare forest-steppe species *Iris brandzae* in Romania

z108
Simona Dumitrița CHIRILĂ, Silviu Giorgian ȚICU, Dumitru MURARIU, Ioan TĂUȘAN - Ant assemblages and vegetation structure across an age gradient of mine spoil heaps in Roșia Montană, Romania

z124
Bianca Elena STROESCU, Robert Andrei VLAD, Ioan TĂUȘAN - First observation of nest protection and ant consumption by domestic horses at a *Formica pratensis* colony

z125
Ioan TĂUȘAN, Robert POPA - Climate change reorganizes the pollinator community spatially co-occurring with invasive *Solidago canadensis* in Romania

z106
Simona Dumitrița CHIRILĂ, Ana Mariana CHIRILĂ, Nikolay VELEV, Adina Camelia POPOVICI, Teodora COZMA, Silviu Giorgian ȚICU, Ana-Maria CHIOSA, Alexandru-Mihai PINTILIOAIE - Variation in *Tropinota* **(***Epicometis***)** *hirta* abundance and floral damage among five rare plant species

z044
Ebru Ceren FİDAN, Hülya ALTUNTAŞ, Belma NURAL YAMAN, Davut Ümit ŞİRİN, Ahmet ÇABUK, Pınar AYTAR ÇELİK - The effect of feeding types on the gut microbiota of *Tenebrio molitor* (Coleoptera: Tenebrionidae)

z173
Elena Iulia IORGU, Andreia TOPĂLESCU, Alina Gabriela ȘTEFAN, Irina BOZ, Roxana COJOCARIU, Narcis IFTIMESCU, Andrei LOBIUC, Ionuț Ștefan IORGU - Same plant, different potency: insecticidal activity of four commercial basil essential oils against *Drosophila melanogaster* and *Tenebrio molitor*

z167
Andreea-Cătălina DRĂGHICI, Melanya STAN, Costică ADAM, Ioana Cristina CONSTANTINESCU, Minodora MANU - Habitat characterization and confirmation of the persistence of *Pseudogaurotina excellens* (Brancsik, 1874) in the Retezat Mountains, Romania (ROSCI0217)

z121
Parinita SINGH, Bhupendra KUMAR - Metabolomics profiling of the parthenium beetle, *Zygogramma bicolorata* to thermal stress

z119
Eugenia PETRESCU, Alexandru-Cătălin BIRĂU - Three years of monitoring the Southern Festoon (*Zerynthia polyxena* Denis & Schiffermüller, 1775) in Văcărești Natural Park, Romania's first natural park in an urban area

z122
Marius SKOLKA, Daniyar MEMEDEMIN, Dan COGĂLNICEANU - Entomofauna of the Retezat Face – case study under climate change conditions

z111
Tamal DAS, Bhupendra KUMAR - Thermal stress-induced changes in growth, silk productivity, and reproductive performance of the mulberry silkmoth, *Bombyx mori* L.

z116
Prema HALDHAR, Bhupendra KUMAR - Climate change and gut microbiota: responses of silkmoth *Bombyx mori* to thermal stress

z112
Nikolay DIMITROV, Nikola TODOROV - Effects of short-term air–water temperature dynamics on conditions for mosquito larval development under warming scenarios

z152
Mihael Cristin ICHIM, Mădălina Oana POPA, Ancuța Cristina RACLARIU-MANOLICĂ, Alecu DIACONU - Arthropod biomass and taxonomic composition in the predeltaic Somova-Parcheș lake complex of the Danube Delta

z099
Alexandru BĂNESCU, Simona Dumitrița CHIRILĂ, Aurel NĂSTASE - Fish assemblages and macrophytes as indicators of ecological responses to canal desilting in the Danube Delta Biosphere Reserve, Romania

z101
Valeriu BRAȘOVEANU, Ala DONICA, Alexandru-Mihai PINTILIOAIE, Emanuel-Ștefan BALTAG - Heavy metal contamination in the Republic of Moldova: A systematic literature review with emphasis on wildlife bioindicators

z102
Ionuț-Alexandru CHELARU, Ramona-Alexandra CIAUȘU, Camelia URECHE, Dorel URECHE, Alin Stelian CIOBÎCĂ, Mircea Nicușor NICOARĂ - Combined pharmaceutical stressors in aquatic environments: behavioral disruption induced by ibuprofen and valproic acid in zebrafish larvae

z109
Ramona-Alexandra CIAUȘU, Ionuț-Alexandru CHELARU, Dorel URECHE, Camelia URECHE, Alin Stelian CIOBÎCĂ, Mircea Nicușor NICOARĂ - Behavioral alterations induced by ceftazidime and polystyrene microplastics in zebrafish (*Danio rerio*) larvae, assessed by the light-dark test

z098
Ioana-Georgia ANDREI, Iulian GHERGHEL, Ștefan Remus ZAMFIRESCU - Comparative courtship behavior in newts: a quantitative focus on tail fanning dynamics

z114
Ana-Maria DRĂGAN, Rafael MÁRQUEZ, Valentina ZAFFARONI-CAORSI, Diego LLUSIA, Peter NARINS, Jakob CHRISTENSEN-DALSGAARD, Dan COGĂLNICEANU, Geanina FĂNARU, Florina STĂNESCU - Effects of substrate-borne vibrations on advertisement calls in the European fire-bellied toad (*Bombina bombina*)

z118
Ionuț-Cătălin PETREANU, Gabriel MANOLE, Benoni CHINDRIȘ, Nicoleta-Petronela CIOBANU, Paul-Cristian DINCĂ, Oana ZAMFIRESCU, Ștefan Remus ZAMFIRESCU - Artificial refugia: an efficient method for monitoring amphibians and reptiles in Romania? -preliminary results-

z046
Ionuț-Cătălin PETREANU, Gabriel MANOLE, Lekshmi B. SREELATHA, Miguel Angel CARRETERO - One habitat, two species, multiple receivers: perception of dorsal colouration in sympatric wall lizards

z117
Gabriel MANOLE, Ștefan Remus ZAMFIRESCU, Alexandru STRUGARIU - Preliminary data on behavioral responses and microhabitat selection of lizards (Lacertidae) under anthropization pressure

z123
Georgiana ȚARANU, Ștefan Remus ZAMFIRESCU, Alexandru STRUGARIU - The influence of captive habitat diversification on the behavior of juvenile *Pantherophis guttatus*

z045
Viorica PALADI, Ala DONICA, Petronel SPASENI, Emanuel-Ștefan BALTAG - Shifting Waters: Long-term responses of waterbird communities to climate change and habitat modification in a Moldavian Emerald Network wetland

z110
Andrei COTOARĂ, Relu GIUCĂ, Emil TODOROV, Alexandru-Cătălin BIRĂU, Gergely OSVÁTH - Spatio-temporal dynamics of the breeding population of the Whiskered Tern (*Chlidonias hybrida* Pallas, 1811) in Văcărești Natural Park (2022–2025)

z038
Mihail GHILAN, Yuriy KODRUL, Alexandru ȚURCAN, Vitalie AJDER - On the edge of the breeding range: conservation efforts for the expanding Ural owl (*Strix uralensis* Pallas, 1771) in the Republic of Moldova

z120
Anastasiia PORTARESCU, Viorica PALADI, Ala DONICA, Emanuel-Ștefan BALTAG, Petronel SPASENI - Woodpeckers as bioindicators of forest quality in the Republic of Moldova: a literature-based assessment of historical and contemporary distribution

z097
Alexandra ALECSA, Ioana Daniela SLIMNICEAN, Ana Maria BENEDEK - Seasonal shifts in small mammal communities across a low-intensity agricultural landscape

z115
Mirela GEORGIEVA, Venislava SPASOVA, Daniela SIMEONOVSKA-NIKOLOVA, Krastio DIMITROV, Simeon HADJIKOSSEV, Bozhidar SAMARDZHIEV - Application of survey techniques for the northern white-breasted hedgehog (*Erinaceus roumanicus*) in Bulgaria

z148
Edoardo VERNIER - *Miniopterus schreibersii* (Kuhl, 1817) a cave dwelling bat exploring new shelters and new habitats in different directions (in N.E. Italy)

z032
Alex BELLAN, Teodora SIN, Alexis PINZIO, Marco FILZ, Giacomo SERAFINI, Leonas DINU, Andrea GAZZOLA - Seasonal activity patterns of the Eurasian lynx (*Lynx lynx*) and temporal overlap with wild ungulates, large carnivores, and humans in the eastern Carpathian Mountains, Romania

z100
Alex BELLAN - Hidden in plain sight: revisiting the function of white occipital ear spots in the genus *Lynx*

z036
Desamarie Antonette P. FERNANDEZ, Géraldine VERON, Pierre-Michel FORGET - Ecological niche partitioning of carnivorans in Palawan Island, Philippines

z169
Răzvan ZAHARIA, Ramona-Andreea BIVOLEANU, Ioana COBZARU, Cătălin Răzvan STANCIU, Viorel Dumitru GAVRIL, Răzvan Valentin POPESCU-MIRCENI, Dumitru MURARIU, Gabriel Bogdan CHIȘAMERA - Road mortality of wildlife in southeastern Romania: species composition, traffic influence, and temporal distribution

z113
Bogdan DOLGHIER, Laura-Elena TOPALĂ, Emanuel-Ștefan BALTAG - Microplastics in mammals: a synthesis of the scientific literature

z035
Andrei DINU, Mahdieh TOURANI, Viorel D. POPESCU, Teodora SIN, Andrea GAZZOLA, Mihai I. POP, Mark HEBBLEWHITE - Spatiotemporal responses of a mammal community to human disturbance in the Romanian Carpathians

Zoological Collections, Museums and Research Infrastructures

z137
Valentin Ioan Remus NICULESCU, Ștefan STEBLEA - Helicidae paleontologic site: descriptive statistics

z163
Ana-Maria PETRESCU - Half a century of Romanian research in African waters through the lens of the crustacean collection of the "Grigore Antipa" National Museum of Natural History

z138
Mihai STĂNESCU, László RÁKOSY - The ringlets and arguses of Marin Goia - The species of the genus *Erebia* Dalman, 1816 in the eng. Marin Goia collection

z135
Ianula DUȚĂ, Emanuel-Ștefan BALTAG, Paul SZÉKELY, Leonardo ORDÓÑEZ DELGADO, Florina STĂNESCU - Anthropogenic materials in avian nest architecture: insights from an ecuadorian museum collection

z158
Liviu-Mircea CIOBANU - The importance of anatomical study in bird taxidermy

z159
Raluca-Silvia STANCU - Restoration interventions on the Mallard (*Anas platyrhynchos*) ♂ specimen

z160
Paul PLOȘTINARU - Methodology for preparing and reconstructing the skull of the Long-eared Owl (*Asio otus*) in taxidermy

z165
Gergely OSVÁTH, Avar-Lehel DÉNES, Zsolt KOVÁCS, Alexandru-Cătălin BIRĂU, Edgár PAPP, Gabriella-Veronka JÁKÓ, Róbert ZEITZ - The lost vultures of Romania: two centuries of decline reconstructed from historical records and citizen-science data

z136
Bogdan Andrei MIU, Ioana-Francesca BADEA, Maria-Alexandra CALIMENT, Andrea-Cristina STAICU - An overview of the rodents (Mammalia: Rodentia) preserved in the "Alexandrina Popescu" Mammalian Collection from the Faculty of Biology, University of Bucharest (Romania)

Zoology, Society and Citizen Science

z143
George-Ioan MERLUȘCĂ, Andrei MĂDULARU, Teodora COZMA, Ștefan AILINCUȚEI, Ștefan HUȚANU, Bogdan DOLGHIER, Dragoș DASCĂLU, Andrada JUGARIU-VICOLEANU, Maria-Isabella GRĂDINARU, Anubis-Claudia STONESCU, Ovidiu-Andrei GEORGESCU, Antonio-Marian DONCEA - From Curiosity to Research: The Eresus Project – A Student-Led Initiative for the Study of Velvet Spiders (Eresidae) in Southeastern Romania

z145
Alina Maria STOLNICU - Lepidoptera fauna of the Capidava area (Constanța County, Romania)

z142
Maria-Alice ION, Ionuț-Cătălin PETREANU - Hybridization in wild-ranging Romanian waterfowl: an analysis based on citizen science and field observations

z141
Desislava GENEVA, Svetla DALAKCHIEVA, Nikola TODOROV - Urban ground-nesting in the Yellow-legged Gull (*Larus michahellis*): an emerging breeding strategy on the Bulgarian Black Sea coast?

z140
Anna-Maria-Iulia DUMITRU, Andrea-Cristina STAICU - The importance of engaging high school students in urban avifauna monitoring activities for developing ecological behaviour

z139
Analisa Liana ACHIM, Andra Claudia NEAGU, Laurențiu ROZYLOWICZ - Stakeholder perceptions of brown bear management in Mureș County, Romania

z144
Andra Claudia NEAGU, Steluța MANOLACHE, Laurențiu ROZYLOWICZ - Patterns of wildlife poaching in Romania: Insights from mass media reports

z146
Alexandru Filip VLADIMIRESCU, Florian-Liviu PRIOTEASA, Aurelian PINTILIESCU Ștefan COȘA, Valeria CIULACU - The area-wide integrated pest management (AW-IPM) for Bucharest and surroundings: A proposed approach for vector insects control

z171
Diana-Măriuca SCÎNTEIANU, Camelia NIȚĂ, Alina MOLDOVEANU, Cornelia ȚOLEA, Maria BLIDERIȘANU, Luis Ovidiu POPA - Assessing content-specific knowledge before and after children's workshops in a natural history museum: A pilot study

INVITED SPEAKERS

Forging a theory of Marine Island Biogeography: Merging geology, fossils, and life on oceanic islands

Sérgio P. ÁVILA

CIBIO, Centro de Investigação em Biodiversidade e Recursos Genéticos, InBIO Laboratório Associado, Pólo dos Açores, Azores, Portugal, e-mail: avila@uac.pt
MPB-Marine Palaeontology and Biogeography Lab, University of the Azores, Rua da Mãe de Deus, 9501-801 Ponta Delgada, Açores, Portugal
Faculdade de Ciências e Tecnologia da Universidade dos Açores, 9501-801 Ponta Delgada, Açores, Portugal
BIOPOLIS, Biodiversity and Genetic Resources Research Center. Universidade do Porto. Campus de Vairão. Rua do Crasto, nº 765. 4485-684 Vairão, Portugal

Key words: Marine Island Biogeography, integrative approach, fusion-fission islands, state-of-the-art theory, shallow-water, benthic organisms.

The last decade has seen a major surge of interest in Marine Island Biogeography. Global and comprehensive approaches are redefining how we understand the geographic distribution of shallow-water benthic life. Modern theories aim decoding the exact processes of dispersal and colonization across isolated oceanic islands, while shedding new light on the evolutionary dynamics of marine speciation and extinction.

To do this, we must systematically integrate deep knowledge of island evolutionary history with quantitative, standardized fossil samples and phylogenetic data. By combining these with functional diversity frameworks and advanced statistical methods, we can better isolate the mechanisms driving marine speciation and extinction rates.

The Sea-Level Sensitive (SLS) dynamic model of marine island biogeography represents a pioneering framework in its field, uniquely addressing the impacts of glacial–interglacial cycles on benthic fauna. Recent expansions of the SLS model incorporate the complex dynamics of fusion–fission islands, tracking how sea-level fluctuations alter the rates of population splitting and merging. Furthermore, this updated framework enables the modeling of speciation and extinction rates across distinct insular configurations, specifically categorized as Solum, Soror, and Moliones islands. Additionally, improved bathymetric data of seafloor topography down to 300 meters depth allows for a much better calculation of key evolutionary patterns. Most notably, these high-resolution metrics allow for the precise modeling of the 'insular littoral area'. This cutting-edge, taxon-dependent concept tracks how sea-level changes dynamically alter available habitat across glacial–interglacial cycles.

Finally, next-generation databases combining taxonomic, functional trait, and environmental data are unlocking new potential. These tools provide invaluable resources for tracking palaeo- and neo-biodiversity, allowing researchers to reconstruct deep-time biogeographic transition zones and define clear biodiversity baselines on islands.

This talk will address these critical challenges, unveiling both the latest theoretical advancements of the SLS dynamic model of marine island biogeography and its most promising future directions.

Curating Roald Amundsen

Anders BACHE

Roald Amundsen's House, MiA – The Museums of Akershus, Akershus Norway, e-mail: anders.bache@mia.no

Key words: Amundsen, expedition, photographs, biographical research.

Roald Amundsen was one of the most famous explorers of the twentieth century. He led expeditions to the Arctic and Antarctic, and for twenty years his private home was Uranienborg, a Swiss chalet-style house, situated just south of Oslo, Norway.

On 16 June 1928, Roald Amundsen left Uranienborg for the last time, when he set out to search for an Italian expedition reported missing in the Arctic. Amundsen never returned and the house still stands as he left it that day.

Today, nearly a century later, Uranienborg remains a unique time capsule filled with objects and archives from Amundsen's life, which makes it an unusual museum and research source. In recent years, Uranienborg has also developed into a centre for biographical research, where conservation, documentation and research have brought new discoveries and perspectives on Amundsen's life. The work combines a deep passion and curiosity, where the approach is to invite the public to take part of the process and, where possible, contribute to the search for new knowledge.

In 2015, a chest containing approximately 1,400 photographs was discovered, alongside notebooks, letters, manuscripts and postcards. The discovery became a starting point for a major digitisation project. By using photogrammetry, the house and collection became available through digital models, while digital reconstructions of Amundsen's ships and aircraft opened up for new interpretation and storytelling through 3D, augmented reality and virtual reality.

Over the period 2026–2028, Uranienborg will undergo major restoration and conservation. Plans include a new exhibition focusing on the objects left by Amundsen, besides more active public engagement through podcasts, books and lectures.

Not just a strange menagerie – lessons from a century and a half of exploring Europe's dinosaur islands

Zoltán CSIKI-SAVA

Faculty of Geology and Geophysics, University of Bucharest, 1 N. Bălcescu Blvd., 010041 Bucharest, Romania, e-mail: zoltan.csiki@g.unibuc.ro
Research Institute of the University of Bucharest (ICUB), 90 Panduri Ave., 050663 Bucharest, Romania
Institute of Geography and Earth Sciences, ELTE Eötvös Loránd University, 1117 Budapest, Hungary

Key words: Late Cretaceous European Archipelago, Dinosauria, Mammalia, Crocodyliformes, Squamata.

European Late Cretaceous continental vertebrates are known for more than 160 years, while those of the Transylvanian area in western Romania had been discovered about 130 years ago. Since then, thousands of fossil specimens had been recovered, some of them in a remarkably good preservation state, and a huge amount of data had been amassed concerning their spatial and temporal distribution, palaeoenvironmental settings, anatomy, palaeoecology and palaeobiology. Consequently, our understanding of their affinities, evolution and palaeobiogeography has improved incrementally, and it did so especially in recent decades due to large-scale human and material investment efforts into their research across the continent, aided by the employment of cutting-edge investigative techniques. Meanwhile, slightly over a century ago the brilliant yet maverick palaeontologist Franz Nopcsa has suggested that these vertebrates, the Transylvanian ones foremost of them, inhabited a series of islands stretching across the continent – a daring hypothesis that nevertheless gained traction subsequently and has received further support along the years. This groundbreaking idea stemmed from his observations that the Transylvanian Late Cretaceous vertebrates were unusual in many respects in comparison with their contemporaries from other, larger landmasses – they showed visible body size differences (mainly in being smaller than their continent-dwelling relatives), retention of ancestral character states to the point of qualifying as true, living fossils, high degrees of endemicity, and overall low assessed (palaeo)biodiversity. The new discoveries that have accumulated since Nopcsa's time impact his original revolutionary, island dinosaur faunas' views in many respects, supporting and even augmenting these in some, while partly refuting them in others. All the while, they are contributing a wealth of new data that allow present-day researchers to draw a more comprehensive (but also far more intriguing, compelling and revealing) picture of the dinosaur-dominated faunas of the Late Cretaceous European Archipelago. The talk delves into some of the newest and/or most startling of these developments, drawing primarily on examples from the Transylvanian area, and explores their implications for understanding processes and underlying mechanisms of island faunal evolution and biogeography from this unique deep-time perspective.

Sounds and vibrations in the biology of Anurans

Rafael MÁRQUEZ

Fonoteca Zoológica, Departamento de Biodiversidad y Biología Evolutiva, Museo Nacional de Ciencias Naturales (CSIC), Madrid, Spain, e-mail: rmarquez@mncn.csic.es

Key words: Anurans, inner ear, vocalization apparatus, vibrations.

Anurans are considered acoustical animals. Their advertisement calls are crucial for species identification and mate selection. They have elaborate vocalization apparatuses that generally emit calls with information in the temporal and spectral domain, and a remarkable hearing system that detects sounds mostly within the same spectral domain as human hearing.

Scientific sound collections store and curate these valuable behavioral keys to reproduction. In www.FonoZoo.com we have the largest collection of anuran calls in the world.

The importance of the description of these calls is emphasized through some studies in nature from exotic locations. Having a methodology for recording in the field, and for describing quantitatively the calls is important.

Studies related to the role of sounds in sexual selection and communication in anurans will be presented. The use of playback tests provides insight on female preferences through a behavioral response that is likely to have direct consequences on fitness.

Finally, Anuran amphibians have a "sixth sense": a very elaborate and sensitive system in their inner ear to detect vibrations of the substrate (soil, water, plants). This sense was initially studied neurologically, but behavioral experiments testing its selective significance have only recently been completed.

I describe some field tests with the transmission of vibrations, trying to shed some light on what is the selective advantage of this seismic detector. The tests include behaviors such as the detection of rainfall vibrations in buried anurans, the transmission of vibrations in a plant where frogs perch, and anthropogenic vibrations as inhibitors of calling activity.

The Romanian Academy – Romania's highest institution for the recognition of intellectual excellence, conducting internationally recognized scientific research and creative activities

Dumitru MURARIU

Romanian Academy, Calea Victoriei no. 125, 010071 Bucharest, Romania, e-mail: dumitru.murariu@acad.ro

Key words: Romanian Academy, Ion Heliade Rădulescu, August Treboniu Laurian, president scientific research, history of science.

The Romanian Academy (R.A.) is a fundamental institution of Romania – the highest Romanian forum for scientific and cultural consecration, which brings together prominent personalities from the country and abroad, from all fields of science, art and literature. Currently, the R.A. fulfills three major roles: 1 - It is a consecration forum. 2 - It is an important pillar of scientific research in the country. 3 - It is an active participant in the life of society. The history and evolution of the R.A. are closely linked to the historical course of the modern Romanian state. First, on 1/13 April 1866 it was only the Romanian Literary Society and starting with 1/13 April 1867 it became the Romanian Academic Society. On 27 March/8 April 1879 the Society became the R.A. Among the founding members was and the President of the R.A. - Ion Heliade Rădulescu - a poet, essayist, memoirist, short story writer and newspaper editor. Second president of the R.A. was a Transylvanian Romanian politician, historian and linguist, named August Treboniu Laurian. His book on *History of the Romanians* began with the *Foundation of Rome* in 753 B.C. The leadership of the R.A. is ensured by a Board, made up of a president, four vice-presidents and a general secretary, elected for a period of four years, and by a Presidium formed by the Bureau of the Presidium, the 14 Section presidents and the three Branch presidents from Cluj, Iași and Timișoara. From the beginning, the R.A. was organized into three Sections: literary, historical and scientific. The 3rd Section appeared with the election of members from the fields of natural sciences. In 1948 the organization diversified into six Sections, and after 1990 – into 14 Sections. In the R.A. there are 181 corresponding and full members, as well as 135 honorary members (at most 40 from Romania). The R.A. coordinates scientific programmes of 64 institutes, centers, commissions and research groups, which carry out their activities in fundamental fields of science, education and culture. The outstanding results of these institutes, some of which are classified at the level of European excellence, are due to over 2,000 certified researchers, specialists in fundamental research with potential practical applications. Research staff in the R.A. totals 2,142 researchers on 1,969 positions (some with part-time), and 15 of 53 journals from the R.A. are in Web of Science. Publishing 110 Journals with 81 with I.F. In 2025 the R.A. cooperated with 29 foreign Academies and 14 in Programmes of interacademy exchange relations. SCOSAAR/2025-2026 with 198 advisers and 432 PhD students. In 2025, the R.A. became coordinator of First Contract ERASMUS+ for 26 months. In 2025 the R.A. was involved in 5 Advances Trans- and Interdisciplinary Projects as base of new

technological development, in 5 Projects of Research at the Border of Knowledge with Impact on Society Development, 5 Projects of Research on History and Culture of Romanian People and 4 Projects of Research on Sustainable Development of Romania. Finally, on Monday 6 April 2026, the R.A. celebrated 160 years since the institution was founded.

FAIR at the start, FAIR at the end: Biodiversity publishing in the AI era

Lyubomir PENEV

Pensoft Publishers, Sofia, Bulgaria, e-mail: lyubo.penev@gmail.com

Key words: biodiversity science, biodiversity data, biodiversity research, semantic publishing, FAIR Data, AI-FAIR, scholarly publishing, scientific literature.

Within the lifetime of an average biodiversity researcher, we have witnessed four disruptive shifts in how scientific results are published, utilised, and reused: (1) print paper, (2) digitally-born PDFs, (3) semantically enhanced XML publishing, and (4) AI-FAIR publishing. These changes closely mirror the major technological revolutions of our time: the advent of personal computers, the rise of the Internet, and the emergence of Artificial Intelligence (AI). How have these disruptive changes in the entire human life affected the publishing landscape? This talk traces these historical transformations through the lens of Pensoft's history as a leading biodiversity publisher, offering perspectives from both the researcher and the publisher.

Scientific publishing has always been an integral part of the research cycle; however, the latter normally ended in closed formats - on paper or digitally produced PDFs in the last decades. In those formats the priceless data that underpin the publication were actually "imprisoned" - and most of it still is! - in the form of tables, free text (e.g. specimen records) or authors' interpretations of what the data is supposed to tell us. Extracting the data from this kind of publications has always been an extremely cumbersome and time-consuming task.

With the invention of the Internet and particularly its semantic WEB 2.0 form, publishers began offering additional article formats that allowed content to be read by computers (XML) or made interactive and enjoyable for readers (HTML). Nonetheless, even when the text is published in machine-readable language like XML, additional effort is needed to tag important terms with their actual meaning. For example, "Rosa" in a particular publication context means a plant genus name, not a female name; or "Bucharest" within a specimen occurrence record indicates the location where that specimen was discovered rather than just a city name used out of context. Pensoft pioneered semantic publishing for biodiversity in volume 50 of ZooKeys in 2010 and since then has spent over a decade developing and customising advanced publishing technologies and workflows for academics, particularly biodiversity scientists.

Fast-forward to 2026: now more than ever, researchers and academic publishers must join forces to ensure that today's discoveries retain their scientific value, visibility, traceability, and credibility, as they pass through the hands and prompts of users across the globe. Our shared mission today is to produce, share, and safeguard scientific knowledge that is truly AI-FAIR - Findable, Accessible, Interoperable and Reusable - being understood by AI in the right context along with the due credit and provenance records. As a working illustration of this, we present ORPHO: a standalone online platform providing a highly automated,

intuitive, and collaborative workspace where authors can co-author manuscript drafts to produce native AI-FAIR, machine-readable and re-usable, data-intensive scholarly literature.

Prof. Dr. Ioan Borcea – "The Titan" of Romanian zoology

Victor SURUGIU

"Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Bd. Carol I, 20A, 700507, Iaşi, Romania, e-mail: vsurugiu@uaic.ro

Key words: history of zoology, entomology, marine biology, ichthyology, Marine Zoological Station of Agigea, University of Iași.

This year marks the centenary of the founding of the Marine Biological Station of Agigea—the first marine research institution in Romania—and 90 years since the passing away of its founder—Prof. Dr. Ioan Borcea. Perhaps less known than his famous contemporaries Grigore Antipa or Emil Racoviță, the university professor Ioan Borcea made significant contributions to the development of zoology in Romania in the first half of the 20th century.

Born in Buhociu Mare (Bacău county) on January 13, 1879, he graduated the Boarding High School of Iași, where the talented professor Dr. Theodor Neculau played a decisive role in steering him towards the natural sciences. At the University of Iași, where he continued his studies, Ioan Borcea had a host of remarkable professors, such as Petru Poni, Anastasie Obregia, Leon Cosmovici, Paul Bujor, Alexandru Popovici, Vasile Bușureanu, and Ion Simionescu. After graduation he was retained as junior assistant at the Chair of Animal Morphology and shortly after that he received a scholarship to the Sorbonne University in Paris. After obtaining the bachelor's degree in Natural Sciences in France, the young Ioan Borcea pursued doctoral studies under the supervision of prominent professor Yves Delage on the morphology and anatomy of the urinary and genital system of Elasmobranchii (cartilaginous fish).

After returning to Romania, Ioan Borcea was appointed associate professor and later full professor of zoology at the Chair of Descriptive Zoology specially created for him at the University of Iași, which he headed until the end of his life. At the same time, he was director of the Natural History Museum in Iași, Editor-in-Chief of at that time prestigious scientific journal *Annales scientifiques de l'Université de Jassy* and president of the Professional Learning Community of Iași. For short periods of time he held leadership positions such as Editor-in-Chief of the *"Vasile Adamachi" Scientific Journal*, Dean of the Faculty of Natural Sciences of the University of Iași and even Minister of Cults and Public Instruction (Minister of Education). However, professor Ion Borcea is best known for founding the Marine Zoological Station of Agigea in 1926, which over time became one of the most renowned research institutions on the coast of the Black Sea.

Endowed with a brilliant intelligence, encyclopaedic erudition, and extraordinary work power, Ioan Borcea approached a broad spectrum of scientific directions: fish cytology, histology, morphology, anatomy and embryology, fish systematics and biology, applied entomology, marine biology, general biology, carcinology, malacology, biogeography, museology, ecology and biodiversity conservation.

For his prodigious work and outstanding merits, he received various awards and honours: member and honorary president of the Zoological Society of France, corresponding member of the Natural Sciences Museums in Paris and New

York, corresponding member of the Romanian Academy, founding member of the Academy of Sciences of Romania, *doctor honoris causa* of the University of Montpellier, and honorary member of various national and foreign scientific societies.

Despite his inexhaustible capacity for work, professor Ioan Borcea died, at the peak of his scientific career, on July 30, 1936, due to septicemia caused by pricking his finger while dissecting the venomous fish *Trachinus draco* at Agigea. However, professor Ioan Borcea has left behind a precious inheritance: a long-lasting scientific work, with around 200 scientific papers, reviews, lectures, and notes, a famous school of zoology in Iași, which produced a large number of renowned scientists (Constantin Motaș, Petre Șuster, Mihai Constantineanu, Mihai Băcescu, Sergiu Cărăușu, Olga Necrasov, Petre Jitariu, Constantin S. Antonescu, Zicman Feider, Gheorghe Hasan, Adriana Antoniu-Murgoci etc.) and the Marine Biological Station of Agigea, where is still kept his "sacred fire of scientific research".

Mountains of Central and Inner Asia – core areas of cutworm moths (Noctuidae, Noctuinae)

Zoltán VARGA

Department Evolutionary Zoology, Faculty of Science, University of Debrecen, e-mail: varga.zoltan@science.unideb.hu

Key words: species diversity, xeromontane, biogeography, endemism, Sino-Himalayan.

Taxonomic revisions of Noctuid moths – mostly the so-known "cutworm moths" Noctuinae – have shown that the highest species diversity of "steppic" genera such as *Euxoa, Dichagyris, Chersotis*, etc. appears in the high mountains of Central and Inner Asia. While some hypothetically "ancestral", in genital structures plesiomorphic, often oligotypic genera are confined to the Sino-Himalayan (Hengduan) core area, the accumulation of endemic species was observed in the chains of the Tien Shan system, Pamirs, Hindukush and Western Himalaya, i.e. in the range of declining/disappearing monsoon influence, as it was shown by the revision of *Euxoa* subg. *Orosagrotis* and *Pleonectopoda,* species groups of *Actebia, Dichagyris, Chersotis, Rhyacia, Eugnorisma* and *Xenophysa*. The most expansive species of these genera populated either the South-East-Central European steppe and forest-steppe, mostly extra-zonal belts or – crossing Asia Minor – the East-(sub)Mediterranean areas. In the mountains of the Balkans and of the Carpathian basin both the (cold-)continental (e.g. *Euxoa distinguenda, E. hastifera, Dichagyris musiva*) and the (sub)Mediterranean xeromontane (*Euxoa birivia*, *Chersotis fimbriola*) types ares represented, often by endemic subspecies. The westwards expansion was generally facilitated by some typical changes in life cycles (see: aestivation and early autumnal phase of reproduction). The adaptation to the Upper Tertiary and Quaternary climatic changes proceeded somewhat differently in species of the two main faunal type: (i) the (cold-)continental xeromontane elements expanded following the uplift of the Tibet plateau to the "mammoth" steppe, and survived e.g. in the "Inner-alpine Steppenheide" and "coffins" of the Transylvanian plateau, while the Mediterranean-xeromontane type started to expand during the Messinian Salinity Crisis and survived mostly in azonal, edaphically suitable habitats from Marchfeld across Transdanubia and the Aggtelek karst to the Euxinian (Măcin Mts.) xeric habitats. The Sino-Himalayan core area of ancestral diversity and the expansions crossing "filters" to the (i) oreal biomes and (ii) boreal zone similarly appear as "generalised tracks" both in Passerine birds and Noctuid moths.

ORAL PRESENTATIONS

Biodiversity and Biogeography of Native and Non-native Faunas

The earthworms (Oligochaeta: Lumbricidae) of the Ajameti Managed Reserve (Georgia, Caucasus)

Khatia BIRKAIA, Nana BAKHTADZE

Institute of Zoology, Ilia State University; George Tsereteli exit 3, 0179, Tbilisi, Georgia, e-mail: khatia.birkaia.1@iliauni.edu.ge

Key words: earthworms, diversity, Ajameti Managed Reserve, Georgia.

The Ajameti Managed Reserve (AMR) is located in western Georgia (Caucasus), in the central part of the Imereti region, in the extreme eastern part of the Colchis Lowland, at an elevation of 150–200 m above sea level. The Colchis Lowland is listed in the UNESCO World Heritage List as a refugium where many plant and animal species survived the Glacial period. AMR is divided into three forestry sections: Ajameti, Obcha, and Vartsikhe, with a total area of 4990.57 ha. More than 95% of the territory is covered with forests, which are an important part of a unique, relict ecosystem – the Colchic forest and of the historical Colchic landscape.

Data on earthworm species diversity in AMR were previously scarce until our investigation. Earlier studies reported only two species from the reserve: *Dendrobaena schmidti surbiensis* (Michaelsen, 1910) and *Lumbricus rubellus* Hoffmeister, 1843.

For our research, earthworm samples were collected from all three forestry sections of the AMR during the spring of 2025 and 2026. Morphological examination of the collected material identified 11 species and subspecies belonging to 7 genera: *Aporrectodea* Örley, 1885, *Dendrobaena* Eisen, 1873, *Dendrodriloides* Kvavadze, 2000, *Eisenia* Malm, 1877, *Imetescolex* Szederjesi, Marchán & Csuzdi, 2022, *Lumbricus* Linnaeus, 1758, and *Omodeoia* Kvavadze, 1993. Out of the 5 genera and 9 species and subspecies are recorded in the investigated territory for the first time. The registered species and subspecies in the Ajameti Managed Reserve are categorized into 4 ecological groups. These species and subspecies belong to 3 groups according to their distribution types.

The tale of a successful invader: the tanaid *Sinelobus vanhaareni* reaches the Black Sea

Andrei ȘTEFAN[1], Maxim-Jean BÂLCU[1,2], Rozalia Magda MOTOC[1], Dumitru MURARIU[3], Oana Paula POPA[1]

[1]"Grigore Antipa" National Museum of Natural History, Kiseleff 1, 011341 Bucharest, Romania, e-mails: andrei.stefan@antipa.ro, max.balcu@antipa.ro
[2]Doctoral School of Biology, Faculty of Biology, University of Bucharest, Splaiul Independenței 91–95, 050095 Bucharest, Romania
[3]Romanian Academy, Calea Victoriei 125, 010071 Bucharest, Romania

Key words: Tanaidacea, alien species, molecular identification, COI marker, SEM imaging.

Invasive alien species pose a serious global concern, impacting biodiversity and human well-being and carry potential economic costs. About 10% of reported negative impacts from biological invasions occur in marine habitats, with crustaceans consistently ranking alongside molluscs and macroalgae as the top drivers of marine biological invasions, frequently introduced through ship biofouling and ballast water. Tanaids (order Tanaidacea) are small peracarid crustaceans that represent an overlooked front in marine invasions, being successful invaders, particularly around human transport hubs like ports and marinas.

Here we report the first occurrence of the tanaid *Sinelobus vanhaareni* Bamber, 2014 in the Black Sea, a species known only from the North and Baltic Seas, and document its spread across European waters. The first specimens were collected during the summer of 2025 around the Romanian ports of Constanța and Năvodari and their identity was confirmed by means of optical and electron microscopy (SEM), as well as DNA barcoding. The thousands of specimens of all life stages present in some locations, particularly in the port of Năvodari, suggest an already established and thriving population, while the identical COI haplotype shared with specimens from Germany, France and Canada points to a "global" population or multiple invasion events. The literature review and public occurrence databases highlight the preference for brackish habitats and high salinity tolerance, as well as the invasion hotspots around ports and marinas. We also provide additional remarks on morphology, based on optical and SEM imaging, for precise future identifications of the species.

The apparent wide tolerance of ecological conditions, coupled with an easily accessible dispersal method, via recreational boating and traffic between small ports and marinas, suggest a broad, albeit undiscovered and probably highly localized distribution of *S. vanhaareni*, and more reports of its presence are expected in the following years.

The rapid expansion of the Oriental river prawn – *Macrobrachium nipponense* (Decapoda) in the Danube Delta Biosphere Reserve from 2021 to 2026

Iulian FOMICI[1,2], Ovidiu DRĂGAN[1], Aurel NĂSTASE[1]

[1]"Danube Delta" National Institute for Research and Development, Tulcea, Str. Babadag, Nr. 165, Romania, e-mail: iulian.fomici@ddni.ro
[2]"Ovidius" University, Constanța, Str. Aleea Universității, Nr. 1, Romania

Key words: alien species, freshwater prawn, DDBR, biological invasion, population establishment.

The Oriental river prawn (*Macrobrachium nipponense*) is one of the most recently recorded alien invertebrate aquatic species in the Danube Delta Biosphere Reserve (DDBR).

The taxon was initially documented in 2021 after a fisherman caught an individual in the Chilia Branch. In 2023, researchers from the Danube Delta National Institute for Research and Development made the first scientific observation in the Somova-Parcheș lake complex.

Since 2024, there has been a significant rise in field observations and catches, indicating a swift expansion in the Danube Delta and nearby waters.

This study assesses the current distribution and population structure of *M. nipponense* using field data collected from 2023 to 2026.

A total of 100 records, representing 293 individuals, were obtained using several fishing methods across different aquatic habitats.

Total length, estimated individual weight, age class, sex, maturity stage, and catch per unit effort (CPUE) were analyzed. Since body weight was only measured for specimen lots, the mean individual weight was calculated by dividing the total lot weight by the number of individuals.

The species was observed multiple times in various sectors of the Danube Delta, showing that it is already well established.

The total length ranged from 2 to 11 cm, with a weighted mean of 6.95 cm, and the estimated mean individual weight was 3.52 g. Most individuals fell within the 6-8 cm and 8-10 cm size classes. The presence of juveniles and adults, and age classes from 0+ to 3+ indicates ongoing local recruitment and sustained population presence rather than sporadic introductions.

Latitudinal variation of the species richness, phylogenetic diversity, and functional diversity of fleas and their small mammalian hosts in four geographic quadrants

Boris R. KRASNOV

Mitrani Department of Desert Ecology, Jacon Blaustein Institutes for Desert Research, Ben-Gurion University of the Negev, Midreshet Ben-Gurion, Israel, e-mail: krasnov@bgu.ac.il

Key words: fleas, mammals, diversity, latitude, global scale.

Latitudinal patterns in the species richness (SR), the phylogenetic diversity (PD), and the functional diversity (FD) of fleas and their small mammalian hosts were investigated in for geographic quadrants with the aim to understand whether these patterns in either fleas, hosts, or both. Data on the latitudinal distribution of 1022 flea and 900 mammal species were compiled from literature sources and the SR, PD, and FD of both groups in 1° latitude bands were calculated. Then, the broken-stick regression models were used to analyse the latitudinal variation separately for (a) each diversity facet and (b) fleas and hosts in each geographic quadrant. The classical latitudinal gradient pattern was not found in either fleas or hosts across any facet of diversity or geographic quadrant, except for the PD of fleas in the south-eastern quadrant and the FD of hosts in the south-western quadrant. Latitudinal patterns of the SR, PD, and FD of fleas and hosts differed substantially between geographic quadrants. Furthermore, the latitudinal distributions of flea and host SR were similar in three of four quadrants (except the north-eastern quadrant), whereas the latitudinal distributions of flea and host PD were similar in the south-western quadrant only. No similarity in flea versus host FD was revealed. The latitudinal patterns of flea and host PD and FD mostly did not follow those of their SR. In conclusion, latitudinal gradients of species richness and phylogenetic and functional diversity appeared not to be universal phenomena. Instead, the latitudinal distributions of these diversity facets represent an interplay of ecological (current and past) and historical processes. For parasites, the processes acting on hosts add another layer of complexity underlying their latitudinal diversity patterns.

Invasive buprestid species in Georgia (Caucasus)

Rusudani TSIKLAURI, Nana BAKHTADZE, Levan MUMLADZE

Institute of Zoology, Ilia State University; George Tsereteli exit 3, 0179, Tbilisi, Georgia, e-mail: rusudani.tsiklauri.1@iliauni.edu.ge

Key words: invasive, *Lamprodila*, Buprestidae, Coleoptera, Georgia.

The cypress jewel beetle *Lamprodila* (Palmar) *festiva* (Linnaeus, 1767) (Coleoptera, Buprestidae) is native to the Mediterranean and southern Europe. Long regarded as a rare, locally protected species, it is now considered a serious pest. The larvae develop under the bark and feed on the wood, damaging the conductive tissues and killing the host plant. They attack plants in the family Cupressaceae, especially *Thuja*. In recent years, *L. festiva* has been recorded in new areas of Europe and the Caucasus, indicating an ongoing expansion into new regions. This expansion is likely due to human activities, particularly the increasing use of ornamental cypresses in landscaping and the associated plant trade, as well as climate change.

The first data for the Caucasus region were received from the Sochi area, where damage to cultivated Cupressaceae was detected in 2013. *L. festiva* likely arrived with imported planting material, and its impact increased following the very dry summer of 2015, which weakened the host trees. In Georgia, the species was first recorded in 2021 in Tbilisi (Dighomi Massive) by the CaBOL team, and later in the Shida Kartli region, specifically in 2023 Gori Municipality on *Juniperus*. In 2025, a case of host shift was observed in the Kaspi Municipality, where the beetles moved into a vegetable crop (*Asparagus*). *L. festiva* has not been recorded in other South Caucasus countries, except for one identification posted on iNaturalist for Armenia in 2022.

From surface to depth: alpha- to gamma-level diversity of edaphic and subterranean Coleoptera in the Romanian karst system

Eugen NITZU

Department Biospeleology and Karst Biology, "Emil Racoviță" Institute of Speleology, Biology Section, Romanian Academy; 13 Septembrie 13, Bucharest, Romania, e-mail: eunitu@yahoo.com

Key words: Coleoptera, diversity, edaphic and subterranean environments, karst areas, Carpathians, Dobrogea.

A synthesis of over 35 years of coleopterological investigations carried out by the author in the karst system of Romania is presented. Our goal was to assess the species richness of Coleoptera of the karst system, aiming to observe how many of the species identified on the exokarst are able to populate the endokarst (MSS, caves), together with specialized cave dwelling species (troglobiont), in different conditions and geographic areas. Starting from alpha diversity, we analyzed similarities regarding beta and gamma diversity across different karst areas (Dobrogea and the Carpathians), as well as species distribution by depth across different geographical zones. The troglobitic fauna of the Southern Carpathians is totally different from that of the Apuseni Mountains and that of Dobrogea, even at the genera level. The similarity of faunas between regions is given only by epigeous/endogeous shared species between Dobrogea, the Southern, Western and the Curvature Carpathians.

In terms of gamma diversity, the highest number of shared species was observed between Dobrogea and the Southern Carpathians (42 shared species, out of a total of 393 species recorded in Southern Carpathians and 283 species in Dobrogea), followed by those from the Curvature Carpathians and the Southern Carpathians (38 shared species; 122 species recorded in the Curvature Carpathians).

Of a total of 810 species and subspecies recorded in the karst system, 46% were found in the superficial underground environment and caves. Of these, only 13% were troglobionts.

Compared to the total area of the karst in Romania (~2.3% of the total area of the country), the species richness of Coleoptera identified in the karst system is relatively high - representing 11.89% of the total number of Coleoptera species inventoried in the Romanian fauna (referring only to soil, subterranean and accidental saproxylic or planticolous species), revealing the high potential of karst areas in species conservation.

Mount building *Formica* (Hymenoptera: Formicidae) in Romania – distribution, conservation and citizen science

Ioan TĂUȘAN[1], Robert Andrei VLAD[1], Bianca Elena STROESCU[1], Diana Monica ENEA[1], Silviu Giorgian ȚICU[2,3], Ágota SZABÓ[4], Bálint MARKÓ[4]

[1]"Lucian Blaga" University of Sibiu, Biology and Ecology Research Centre, Dr. Ratiu nr. 5-7, Sibiu, Romania, e-mail: ioan.tausan@ulbsibiu.ro
[2]Doctoral School of Biology, Faculty of Biology, University of Bucharest, Splaiul Independenței 91-95, 050095 Bucharest, Romania, e-mail: giorgiansilviu@gmail.com
[3]Natural History Museum, Brukenthal National Museum, Cetății 1, 550163 Sibiu, Romania
[4]"Babeș-Bolyai" University of Cluj-Napoca, Faculty of Biology and Ecology, Hungarian Department of Biology and Ecology, Clinicilor 5-7, Cluj-Napoca, Romania

Key words: red-wood ants, ecosystem engineers, Romania.

Red wood ants of the *Formica rufa* species group represent one of the most ecologically influential ant complexes native to the coniferous, deciduous, and mixed forests of the Palaearctic region, with their range extending across much of Europe and into parts of Asia. As ecosystem engineers, these ants construct large, dome-shaped mounds built from spruce and pine needles, twigs, resin fragments, and grass stems, structures that can persist for decades and, in long-established polydomous colonies, form extensive interconnected mound networks spanning several hectares. Red wood ants occupy a genuine keystone role in forest ecosystems, exerting influence disproportionate to their biomass through several interlocking mechanisms.

Taxonomically, the group comprises seven recognized European species: *rufa*, *polyctena*, *lugubris*, *aquilonia*, *pratensis*, *paralugubris*, and *truncorum*, distinguished by a combination of morphological, ecological, and behavioural traits, including differences in colony founding strategy, habitat preference, and degree of polygyny and polydomy. Of these, four species are confirmed to occur in Romania, where their distribution reflects the country's varied biogeographic zones, from lowland and hill forests to the montane spruce belts of the Carpathians, and appears strongly structured by elevation, forest type, and canopy management history.

Given their sensitivity to forest management practices, habitat fragmentation, and climate change, red wood ants are increasingly recognized as valuable bioindicators of forest ecosystem health. This has prompted growing interest in standardized conservation and monitoring protocols consisting of mound census methods, GPS-based spatial mapping, activity and nest-density indices, and long-term population trend assessment, as tools for integrating red wood ant conservation into broader forest biodiversity management and protected-area monitoring frameworks across their European range.

In Romania, our data show that *rufa* is not as frequent as previously known from the literature, whereas *F. polyctena* is more abundant in the Carpathian arch.

In open habitats, *pratensis* was the dominant species. The species distribution is discussed in more depth and conservation issues are highlighted.

This work was carried out with the support of a grant from the Ministry of Research, Innovation and Digitalisation, CNCS/CCCDI – UEFISCDI, project number COFUND-BIODIVMON-MonitAnt, under the PNCDI IV programme.

KladiSOS: the challenging eradication of the invasive Italian wall lizard, *Podarcis siculus*, from Chania, Crete, Greece

Charikleia-Foteini PANTAGAKI, Emmanouil STRATAKIS

Natural History Museum of Crete, University of Crete, Knossou Avenue, Irakleio, Greece, e-mails: haritini.pant@gmail.com; mastratakis79@gmail.com

Key words: introduction pathways, phylogenetics, invasive species.

The Italian wall lizard is a widespread invasive species, occurring across four continents (Europe, North America, Africa, and Asia). This diurnal medium-sized lacertid is highly adaptive, being a neophilic generalist that can outcompete native species. In 2023, a population of *Podarcis siculus* was found in Kladisos, an area near the city of Chania in Crete. This is the second confirmed presence of the species in Greece after its first introduction in Athens in 2014. The island is inhabited by the endemic Cretan wall lizard, *P. cretensis,* and *P. siculus* has been introduced in the core of its distribution, raising concerns about their interaction, given documented cases of displacement of other native congeners (e.g. *P. melisellensis* and *P. raffonei*).

Since April 2026, an eradication project has been initiated. The scope is to reduce the number of individuals, reassess the species' current distributional range, trace the origins of the population and raise awareness among the public and relevant authorities about invasive species. From April to July 2026, 90 Italian wall lizards have been collected and photographed dorsally and ventrally. To investigate the origin of the invasive population both mitochondrial (cyt *b*) and nuclear markers (MC1R and βfibint7) were used and a phylogenetic tree incorporating representative DNA sequences from all the clades inferred within the species was constructed. Preliminary results revealed that the population of *P. siculus* is established in an urban area of 0.24 km^2, double the size of the initially estimated one. This area includes several inaccessible parts, making the eradication even more challenging. According to our phylogenetic analyses, most of the so far collected individuals belong to the Siculo-Calabrian clade, whereas one is included in the Central-Northern, along with specimens from Athens. Raising public and competent-authority awareness, together with continued intensive sampling, is considered crucial for preventing the species' further spread.

Invasion pressure in Romanian protected areas

Cristina PREDA[1], Carla F. GAVRILESCU[1], Daniyar MEMEDEMIN[1,2], Lucian M. PĂTRAȘCU[1], Marius SKOLKA[1], Laurențiu ROZYLOWICZ[3,4]

[1]"Ovidius" University of Constanța, Research Center of the Department of Natural Sciences, Faculty of Natural and Agricultural Sciences, Constanța, Romania, e-mail: cristina.preda@univ-ovidius.ro
[2]Research-Development Institute for Grasslands, Braşov, Romania
[3]University of Bucharest, Center for Environmental Research, Bucharest, Romania
[4]"Ovidius" University of Constanța, Faculty of Natural and Agricultural Sciences, Constanța, Romania

Key words: alien species, Natura 2000 network, zero-inflated models, hotspots, prioritization.

Biological invasions are a major threat to biodiversity, yet the vulnerability of protected areas to alien species remains insufficiently quantified, particularly in Eastern Europe. Investigating how alien species richness differs between protected areas and the surrounding landscapes helps target surveillance and management across the EU Natura 2000 network.

We analysed 657 alien species (187,381 georeferenced occurrences) across 240,290 terrestrial 1-km² grid cells in Romania, spanning four biogeographic regions. Cells with more than 48% of their area overlapping Natura 2000 sites were treated as protected (54,289 cells, 22.6%), covering 469 sites. Because 86.2% of cells held no alien record, we fitted zero-inflated negative binomial models controlling for wilderness, elevation, road presence and biogeographic region. Only 16.3% of alien occurrences fell inside protected areas and observed mean richness was lower there, yet the pattern reversed once environmental covariates were accounted for, with protected cells harbouring 45% more alien species (IRR = 1.45). The presence of roads reduced by 90% the odds that a cell held no aliens, wilderness increased alien species richness among suitable cells, and elevation reduced it.

The protected-area (PA) effect was significant in all four biogeographic regions. It ranged from a nearly threefold increase of alien richness in the Steppic and Black Sea region (IRR = 2.86), where sites along the Danube serve simultaneously as conservation areas and invasion corridors, to a modest effect in the Alpine region (IRR = 1.13). Moreover, the PA effect was strongest for vertebrates (IRR = 3.34), intermediate for invertebrates (IRR = 2.18) and weakest for plants (IRR = 1.21). Alien and protected species richness were positively correlated across sites, and a composite risk index indicated 37 sites as very high risk. Romanian protected areas therefore combine high conservation value with elevated invasion pressure, and management must be regionally calibrated, most urgently in the Steppic bioregion and along river corridors.

This study was published within the OneSTOP project (OneBiosecurity Systems and Technology for People, Places and Pathways, ID 101180559), funded by the European Union, and the RECOVER project (14CoEx/2026, PN-IV-P6-6.1-CoEx-2024-0124).

An urban pond in Chișinău: potential protected site in the Emerald Network?

Galina BUȘMACHIU

Institute of Zoology, Moldova State University; str. Academiei, 1, Chișinău, Republic of Moldova, MD-2028, e-mail: bushmakiu@yahoo.com

Key words: pond, species diversity, Odonata, rare and protected species.

There are 26 ponds in the Chișinău city, some of which are located in urban parks such as La Izvor, Valea Morilor, Valea Trandafirilor, Dendrariu, Botanical Garden, Rîșcani etc. One of such parks is near the City Gates which is a green area in the Botanica sector of Chișinău, located at the southern entrance to the city and including a large pond. The park and pond were developed in the 1980s, along with the construction of the City Gates architectural complex.

Sites for the Emerald Network are selected through a strict, three-phase scientific and legal framework managed under the Bern Convention. An urban pond can be designated as part of the Emerald Network if it meets strict ecological criteria, specifically supporting habitats or species of European importance.

Ordinary urban ponds rarely qualify unless they harbor critical populations of rare or endangered protected species. However, they may qualify if they are located in human-modified or urban landscapes and act as vital stepping-stone wetlands for regional biodiversity.

The pond at the City Gates is set apart by the higher number of Odonata species (Insecta) that were identified during the 2025-2026 years. A total of 26 species, some of them rare, such as *Cordulia aenea* (Linnaeus, 1758) and *Libellula quadrimaculata* Linnaeus, 1758 were observed here, as well as *Leucorrhinia pectoralis* (Charpentier, 1825) which is included on the priority protection list within the Emerald Network (established under the Bern Convention) and requires specific conservation measures. *Anax imperator* Leach, 1815, regularly observed here together with *pectoralis* are included in the 3rd edition of the Red Book of the Republic of Moldova (2015).

The presence of rare species, protected by the Bern Convention, the Emerald Network and Red Book underline the importance and necessity of protecting this pond in Chișinău.

The study was supported by the subprogram 010701, and "Assessment of the state of plant, fungi and animal species, development of the list of species with rarity status and the algorithm for their presentation in the 4th edition of the Red Book of the Republic of Moldova".

Evolution, Systematics and Integrative Taxonomy

Microhabitats constraints on *Niphargus pannonicus* ecology in Gaura cu Muscă Cave (Romania)

Octavian PACIOGLU[1,2], Corina IȚCUȘ[3], Iris M. TUȘA[2], Ionuț POPA[4], Ștefan Cătălin BABA[4,5]

[1]Research and Development Institute for Wildlife and Mountain Resources, 37B Progresului street, 530240, Miercurea Ciuc, Romania, e-mail: octavian.pacioglu@incdsb.ro
[2]National Institute of Research and Development for Biological Sciences, 296 Splaiul Independenței street, 060031, sector 6, Bucharest, Romania, e-mail: iris.tusa@gmail.com
[3]Institute of Biology Bucharest of the Romanian Academy, Splaiul Independenței 296, 060031 Bucharest, Romania, e-mail: corina.itcus@gmail.com
[4]"Emil Racoviță" Institute of Speleology of the Romanian Academy, 13 Septembrie Road, No. 13, Sector 5, 050711 Bucharest, Romania, e-mail: ionutpopaag@yahoo.com
[5]Faculty of Biology, University of Bucharest, Splaiul Independenței 91–95, Sector 5, 050095 Bucharest, Romania, e-mail: catalinstefanbaba@gmail.com

Key words: subterranean amphipods, life-history stygobites, groundwater food webs.

Subterranean streams are among the most energy limited freshwater ecosystems, yet the extent to which local resource heterogeneity shapes the ecology of groundwater fauna remains poorly understood. We investigated populations of the stygobiotic amphipod *Niphargus pannonicus* along a karst stream spanning epigean, intermediary, and deep cave sectors in Gaura cu Muscă Cave (Romania). By combining demographic analyses, reproductive traits, stable isotopes, stoichiometric imbalance, and ingestion based nutrient fluxes, we evaluated how trophic conditions varied across closely connected microhabitats.

Marked ecological divergence was observed along the epigean–hypogean gradient. Deep cave sector amphipods exhibited delayed female maturation, lower fecundity, reduced growth performance, and lower ingestion fluxes, while reproductive investment relative to biomass increased, suggesting energetic tradeoffs under chronically oligotrophic conditions. Isotopic analyses indicated distinct trophic strategies among sectors, with epigean amphipods assimilating more diverse resources, intermediary individuals relying mostly on bat guano, whereas deep sector individuals displaying narrow trophic niches and elevated trophic positions linked to increased assimilation rate of conspecific juveniles. Stoichiometric analyses further showed pronounced nitrogen imbalances in the deep sector, contrasting with the intermediary sector where guano inputs supported higher nitrogen and phosphorous fluxes and population densities.

Although hydrochemical conditions remained relatively stable throughout the stream, localized differences in basal resource composition and quality were associated with substantial demographic and trophic differentiations. The present study highlighted how fine scale variation in organic matter inputs can structure subterranean food webs and influence life history strategies in groundwater amphipods, emphasizing the ecological importance of microhabitat heterogeneity in karst ecosystems.

The enigmatic snail from the Apuseni Mountains (Romania) – Is *Drobacia maeotica* (Wenz, 1926) a valid species? Insights from molecular markers

Ana-Maria KRAPAL[1], Andrei ȘTEFAN[1], Elena Iulia IORGU[2], Maxim-Jean BÂLCU[1,3], Alexandra-Florina POPA[1], Rozalia Magda MOTOC[1], Oana Paula POPA[1]

[1]"Grigore Antipa" National Museum of Natural History, Șos. Kiseleff no. 1, 011341 Bucharest 1, Romania, e-mails: ana.krapal@antipa.ro, oppopa@antipa.ro
[2]"Ștefan cel Mare" University of Suceava, Universității Str. no 13, 720229 Suceava, Romania,
[3]Doctoral School of Biology, Faculty of Biology, University of Bucharest, Splaiul Independenței 91–95, 050095 Bucharest, Romania

Key words: terrestrial snail, Natura 2000 species, protected snail species, relict species.

Drobacia banatica (Rossmässler, 1838), a Carpathian relict land snail, is a species of European conservation interest. It is listed in Annexes II and IV of the Habitats Directive (92/43/EEC) as *Chilostoma banaticum* (Natura 2000 code 4057). The genus has a particular taxonomic history, with the second species, *Drobacia maeotica* (Wenz, 1926), originally described as a late Miocene fossil from southern Romania. In 1966, D. Lupu reported it as a living species from the Apuseni Mountains, on the basis of shell and reproductive anatomy, and presented it as a "living fossil". Subsequent morphometric studies reported intermediate shell forms between the two species. As a result, the genus is currently treated as monospecific, with *D. maeotica* regarded as a synonym or ecotype of *D. banatica*. To test this hypothesis, we examined 116 specimens from the Apuseni and Făgăraș Mountains using shell morphometry, reproductive anatomy, and molecular markers (mitochondrial COI, 16S, and nuclear H3). The two taxa formed reciprocally monophyletic COI lineages (PP = 1.0) with no shared haplotypes, separated by a mean p-distance of 8.7%. All species delimitation methods (bPTP, GMYC, ASAP) separated *D. banatica* and *D. maeotica*. Genetic diversity was markedly higher in *D. maeotica* (Hd = 0.808, π = 0.0052) than in *D. banatica* (Hd = 0.217, π = 0.0006). *D. banatica* showed a star-like network and a negative Tajima's D, consistent with recent demographic expansion. The conserved nuclear H3 fragment showed low variability, and haplotypes were shared between the taxa, most likely reflecting incomplete lineage sorting. There is a large amount of overlap between shell diameter and height of both species, with no clear discrimination between the two based on shell morphology alone, but *D. banatica* tends to have a larger shell diameter and height than *D. maeotica*. These results are incompatible with the interpretation of *D. maeotica* as a recently derived ecotype. They confirm, over half a century later, the remarkable intuition of Lupu (1966): *D. maeotica* is an independent evolutionary lineage with its taxonomic rank and conservation status, currently subsumed under *D. banatica*, needing re-evaluation.

Tracing the threads: An integrative approach confirms *Eresus hermani* in Romania (Araneae: Eresidae)

Antonio-Marian DONCEA[1], Teodora COZMA[1], Alexandru-Mihai PINTILIOAIE[2,3], Mădălina-Ionela VICIRIUC[4], István URÁK[5], Gábor KOVÁCS[6]

[1]"Alexandru Ioan Cuza" University of Iași, Faculty of Biology, str. Carol I, no. 11, 700506, Iaşi, Romania, e-mail: donceaantonio12@gmail.com
[2]ICI RECENT AIR Center, Laboratory of Interdisciplinary Research on the Marine Environment and Marine Terrestrial Atmosphere, "Alexandru Ioan Cuza" University of Iași, Prof. Dr. Ioan Borcea Marine Biological Station, Agigea, Constanţa, Romania
[3]"Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Doctoral School of Biology, Iași, Romania
[4]INRAE, UMR1355 Institut Sophia Agrobiotech (ISA), Sophia Antipolis, France
[5]Sapientia Hungarian University of Transylvania, Faculty of Life Sciences and Sports, Str. Ciucului Nr. 50, Ro – 520036, Sfântu Gheorghe, Romania
[6]Londoni Krt. 1., Szeged, H–6724, Hungary

Key words: biogeography, DNA sequencing, *Eresus, Eresus hermani*, phenology, species distribution.

The family Eresidae comprises a small but taxonomically dynamic group of spiders (Araneae) whose diversity has been substantially revised over the last decade through integrative taxonomic approaches. Within the genus *Eresus* Walckenaer, 1805, the combination of detailed morphological investigations and molecular evidence has led to the description of several new species across Europe and Western Asia, including *Eresus hermani* Kovács, Prazsák, Eichardt, Vári & Gyurkovics, 2015, described from Hungary. Until recently, the Romanian fauna included only *E. kollari* Rossi, 1846, while the occurrence of *E. moravicus* Řezáč, 2008 was confirmed only in 2022. During that study, an additional *Eresus* specimen observed in Babadag Forest could not be confidently assigned to any known Romanian species, raising the possibility that it represented *E. hermani*.

Here, we confirm the presence of *Eresus hermani* in Romania extending the known distribution of the species beyond Hungary and the Czech Republic, using an integrative approach combining diagnostic morphology and mitochondrial DNA sequencing. The specimen was collected during the first stage of Eresus Project 2026 expedition, a targeted field survey designed to investigate the diversity and distribution of the genus in Romania following recent taxonomic advances. We additionally provide the first ecological characterization of the Romanian locality, document the associated plant community, insights into its diet in the wild, and compare the phenology of the Romanian population with published observations from Hungary.

Beyond documenting a new national record, our results demonstrate the importance of hypothesis-driven field surveys and integrative species identification for resolving the distribution of recently described taxa and establish the foundation for a comprehensive reassessment of the genus *Eresus* in Romania.

Comparative anatomy and functional morphology of the orthopteran ovipositor – a case study on the genus *Isophya* Brunner von Wattenwyl, 1878

Simeon BORISSOV[1], Tsvetan TSVETKOV[2], Boyan ZLATKOV[1], Vladislav VERGILOV[1], Dragan CHOBANOV[1]

[1]Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 1113 Sofia, Bulgaria, e-mail: borissovsb@gmail.com
[2]Institute of Biology and Immunology of Reproduction, Bulgarian Academy of Sciences, 1113, Sofia, Bulgaria

Key words: bush-cricket, 3-D reconstruction, musculature, ecology, adaptation.

Orthopterans are a conspicuous group of insects that occupy almost all terrestrial habitats, and play a particularly important role in grassland communities. Notable adaptation of Orthoptera is the ovipositor – a structure derived from the elongated VIII and IX abdominal segments in females that allows egg deposition in various substrates. The ovipositor is considerably elongated in representatives of the suborder Ensifera showing remarkable diversity in shape, often within a genus. Members of the family Tettigoniidae lay eggs mostly in soil but can exploit a variety of substrates such as dry plants, barks, crevices, etc. To date variation in ovipositor morphology has been studied mainly for taxonony but differences in its functional morphology between species and its role in environmental adaptation remain unclear.

In this study, the skeletal-muscular apparatus, responsible for the movement of the ovipositor was examined in four closely-related species of the genus *Isophya* and one distant relative for comparison - *Leptophyes albovittata* (Kollar, 1833).

Initially, a μCT scanning and a 3-D reconstruction were applied. To evaluate the mechanical properties of the valvae, autofluorescence ability of the cuticle was studied with confocal microscopy. Histological techniques were used to study the fine structure of the ovipositor. The species demonstrate differences in muscle size and cuticular rigidity in relation to different habitat specialisation. Results were related to phylogenetic reconstructions and ecological niche models. Possible adaptations for ovipositing in the context of historical climate changes are briefly discussed.

This study was supported by the Bulgarian National Science Fund (Grant No. KP-06-M-91/4).

Accelerating biodiversity research in the digital era: a case study on Platygastroidea (Hymenoptera)

Ana-Maria CHIOSA[1,2], Carmen NEUNER[2], Anna HAUPRICH[2], Ovidiu-Alin POPOVICI[3], Cristina LUPAȘCU-VASILIȚA[1,2], Lars KROGMANN[1,2]

[1]Center of Excellence for Biodiversity and Integrative Taxonomy (KomBioTa), University of Hohenheim & Stuttgart State Museum of Natural History, Wollgrasweg 23, 70599 Stuttgart, Germany, e-mail: ana-maria.chiosa@smns-bw.de
[2]Stuttgart State Museum of Natural History, Department of Entomology, Rosenstein 1, 70191 Stuttgart, Germany
[3]"Alexandru Ioan Cuza" University of Iași, Faculty of Biology, B-dul Carol I 20A, 700505 Iași, Romania

Key words: dark taxa, digitisation, Entomoscope, megabarcoding, micro-CT.

Insects represent the most diverse group of animals on Earth. They provide essential ecosystem services, such as pollination, herbivory, parasitism, seed dispersal, nutrient cycling, and soil modification. However, it is estimated that ~82% of insect species remain unknown, while undergoing an accelerated decline. This situation poses a major challenge for research and conservation, as many species are at risk of going extinct before they are discovered, documented, understood, or assessed for conservation purposes.

Accelerating insect research is therefore essential. We show how a digitisation-centred approach can provide an effective pathway towards faster and more comprehensive biodiversity research. Platygastroidea is one of the most species-rich groups of parasitoid wasps, with approximately 6,500 described species. They play fundamental ecological roles in regulating host populations, are widely used in biological control, and serve as sensitive bioindicators of environmental change. Platygastroid wasps are a classic dark taxon - minute body size, high species richness, prevalence of cryptic species and limited tools and identification resources.

At the Stuttgart State Museum of Natural History (SMNS), we apply a digitisation-centred comprehensive workflow that combines megabarcoding, AI-assisted identification tools, Large-scale Integrative Taxonomy (LIT) and synchrotron-based micro-computed tomography (SR-μCT). This approach supports species delimitation and reveals hidden diversity through a reverse workflow that combines morphological validation of mOTUs via the LIT pipeline with an AI-based identification tool developed with the Entomoscope's standardised digitisation method. In addition to that, SR-μCT is employed at the IMAGE beamline at the KIT Light Source (Karlsruhe Institute of Technology) for non-destructive three-dimensional visualisation of internal anatomy, providing unprecedented access to hidden morphological diversity. Together, these complementary approaches accelerate species discovery and improve our understanding of the diversity and life history of megadiverse dark taxa. This project illustrates how this can be applied in practice in the case study on Platygastroidea.

DNA barcoding of the family Encyrtidae (Hymenoptera, Chalcidoidea) in Romania

Andrada JUGARIU-VICOLEANU, Lucian FUSU

Research Group in Invertebrate Diversity and Phylogenetics, Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Iași, Romania, e-mail: jugariu2002@gmail.com

Key words: parasitoids, species delimitation, COI, Oxford nanopore, biodiversity.

DNA barcoding is a standard tool in integrative taxonomy, enabling the delimitation of species in cases where morphological characters are puzzling, inconspicuous or insufficient. The family Encyrtidae (Hymenoptera, Chalcidoidea) comprises over 4,900 described species and is one of the most important groups used in the classical biological control of scale insects (Coccidae, Diaspididae and Pseudococcidae). Their small size, high morphological variability, sexual dimorphism and host-induced phenotypic variation hinder species-level identification. Cryptic species appear to be frequent, including in genera of economic importance.

The Encyrtidae fauna of Romania has not been previously studied using molecular methods, and the family lacks a comprehensive public DNA barcode library. To address this gap, we used nanopore sequencing for the mitochondrial COI marker from Encyrtidae specimens collected from different regions of Romania, with DNA being extracted using a non-destructive method that allows the preservation and subsequent identification of the voucher specimens. The DNA barcodes are thus associated with mounted specimens in an entomological collection.

The COI marker proved effective for species delimitation and will support the development of a reference library for Encyrtidae from Romania and Europe, with applications in identifying and characterising biological control agents. The molecular data will be correlated with the morphological analysis of voucher specimens within an integrative framework. Expanding this library is an essential step toward the rapid molecular identification of Encyrtidae.

Harnessing molecular tools for the assessment of cryptic species prevalence in parasitoid wasps

Lucian FUSU[1], Antonia-Elena BEREȘ[1], Florina-Georgiana CABA[2], Maria-Magdalena DASCĂLU[3], Lucian HĂNCEANU[2], Andrada JUGARIU-VICOLEANU[1], Marius MIHĂȘAN[4], Mircea-Dan MITROIU[1], Andreea OPĂRIUC[1], Ovidiu-Alin POPOVICI[1]

[1]Research Group in Invertebrate Diversity and Phylogenetics, Faculty of Biology, "Alexandru Ioan Cuza" University of Iasi, Iași, Romania, e-mail: lucfusu@hotmail.com
[2]Research Center with Integrated Techniques for Atmospheric Aerosol Investigation in Romania (RECENT AIR), Institute of Interdisciplinary Research, "Alexandru Ioan Cuza" University of Iași, Romania
[3]Integrated Center of Environmental Science Studies in the North-Eastern Region (CERNESIM), Institute of Interdisciplinary Research, "Alexandru Ioan Cuza" University of Iași, Romania
[4]Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Iași, Romania

Key words: molecular species delimitation, hyperdiverse groups, biodiversity, biological control.

Parasitoid hymenopterans are small wasps that play a key role in regulating other arthropod populations, including many agricultural pests. As such, they are frequently used in classical biological control and augmentative biological control programs. Their effective use in biocontrol depends on accurately defining species boundaries and detecting cryptic diversity. Taxa traditionally regarded as generalist species may in fact represent complexes of closely related species with different host preferences, economic relevance, and ecological impacts. This study focuses on the molecular taxonomy of selected genera within Chalcidoidea and Platygastroidea (*Eupelmus*, *Spalangia*, *Ooencyrtus*, *Trissolcus* and others), integrating molecular and morphological evidence within an integrative taxonomy framework. Using DNA barcoding, high-throughput sequencing, reduced-representation genomic approaches, phylogenomics, and coalescent-based modelling, we aim to delimit cryptic species in the target groups. Molecular results are combined with morphological assessment to provide biologically meaningful species hypotheses. We expect that cryptic species will account for a substantial proportion of the currently recognized biodiversity with implication for biological control, biodiversity conservation, species number estimates, ecology. We are presenting test cases and envisaged future developments.

Financial support provided by the Romanian Executive Agency for Higher Education, Research, Development and Innovation Funding (UEFISCDI) through the grant PARACRYS (PN-IV-P1-PCE-2023-1971).

Does sexual dimorphism affect species delimitation within the *Cotesia tibialis* species complex (Insecta: Hymenoptera: Braconidae: Microgastrinae)?

Milica ANĐELKOVIĆ, Vladimir ŽIKIĆ, Maja LAZAREVIĆ

Department of Biology and Ecology, Faculty of Sciences and Mathematics, University of Niš, Višegradska 33, Niš, Serbia, e-mail: milica.andjelkovic2@pmf.edu.rs

Key words: *Cotesia*, geometric morphometrics, forewings, sexual dimorphism.

Cotesia is one of the most species-rich genera of lepidopteran larvae parasitoids within the subfamily Microgastrinae (Insecta: Hymenoptera: Braconidae) and includes several species complexes, among which the *Cotesia tibialis* complex is particularly challenging from a taxonomic perspective. Sexual dimorphism may contribute to morphological variation and potentially affects species identification based on the wing morphology.

This study aimed to assess differences in forewing shape and size between sexes and among species within the *C. tibialis* species complex and among species within the *C. tibialis* complex and determine whether species can be reliably identified based on forewing morphology regardless of sex.

A total of five taxa were examined: *Cotesia ofella*, *C. tibialis*, *C. trivalliae*, *C. vanessae*, and the currently undefined taxon *C. tibialis kampinoski*, collected from six European countries. Forewing morphology was quantified using 22 specific landmarks and analysed with geometric morphometric methods. Shape variation was explored using Principal Component Analysis (PCA), Canonical Variate Analysis (CVA), and Discriminant Analysis (DA).

Significant differences were detected among species as well as between sexes within species. However, interspecific variation in wing shape and size was substantially greater than sexual dimorphism, which was primarily expressed as differences in wing size. The greatest morphological divergence was observed between *C. tibialis* and *C. ofella*, mainly in forewing width and the broader pterostigma of *C. ofella*. *C. vanessae* was clearly distinguished from the remaining taxa by its shortened R1 vein and elongated pterostigma. Across all species, males consistently exhibited relatively broader forewings than females.

Forewing shape provides a stronger taxonomic signal than sexual dimorphism within the *C. tibialis* species complex, indicating that both male and female specimens can be used reliably for species identification based on wing morphology.

Cryptic diversity strikes again: the story of European endemic butterflies of the *Erebia melampus* complex

Nok Ting LAM[1], Vladislav IVANOV[1,2], Lola STEBLER[3], Claudia BRUSCHINI[4], Jan KOLLROSS[5], Pável MATOS-MARAVÍ[5], Irena KLEČKOVÁ[5], Sylvain CUVELIER[6], Marko MUTANEN[1], Leonardo DAPPORTO[4], Roger VILA[7], Kay LUCEK[3], Vlad DINCĂ[1,8]

[1]Ecology and Genetics Research Unit, University of Oulu, Oulu, Finland, e-mails: samuellam201206@gmail.com, marko.mutanen@oulu.fi
[2]Institut für Biowissenschaften, University of Rostock, Rostock, Germany, e-mail: vladislav.ivanov@uni-rostock.de
[3]Biodiversity Genomics Laboratory, Institute of Biology, University of Neuchâtel, Neuchâtel, Switzerland, e-mails: lola.stebler@unine.ch; kay.lucek@unine.ch
[4]Dipartimento di Biologia, Università degli studi di Firenze, Firenze, Italy, e-mails: claudia.bruschini@unifi.it; leonardo.dapporto@unifi.it
[5]Biology Centre of the Czech Academy of Sciences, Institute of Entomology, České Budějovice, Czech Republic, e-mails: jankollross92@gmail.com; pavel.matos@entu.cas.cz; irena.slamova@gmail.com
[6]Archives of Western Palearctic Lepidoptera, Ieper, Belgium, e-mail: sylvain.cuvelier@telenet.be
[7]Institut de Biologia Evolutiva (CSIC-Universitat Pompeu Fabra), Barcelona, Spain, e-mail: roger.vila@csic.es
[8]"Grigore Antipa" National Museum of Natural History, Bucharest, Romania, e-mail: vlad.dinca@antipa.ro

Key words: climatic niche, cold adapted, cuticular hydrocarbons, double-digest RAD sequencing, integrative taxonomy, Natura 2000 species, *Wolbachia* infection.

Resolving cryptic diversity in conservation-relevant species groups can have important consequences for future research, monitoring, and conservation policy. A particularly relevant case is the European butterfly complex comprising *Erebia melampus*, a widespread Alpine endemic, and *E. sudetica*, a highly localized species occurring in the French Massif Central, the Alps, the Sudetes, and the Carpathians. Although *E. sudetica* is emblematic of cold-adapted invertebrate conservation and is legally protected in Europe, its taxonomic status remains uncertain. Historically, it was regarded as a subspecies of *E. melampus*, and questions about whether it constitutes a separate species persist. At the same time, earlier molecular and morphological studies revealed substantial differentiation within *E. melampus*, raising the possibility that a third taxon, *momos*, occurs in the eastern Alps.

Here, we reassessed species boundaries within this complex using an integrative approach combining genomic data (double-digest RAD sequencing), ecological information (climatic niche), chemical traits (cuticular hydrocarbons), and microbiological data (*Wolbachia* infections).

Our results confirmed pronounced genetic differentiation between western and eastern Alpine populations of *E. melampus*, with the eastern Alpine lineage, *momos*, recovered as the sister group of *E. sudetica*. Gene flow among the three groups was limited, while their climatic niches differed significantly. Cuticular hydrocarbon profiles distinguished *E. sudetica* from *E. melampus*, whereas *momos* showed characteristics more closely associated with the latter. *Wolbachia*

infections were common in both *E. melampus* lineages, but in *E. sudetica* were detected exclusively in populations from the French Alps.

Overall, the combined evidence supports the distinctiveness of *momos*. This lineage could either represent a separate species restricted to the eastern Alps or a subspecies of *E. sudetica*. Treating *momos* as a subspecies of *E. sudetica* would substantially expand the recognized distribution of the latter and could therefore have important implications for its conservation status and management.

Investigating the effects of global warming on wetland-dependent populations with fragmented distribution in Anatolia using genome-wide SNP data from the *Simulium bezzii* (Diptera: Simuliidae) metapopulation

Ebru Ceren FİDAN[1], Sarp KAYA[2], Huriye DOĞRU[3], Davut Ümit ŞİRİN[1]

[1]Eskişehir Osmangazi University, Department of Biology, Eskişehir, Türkiye, e-mails: ebruceren@ogu.edu.tr; usirin@ogu.edu.tr
[2]Burdur Mehmet Akif Ersoy University, Department of Medical Services and Techniques, Burdur, Türkiye, e-mail: sarpkaya@mehmetakif.edu.tr
[3]Burdur Mehmet Akif Ersoy University, Graduate School of Natural and Applied Sciences, Burdur, Türkiye, e-mail: huriyedogruu@gmail.com

Key words: Global warming, *Simulium bezzii*, metapopulation dynamics, gene flow, wetland ecosystem.

This study investigates the genetic effects of global warming and anthropogenic pressures on *Simulium bezzii*, a freshwater dependent species innhabiting wetland ecosystems in Turkey. Genome-wide SNP data from 93 *S. bezzii* individuals collected from nine basins in Turkey were analyzed. Phylogenetic and population genetic analyses revealed that the species does not exhibit a distinct geographic-genetic structure in Anatolia. However, PCoA identified three genetic groups: Thrace, Western Anatolia, and Eastern Anatolia. These distinctions suggest that the Anatolian Diagonal and the Turkish Straits act as barriers to the species' distribution. Western Anatolia and Thrace populations indicated high genetic diversity, whereas populations from the Eastern Mediterranean and Western Black Sea exhibited low genetic diversity. Genetic bottlenecks were detected in the Marmara region populations, likely due to intense human activities. Additionally, analyses focusing on heat shock proteins revealed that southern populations exhibit slight adaptive differences compared to northern populations.

Overall, the results indicate that historical isolation, environmental pressures, and human activities have jointly shaped the genetic structure of *S. bezzii*. Anatolia appears to function as both a refuge and a zone of genetic admixture for this species, providing new insights into the conservation genetics of freshwater-dependent organisms under ongoing climate change.

Context-dependent trait evolution: is there evidence for an elevational pace of life syndrome in squamates?

Tiberiu Constantin SAHLEAN[1], Ryan Andrew MARTIN[2]

[1]Ecology, Taxonomy and Nature Conservation Department, Institute of Biology Bucharest, Romanian Academy, Bucharest, e-mail: tiberiu.sahlean@ibiol.ro
[2]Department of Biology, Case Western Reserve University, Cleveland, Ohio, USA

Key words: slow-fast continuum, environmental gradients, elevation, pace of life syndrome, Lacertilia, Serpentes.

The pace-of-life syndrome (POLS) hypothesis predicts that life-history, behavioral and physiological traits co-evolve along a fast-slow continuum in response to environmental pressures. While elevation gradients have been used to test these predictions in endotherms (especially birds), whether they consistently drive POLS evolution within species in squamate reptiles remains untested. We conducted a comprehensive meta-analysis to evaluate intraspecific divergence and variation in squamate life-history and physiological traits across elevational gradients. We extracted 671 effect sizes from 192 studies representing 104 squamate species across 10 families. Using multi-level models accounting for phylogeny and shared measurements, we quantified differences in trait means (via response ratios) and variance (via coefficient of variation) between low and high-elevation conspecific populations.

Our synthesis found no clear evidence for overall intraspecific trait divergence consistent with a squamate POLS. Across most categories—including adult body size, fecundity, and thermal tolerance—mean effect sizes were small and non-significant. However, specific traits diverged predictably: egg size increased by an average of 11% and body temperature decreased by 5.3% at higher elevations. We also detected divergent suborder responses; high-elevation snakes exhibited increased neonate size but reduced adult female size and fecundity, whereas lizards displayed minimal life-history responses. Furthermore, contrary to our expectation of precise high-elevation thermoregulation, body temperature variation significantly increased by 23.24% at higher elevations.

We conclude that POLS is not a robust framework for predicting intraspecific squamate responses to elevation. The lack of a universal syndrome likely reflects the clade's immense ecological diversity, behavioral buffering mechanisms, and the constraining effects of gene flow. These findings challenge broad syndrome models and highlight the necessity of evaluating context-dependent mechanisms in trait evolution.

Ecology, Behaviour and Conservation under Global Change

From habitat mapping to ecosystem functioning: benthic habitat heterogeneity drives functional diversity patterns in a Romanian Black Sea Marine Protected Area

Adrian TEACĂ, Tatiana BEGUN, Selma MENABIT,
Ana-Bianca PAVEL, Adrian POPA, Cătălina GAVRILĂ

National Institute for Research and Development on Marine Geology and Geoecology - GeoEcoMar, 23-25 Dimitrie Onciu Street, Bucharest, Romania, e-mail: ateaca@geoecomar.ro

Key words: marine protected area, biodiversity assessment, habitat mapping.

Benthic habitats and macrozoobenthic communities are fundamental components of marine ecosystems, supporting biodiversity, ecosystem functioning, and ecological resilience. However, baseline information on benthic habitat distribution, community structure, and ecological status remains limited for the 20-40 m depth zone of the Romanian Black Sea shelf. Within the Natura 2000 site ROSCI0066 "Danube Delta - Marine Area", GeoEcoMar conducted a long-term investigation to improve knowledge of benthic habitats and provide scientific support for ecosystem-based management and conservation planning.

This study aimed to characterize benthic habitat heterogeneity, assess macrozoobenthic community structure and diversity patterns, and evaluate the relationships between habitat variability, ecological quality, and ecosystem functioning within a Marine Protected Area.

Between 2015 and 2025, 18 field campaigns were conducted at 246 sampling stations across the 20–40 m depth zone. Sediment characteristics were classified according to the Folk 5/7 scheme and integrated with MSFD habitat typology through GIS-based spatial analyses. Habitat distribution maps were developed using sediment type, depth, and geographic data, and validated through multibeam bathymetry and Side-Scan Sonar surveys. Macrozoobenthic communities were sampled using a Van Veen grab, and ecological patterns were assessed using species richness, abundance, diversity indices, ecological quality indicators, and functional diversity metrics.

A total of 142 macrozoobenthic species were identified, revealing marked spatial variability in community composition across the study area. Six benthic habitat types were delineated according to the MSFD classification framework. Habitat heterogeneity, primarily driven by sediment characteristics and environmental gradients, influenced species distribution, diversity patterns, and the functional organization of benthic communities. Areas characterized by higher habitat complexity supported richer and more functionally diverse assemblages, indicating enhanced ecological stability and resilience.

In summary, the integration of habitat mapping, biodiversity assessment, diversity indices, and functional approaches highlights the importance of benthic habitat heterogeneity in supporting ecosystem functioning within a Romanian Black Sea Marine Protected Area. The findings provide valuable scientific information

for MSFD implementation, Natura 2000 management, marine spatial planning, and long-term biodiversity conservation strategies.

This work was supported by a grant of the National Research Authority, CCCDI - UEFISCDI, project number PN-IV-P6-6.1-CoEx-2024-0124, within PNCDI IV. Additional support was provided by the Romanian Ministry of Education and Research within the framework of the National CORE Programs (projects PN 23300202, PN23300101 and PN2330103), and by the Large Infrastructure Operational Programme through the project "Revision of the Danube Delta Biosphere Reserve Management Plan and Regulation" (SMIS Code 123322, contract no. 253/18.06.2019). The authors declare no conflict of interest.

Population size challenge in endemic freshwater species: field and spatial modelling of the idle crayfish

Antonio V. LAZA[1,2], Kristian MIOK[2,3], David LIVADARIU[2], Lucian PÂRVULESCU[1,2]

[1]Department of Biology, Faculty of Chemistry, Biology, Geography, West University of Timişoara, Pestalozzi 16A, 300115 Timişoara, Romania, e-mail: antonio.laza@e-uvt.ro
[2]Crayfish Research Centre, Institute for Advanced Environmental Research, West University of Timişoara, Oituz 4, 300086 Timişoara, Romania, e-mail: david.livadariu02@e-uvt.ro
[3]Faculty of Computer and Information Science, University of Ljubljana, Večna pot 113, 1000 Ljubljana, Slovenia, e-mail: rektorat@uni-lj.si

Key words: endemic species, conservation, population biology, population size, spatial ecology, species distribution modelling.

Estimating population size remains one of the most challenging tasks in ecology, particularly for endemic freshwater species where restricted distributions and data scarcity compound uncertainty. Using the idle crayfish (*Austropotamobius bihariensis* Pârvulescu, 2019), endemic to Romania's Apuseni Mountains, as a case study, we develop and validate a practical framework for population size estimation in data-scarce taxa. Capture–mark–recapture (CMR) surveys were conducted and three estimators (Chapman, Chao, Jackknife) applied to obtain absolute abundance estimates, which were integrated into a zero-inflated negative binomial (ZINB) modelling framework projected across an optimum river network under three habitat suitability scenarios (permissive, balanced, restrictive). Models incorporating field-verified non-presences (RA strategy) were compared against presence-only approaches (PO strategy) and validated through intensive surveys at 15 randomly selected sites using near-complete census collections as benchmarks. The Chao estimator within the RA-ZINB framework yielded the best predictive accuracy (RMSE = 22.3, R^2 = 0.98), while presence-only models performed substantially worse across all metrics. The balanced habitat suitability scenario – integrating spatial predictions with independently derived genetic population structure – produced the most ecologically realistic total population estimate of approximately 170,000 individuals. This framework offers a repeatable methodological template for population monitoring and conservation planning in narrow-range freshwater species globally.

Tomares nogelii dobrogensis (Caradja, 1895), a taxon requiring strict protection

Marius SKOLKA[1], Cristina CRAIU[2]

[1]Department of Natural Sciences, Faculty of Natural and Agricultural Sciences, Ovidius University; of Constanța, Aleea Universității nr. 1, B Building, Constanța, Romania, e-mail: mskolka@gmail.com
[2]"Danube Delta" Eco-Tourism Museum Center, "Gavrilă Simion" Eco-Museum Research Institute Tulcea, Str. 14 Noiembrie, Nr.1bis, 820009, Tulcea, Romania

Key words: *Tomares nogelii,* conservation measures.

Tomares nogelii dobrogensis is one of the most endangered taxa at national and European levels. With a population exterminated following over-collection in the 1970s, the subspecies was long considered extinct. 10 years ago, the taxon was rediscovered in northern Dobrogea, 150 years after the first report in 1866. Subsequent studies have shown that there are several populations, linked to the host plant – *Astragalus ponticus*.

The strict link with the host plant makes the species particularly sensitive. Despite the fact that the areas where the species occurs are included in Natura 2000 protected areas, the situation of the taxon is far from being one without dangers.

The changes that occur in the respective habitats, related to both human activity and climate change, are all factors that can affect the conservation status.

Management measures are particularly important for the conservation of this vulnerable subspecies, and awareness among stakeholders of protected areas where populations of this species are found is an essential condition for this taxon to survive. The fact that it is sought after by collectors is an additional impediment that requires dedicated and effective conservation measures.

In this paper, we present the situation of the population of *Tomares nogelii dobrogensis* as it emerged from the study carried out in the spring and summer of 2026.

The cryptic pollination role of social wasps in the Palaearctic: a systematic review of plant-wasp interactions

Kiril ARSOVSKI PRZO

Chair of Plant Insect Interactions, School of Life Sciences, Technical University Munich, Hans-Carl-von-Carlowitz-Platz 2, 85354 Freising, Germany, e-mail: kiril.arsovski@outlook.com

Key words: pollination, social wasps, Palaearctic, plant-insect interactions.

Despite increasing recognition of the contribution of non-bee insects to pollination, the role of social wasps (Vespidae: Vespinae) remains poorly understood and is frequently overlooked in pollination ecology. Research has predominantly focused on bees, hoverflies, and butterflies, while evidence of pollination by social wasps is dispersed throughout the literature and has not previously been synthesized for the Palaearctic region. Consequently, the diversity of plant species pollinated by social wasps, as well as the ecological contexts in which these interactions occur, remains inadequately characterized. To address this knowledge gap, a comprehensive literature review was conducted to compile published records of confirmed pollination by social wasps across the Palaearctic. Records were assessed for taxonomic reliability and evidence supporting plant-wasp pollination interactions. A verified database of social wasp and plant species was compiled, and associated habitat types and seasonal patterns were cross-referenced to evaluate the cryptic pollination potential of common European social wasps.

The review identified a diverse network of confirmed interactions involving species of *Vespula*, *Dolichovespula*, and *Vespa*, associated with a broad range of flowering plant taxa distributed across forest, grassland, agricultural, and urban habitats. Analysis of habitat and seasonal occurrence indicated that the majority of interactions took place during late summer and early autumn, corresponding with peak worker abundance and the flowering period of numerous nectar-producing plant species. Several plant species were found to be associated with multiple social wasp taxa, suggesting that these insects contribute more broadly to pollination networks than has traditionally been recognized.

The findings demonstrate that social wasps represent an overlooked but ecologically significant component of Palaearctic pollination systems. By providing the first comprehensive synthesis of confirmed plant-social wasp pollination interactions across the region, this study addresses an important knowledge gap and establishes a foundation for future investigations into the effectiveness, ecological significance, and conservation value of social wasps as cryptic pollinators. Recognition of their contribution expands current understanding of pollinator diversity and supports the inclusion of social wasps in future pollination ecology and biodiversity conservation research.

Age and growth research in neotropical amphibians and reptiles: a critical review of skeletochronology use

Teodora L. TĂNASE[1,2,3], Florina STĂNESCU[2,3,4], Sabina Elena VLAD[2,3,4], Diana SZÉKELY[5,6], Dan COGĂLNICEANU[2,3]

[1]"Ovidius" University of Constanța, Institute of Doctoral Studies, 58 Ion Vodă Street, 900573, Constanța, Romania, e-mail: teodoral.tanase@365.univ-ovidius.ro
[2]Research Center of the Department of Natural Sciences, Faculty of Natural and Agricultural Sciences, Ovidius University Constanța, Al. Universității no.1, 900470, Constanța, Romania, e-mail: teodoral.tanase@365.univ-ovidius.ro
[3]Association Chelonia Romania, 5 Paşcani Street, 062082 Bucharest, Romania, e-mails: teodoral.tanase@365.univ-ovidius.ro; florina.stanescu@365.univ-ovidius.ro; sabinaochiana@gmail.com; dcogalniceanu@univ-ovidius.ro
[4]Center for Research and Development of the Morphological and Genetic Studies of Malignant Pathology (CEDMOG), e-mails: florina.stanescu@365.univ-ovidius.ro; sabinaochiana@gmail.com
[5]Museo de Zoología, Universidad Técnica Particular de Loja, Loja, 110107, Ecuador, e-mail: dszekely@utpl.edu.ec
[6]Laboratorio de Ecología Tropical y Servicios Ecosistémicos (EcoSs-Lab), Facultad de Ciencias Exactas y Naturales, Departamento de Ciencias Biológicas y Agropecuarias, Universidad Técnica Particular de Loja, Ecuador, e-mail: dszekely@utpl.edu.ec

Key words: conservation, life-history traits, herpetofauna, data reporting, research synthesis.

Amphibians and reptiles are among the most threatened vertebrate groups globally, with 41% of assessed amphibian species and 21% of assessed reptile species at risk of extinction. The Neotropical region harbors a significant proportion of the global amphibian and reptile diversity yet remains understudied relative to the Holarctic region.

Understanding age and growth parameters is essential for estimating population dynamics and informing conservation strategies. Skeletochronology is a valuable method for this purpose as it is minimally invasive and relatively quick compared to long-term capture-mark-recapture studies. However, only 3.3% of amphibian species and 2% of reptile species have been studied using this tool worldwide, mostly in the Holarctic. We synthesized the available skeletochronology literature in Neotropical amphibians and reptiles to identify biases and gaps, and guide future research.

Our final dataset comprises 91 published papers (57 on amphibians and 34 on reptiles), disproportionately concentrated in Argentina and Brazil for amphibians, and Argentina and Mexico for reptiles. Bufonidae, Hylidae and Leptodactylidae were the most frequently studied amphibian families, while Liolaemidae dominates the dataset for reptiles.

Beyond this uneven taxa coverage, we found substantial inconsistencies in how authors reported their data, with sampling location coordinates, period of the study, sample sizes and skeletochronology protocols frequently omitted or incomplete. These further limit the comparability and reusability of existing data. Our synthesis shows that Neotropical skeletochronology research is not only geographically and taxonomically biased but also methodologically inconsistent and underlines the need for standardized reporting protocols to support future comparative and conservation-oriented analyses.

Ectoparasitism in a widespread spiny lizard of Mexico: effect of habitat and host phenotype

César A. DÍAZ-MARÍN, Aurelio RAMÍREZ-BAUTISTA

Laboratorio de Ecología del Paisaje y Ordenamiento Ambiental, Centro de Investigaciones Biológicas, Instituto de Ciencias Básicas e Ingeniería, Universidad Autónoma del Estado de Hidalgo, km 4.5 carretera Pachuca-Tulancingo, 42184, Mineral de La Reforma, Hidalgo, México, e-mail: cesaardm@hotmail.com

Key words: color polymorphism, mites, *Sceloporus* lizard, intraspecific variation.

Ectoparasitism in a host can vary depending on different extrinsic (e.g., habitat type and seasonality) and intrinsic (e.g., body size, sex, and polymorphism) factors. If they are considered simultaneously, we can have a better picture of infection patterns and their associated consequences. Therefore, the objective of this study was to analyze the mite load in four populations of the lizard *Sceloporus grammicus* that inhabit contrasting environments in central Mexico. Specifically, we evaluated possible differences in the prevalence (P%), mean abundance (MA), and mean intensity (MI) of mites across habitats, seasons (dry and rainy), sexes, and color morphs of *S. grammicus*. Likewise, it was determined whether there is an attachment affinity of mites towards specific lizard body regions.

The P% was similar among habitats, seasons, sexes, and color morphs, whereas MA and MI increased with body size and mass of lizards. These last parameters were higher in lizards from montane cloud forest and grassland than in those from the pine-oak forest. Additionally, female lizards of grassland had higher MI than those of pine-oak forest, while male lizards of montane cloud forest had higher MI than those from the pine-oak forest and xeric scrubland. Similarly, the attachment affinity of mites in lizard body regions is defined by habitat type, sex, and color morph. These results show that the complexity of intraspecific patterns of ectoparasitism in *S. grammicus* is determined by phenotypic characteristics and environmental factors; therefore, future studies could evaluate their effect on individual's fitness, as well as on the dynamics and persistence of lizard populations.

Timing matters: sexual dichromatism and sex-specific moult investment across the annual cycle

Kimberley HANNA[1], Yosef KIAT[2]

[1]School of Zoology, Faculty of Life Sciences, Tel Aviv University, Tel Aviv, Israel, e-mail: kimberleyh@mail.tau.ac.il
[2]Steinhardt Museum of Natural History, Tel Aviv University, Tel Aviv, Israel, e-mail: yosefkiat@tauex.tau.ac.il

Key words: sexual dichromatism, moult extent, passerines, sexual selection, plumage coloration.

Sexual dichromatism is a widespread outcome of sexual selection in birds, but the production and maintenance of sex-specific plumage signals depend on moult, the only process through which feathers are renewed. Because moult is constrained by time, energy, and resource availability, sexually selected coloration may require males and females to invest differently in feather replacement. However, the relationship between sexual dichromatism and sex-specific moult investment remains poorly understood. We examined whether sexual dichromatism predicts differences between males and females in wing and tail moult extent across 113 passerine species, based on data from 10,379 individuals. We analysed two distinct moult events: the post-juvenile moult, occurring shortly after fledging, and the pre-breeding moult, occurring before the breeding season. Species-level sexual dichromatism was combined with sex-specific estimates of moult extent, and associations were tested using phylogenetically informed models. Sexual dichromatism was strongly associated with intersexual differences in pre-breeding moult extent. In more dichromatic species, males – the more ornamented sex – replaced more feathers than females, resulting in larger differences in moult extent between the sexes. In contrast, sexual dichromatism was not associated with sex differences during the post-juvenile moult. These findings suggest that sex-specific investment in moult becomes most pronounced when feather renewal directly contributes to the production of breeding plumage and sexually selected visual signals. Moult should therefore be viewed not only as a maintenance process, but also as a key mechanism linking sexual selection with life-history trade-offs across the avian annual cycle.

Intraspecific spatio-temporal segregation in brown bears (*Ursus arctos*) in the South-Eastern Carpathians

Steluța MANOLACHE[1], Teodora SIN[1,2], Lavinia C. PÎNDARU[1], Viorel D. POPESCU[1,3], Mihai I. POP[1,2,4]

[1]Centre for Environmental Research and Impact Studies. University of Bucharest, N. Bălcescu Blvd, No.1, Sector 1, 010041, Bucharest, Romania, e-mail: aanamanola13@gmail.com
[2]Association for the Conservation of Biological Diversity (ACDB), 12 Ion Creangă street, Focșani, Vrancea, Romania
[3]Columbia University, School of Professional Studies & Department of Ecology, Evolution and Environmental Biology, New York, USA
[4]Research and Development Institute for Wildlife and Mountain Resources, 35/B Progresului street, Miercurea Ciuc, Harghita, Romania, e-mail: minelpop@yahoo.com

Key words: brown bears, *Ursus arctos*, intraspecific segregation, diel activity.

Intraspecific segregation in brown bears (*Ursus arctos*) is considered a key mechanism for reducing competition and infanticide risk. The study presents preliminary results from the IntraBEAR project, based on 1,872 records collected in 2020–2022 at 32 stations in the Putna Vrancea Natural Park in the South-Eastern Carpathians. We tested three hypotheses: temporal segregation, spatial segregation, and asymmetric temporal dominance among adult males, adult females, and juveniles. Diel activity overlap was estimated using the Dhat4 coefficient; asymmetry in arrival order at a station was tested using a binomial test within a 48-h window; and habitat effects on arrival order were assessed using univariate logistic GLMs, with land cover (CORINE), landscape heterogeneity (Shannon's Diversity Index), terrain ruggedness (Terrain Ruggedness Index), and distance to the wildland-urban interface as covariates. Temporal overlap was high for all group pairs, both annually (Dhat4=0.900-0.937) and across the four biological seasons (Dhat4=0.926-0.979), not supporting temporal segregation at the diel scale. All three groups were detected at 78.1% of stations, indicating the absence of complete spatial segregation, although some stations were consistently dominated by juveniles or by males. Only one dominance pattern was significant: adult females preceded adult males in 66.7% of the 42 pairs analysed (p=0.044), consistent with active avoidance of infanticide risk by females with cubs. The probability that males arrived first increased with the proportion of coniferous forest (OR=2.30) and decreased with the proportion of broadleaf forest (OR=0.41). These results are constrained by a high proportion of unclassified records (41.9%), and a small station-level dominance. We tentatively conclude that coexistence among demographic groups in this population is not mediated by diel temporal partitioning but may instead depend on fine-scale spatial or behavioural mechanisms, including avoidance of adult males by females.

A preliminary analysis of coat pattern variation in the Eurasian lynx (*Lynx lynx*) from the eastern Romanian Carpathians

Carolina MICHELOTTO[1], Alex BELLAN[1], Teodora SIN[1], Ilenia MAROCCO[2], Bogdan KRAFT[3], Andrei DINU[4], Yon HALOTEL[5], Naima DALPIAZ[6], Paola ANTONINI[7], Alexis PINZIO[8], Marco FILZ[3], Leonas DINU[9], Andrea GAZZOLA[1]

[1]Association for the Conservation of Biological Diversity (ACDB), Focșani, Romania, e-mail: carolinamichelotto19@gmail.com
[2]Department of Conservation Biology, University of Göttingen, Göttingen, Germany
[3]Independent Scholar
[4]Wildlife Biology Program, Department of Ecosystem and Conservation Sciences, College of Forestry and Conservation, University of Montana, Missoula, MT, USA
[5]Faculty of Applied Ecology, Agricultural Sciences and Biotechnology, University of Inland Norway, Elverum, Norway
[6]Institute of Nature Conservation of the Polish Academy of Sciences, Kraków, Poland
[7]Department of Life Sciences, University of Siena, Siena, Italy
[8]Slovenian Forest Service, Ljubljana, Slovenia
[9]National Forest Administration – Romsilva, Bucharest, Romania

Key words: coat pattern, camera trapping, Eurasian lynx, eastern Romanian Carpathians

Coat pattern in the Eurasian lynx is a highly heritable phenotypic marker with important evolutionary and conservation implications. Besides encoding information about historical population divergence and range expansion, it can also reflect current demographic stress, serving as an early-warning sign for inbreeding/bottleneck effects. While such effects have been documented in the Slovak part of the Carpathian lynx population, the coat pattern polymorphism of the Romanian population, which encompasses almost 50% of the Carpathian range and harbours one of the largest native lynx populations in Europe, remains unexplored.

In this study, we examined the distribution of coat pattern phenotypes across three areas in the Eastern Romanian Carpathians to assess their polymorphism and relative frequencies. We analysed a dataset of 11,140 images collected through systematic and opportunistic camera-trapping between 2017 and 2026.

A total of 85 individuals (33 males, 22 females, and 30 of unknown sex) were independently identified and classified by at least two observers. After excluding uncertain or unidentifiable individuals, coat patterns were assigned to one of three phenotypic categories: Spot, Rosette, or Uniform. The Spot phenotype was the most frequent (47.0%), followed by Rosette (36.5%) and Uniform (16.5%). No statistically significant differences in coat pattern distribution were detected among the three study areas (Monte Carlo χ^2 test, $p = 0.127$).

While the Spot phenotype remains the dominant category, the retention of all three phenotypes is consistent with a demographically robust, well-connected population – in contrast to the phenotype homogenization seen in small, isolated populations. Our findings provide the first characterization of coat pattern distribution in the Romanian Carpathian population, expanding current knowledge of phenotypic variation across the species' Carpathian range. This work also establishes a baseline for detecting past changes through comparison with historical records and for

assessing future changes resulting from imminent infrastructure development and potential habitat fragmentation in Romania.

Current status of golden jackal (*Canis aureus*) in the Republic of Moldova

Mihail ȘCERBLIUC[1,2], Anatolie SAVIN[3,4],
Victoria NISTREANU[3,4], Alina LARION[3,4]

[1]Society of Hunters and Fishermen of the Republic of Moldova, e-mail: mihail.scerbliuc@mail.ru
[2]Moldova State University, Doctoral School of Natural Sciences, Chișinău, Republic of Moldova, e-mail: mihail.scerbliuc@mail.ru
[3]Moldova State University, Institute of Zoology, Chișinău, Republic of Moldova, e-mail: vicnistreanu@gmail.com
[4]Theriological Society of the Republic of Moldova, e-mail: alinalarion68@gmail.com

Key words: golden jackal, expansion, population ecology, Republic of Moldova.

Although the golden jackal (*Canis aureus*) is not considered an invasive species, due to climate change, its intense expansion in Europe in the last decades has become a major problem of ecological and conservation concern, driven by its rapidly increasing range and the implications for biodiversity and human-wildlife conflicts. The golden jackal appeared in Moldova in the early 2000s, initially inhabiting the forest and marsh ecosystems of the Lower Dnister and Prut rivers. Subsequently, it dispersed northward along Dnister and Prut meadows, with an average annual growth rate of over 55%.

At present, the number of jackals in the arboreal biotopes and wet habitats of the Prut and Dniester rivers and their tributaries is estimated at about 3500 individuals. Thus, in the last 3 years the species has an average annual increase of 39%, most of the population (70%) being distributed in the meadows of the lower areas of the Dnister and Prut rivers.

In wetlands the jackal feeds on rodents and water birds, substantially reducing the number of pheasants and aquatic species of hunting interest. It can hunt hares and roe deer, covering the ecological niches of the raccoon dog and fox, whose populations are already much above optimal. The jackal causes damage to sheep owners, domestic birds, and wild birds nesting in wet habitats.

The golden jackal is able to occupy new territories very quickly, performing seasonal migrations at distances of 70-100 km, due to ecological plasticity and high reproductive capacity. Migration has a familial character and males take care of the education of the offspring. Thanks to the aforementioned factors, golden jackals adapt very well to any environment, taking advantage of accessible food resources even in localities.

The study was conducted within the project 26.80013.7007.03MDTR, Moldova State University subprogram 010701 and the doctoral project "Sedentary game species in the Republic of Moldova - biology, ecology and sustainable management".

Evidence, gaps, and priorities in European research on human-large carnivore coexistence

Laurențiu ROZYLOWICZ, Steluța MANOLACHE, Andra Claudia NEAGU, Andreea NIȚĂ, Iulian M. NICULAE, Cristian IOJA, Mihai R. NIȚĂ, Viorel D. POPESCU

University of Bucharest, Center for Environmental Research and Impact Studies, 1 N. Bălcescu Blvd., 010041 Bucharest, Romania, e-mail: laurentiu.rozylowicz@g.unibuc.ro

Key words: human-wildlife coexistence, large carnivores, systematic review, conservation conflict, Europe.

Large carnivores are recolonising human-dominated landscapes across Europe, making coexistence an increasingly urgent research and policy priority. To assess how well the literature can inform decisions, we reviewed 335 peer-reviewed studies published between 1988 and 2025 on conflict and coexistence involving the gray wolf (*Canis lupus*), brown bear (*Ursus arctos*), Eurasian lynx (*Lynx lynx*), wolverine (*Gulo gulo*), Iberian lynx (*Lynx pardinus*), and golden jackal (*Canis aureus*), coding each against a standardised 56-question protocol covering design, drivers, solutions, definitions, and policy context. Research output has grown sharply since 2015, with 78% of studies published in the last decade, although coverage remains uneven across species. The wolf appeared in 74.6% of studies and the brown bear in 46.0%, followed by the Eurasian lynx (25.7%), whereas the wolverine (11.6%), Iberian lynx (2.7%), and golden jackal (2.1%) were rarely addressed. Research also clustered in Italy (25.1%), Sweden (23.6%), Spain (20.9%), Germany (18.2%), and Norway (17.3%), and 69% examined a single country.

Most studies were empirical (77%) and observational (73%), relying on questionnaires, government databases, and interviews, and were situated in mixed social-ecological (47.5%) or social (35.5%) domains. Conceptual foundations nevertheless remain weak, since 68% gave no explicit definition of coexistence or conflict, and Carter and Linnell's (2016) framework, the most frequently cited, appeared in only 8%. Drivers were analysed in 96% of studies, dominated by human attitudes and perceptions (77%), whereas solutions were evaluated in only 69%, most often compensation schemes, education programmes, and livestock guardian animals. Conflict metrics (52%) were reported more than twice as often as coexistence metrics (23%), showing a persistent focus on negative interactions. Advancing the field will require standardised definitions, greater attention to understudied species and to eastern and southeastern Europe, experimental evaluation of interventions, and cross-national comparative designs that match the transboundary scale of carnivore populations.

This work was supported by a grant from the Romanian Ministry of Education and Research, CNCS-UEFISCDI, project number PN-IV-P1-PCE-2023-1119 (Harmonia), within PNCDI IV.

Zoological Collections, Museums and Research Infrastructures

Building World of Crayfish®: from a continental pathogen question to a global portal

Constanța-Mihaela ION[1], Lucian PÂRVULESCU[2,3]

[1]Institute of Biology Bucharest, Romanian Academy, 296 Splaiul Independenței, Bucharest, Romania, e-mail: mihaela.ion@ibiol.ro
[2]Department of Biology-Chemistry, Faculty of Chemistry, Biology, Geography, West University of Timișoara, Timișoara 300115, Romania, e-mail: lucian.parvulescu@e-uvt.ro
[3]Crayfish Research Centre, Institute for Advanced Environmental Research, West University of Timișoara, Oituz 4, Timișoara 300086, Romania

Key words: biodiversity informatics, freshwater crayfish, occurrence data, Darwin Core, host–associate interactions.

To map the genotypes of *Aphanomyces astaci*, the crayfish plague agent, across Europe, we needed current distributions of its crayfish hosts. None were available: the most recent continental synthesis was already years old, and rebuilding one from scattered literature lay beyond the reach of a single study, so the work proceeded without it.

World of Crayfish® was the response: a living portal rather than a periodic snapshot. It launched in October 2024 with 105,611 records from 427 taxa, assembled by 91 contributing authors, and now holds over 120,000 validated occurrences across 676 crayfish species. Every record passes expert review rather than crowd-sourcing: slower growth, dependable data.

Displaying distributions was never the endpoint. Open, reproducible modules turn validated occurrences into versioned, citable Species Exposure Bundles: machine-readable manifests carrying IUCN-aligned metrics, spatial context and provenance, built to be queried by machines as readily as read by people. Ecological and conservation modules are already operational, mapping richness and hotspots and flagging populations whose last record is old enough to warrant re-verification, escalating to critical where an invasive neighbour lies nearby.

A portal built around hosts invites a question about itself: does its coverage of associated organisms match its coverage of crayfish? The schema follows Darwin Core, keeping records interoperable with infrastructures such as GBIF, and every associated taxon is tied to a named crayfish host. The biotic-interaction dimension, however, remains underdeveloped. Associated taxa of all classes, from ectosymbionts such as branchiobdellidans to viruses, bacteria and fungi including *A. astaci*, are recorded from only 81 of the 676 host species, in 948 records, under 1% of the database. More data are needed, and a dedicated module is envisaged.

We present how the portal was built, where it stands and what comes next, for the astacologists working today and for those who follow.

DoME - a low cost and high throughput solution for 3D digitisation of insect collections

Beatrice SPENCE[1,2], Arissa-Elena ROTUNJANU[1,2], Nga Ting Anna YIU[2], Tiffany KI[2], Anil MADHAVAPEDDY[1], Edgar TURNER[2]

[1]Energy and Environment Group, Department of Computer Science and Technology, University of Cambridge, Cambridge, United Kingdom, e-mails: bsys2@cam.ac.uk; aer82@cam.ac.uk
[2]Insect Ecology Group, Department of Zoology, University of Cambridge, Cambridge, United Kingdom

Key words: 3D digitisation, affordability, biodiversity, insects, smart phone.

Museum insect collections are valuable for understanding long-term biodiversity trends amidst global insect decline. While 2D digitisation is useful, the information it gathers is limited and current 3D digitisation methods have significant cost and time barriers to digitisation for small museums. We present the DoME (Digitisation of Museum Entomology), an affordable, open-source automated 3D scanning setup which exploits easy to use and commonly-found smart phone technology. DoME features a 3D-printed dome, a Raspberry Pi-controlled motorised turntable, and an automated image-capturing application. The DoME rotates the smartphone around the specimen to capture multi-angle perspectives without excessive movement of the specimen. The DoME system reduces hardware costs to £300 and scanning time per specimen to up to 30 minutes. Image capture and specimen processing times are substantially reduced compared to existing pipelines. Whilst the resolution is reduced by DoME, it excels in cost and speed, and can accurately capture key morphological traits across a range of insects. This highly accessible, low-cost system will allow small museums to carry out and scale up 3D digitisation efforts.

The first DNA reference library of macroinvertebrates in Armenia

Marine DALLAKYAN[1], Vardan ASATRYAN[1], Liana POGHOSYAN[1], Jana THORMANN[2], Laura VON DER MARK[2], Jonas J. ASTRIN[2]

[1]Scientific Center of Zoology and Hydroecology, P. Sevak 7 str., 0014, Yerevan Armenia, e-mail: zoohec@sci.am
[2]Zoological Research Museum Alexander Koenig - Leibniz Institute for Animal Biodiversity ZFMK, Adenauerallee 127 53113 Bonn, Germany, e-mail: j.astrin@leibniz-lib.de

Key words: DNA barcoding, reference library, macroinvertebrates, insects.

Freshwater macroinvertebrates are widely recognized as key bioindicators for assessing the ecological status of aquatic ecosystems. In Armenia, despite increasing efforts in hydroecological research, comprehensive DNA-based reference libraries remain overlooked in many taxonomic groups relevant to the aquatic environment. This study presents the first initiative to establish a DNA barcode reference library for freshwater macroinvertebrates in Armenia, aiming to support biodiversity assessment, ecological monitoring, and conservation planning.

Since 2019, we collected 248 Diptera samples (Athericidae, Blephariceridae, Ceratopogonidae, Chironomidae, Culicidae, Dixidae, Ephydridae, Fanniidae, Limoniidae, Muscidae, Pediciidae, Psychodidae, Sepsidae, Simuliidae, Syrphidae, Tabanidae, Tipulidae), 398 Ephemeroptera (Baetidae, Caenidae, Ephemerellidae, Heptageniidae, Leptophlebiidae, Oligoneuridae), 76 Odonata (Aeshnidae, Agrionidae, Coenagrionidae, Cordulegastridae, Euphaeidae, Gomphidae, Libellulidae, Platycnemididae), 101 Plecoptera (Capniidae, Leuctridae, Nemouridae, Perlidae, Perlodidae, Taeniopterygidae), 426 Trichoptera (Apataniidae, Brachycentridae, Glossosomatidae,Goeridae, Hydropsychidae, Hydroptilidae, Lepidostomatidae, Leptoceridae, Limnephilidae, Philopotamidae, Polycentropodidae, Psychomyiidae, Rhyacophilidae, Sericostomatidae, Uenoidae). The integration of molecular and morphological approaches during the ensuing analysis of all these specimens allowed for the detection of cryptic diversity and refinement of taxonomic identifications.

The establishment of the first DNA barcode reference library of macroinvertebrates marks a significant step toward modernizing freshwater ecosystem assessment in Armenia. It lays the foundation for future research and efficient biomonitoring methods (e.g., metabarcoding), improved water quality monitoring, and evidence-based conservation strategies in the region.

The work is supported by the Higher Education and Science Committee of Armenia, as part of research project # 24WS-1F046.

Preliminary data on the Bănărescu-Nalbant ichthyological collection ("Grigore Antipa" National Museum of Natural History)

Alexandru IFTIME

"Grigore Antipa" National Museum of Natural History, Kiseleff Blvd. No. 1, Bucharest, Romania, e-mail: aiftime@antipa.ro

Key words: Bănărescu-Nalbant, ichthyology, museum, collection, species, heritage.

The Bănărescu-Nalbant ichthyological collection ("Grigore Antipa" National Museum of Natural History), thus named after its collectors and organizers, the late Petru M. Bănărescu (1921-2009) and the late Teodor T. Nalbant (1933-2011), is one of the largest memorial ichthyology collections in European museums. It is still being evaluated and registered, a lengthy process that, however, permits to estimate the already processed part (as of July 2026) at 3398 inventory numbers containing 22219 physical specimens, belonging to more than 700 species (the exact figure depends upon the taxonomical arrangement followed) and 17 families, hailing from Romania and 66 other countries in Africa, Asia, Europe and North America; most of the Eurasian landmass is represented. Cypriniform fishes (fam. Acheilognathidae, Botiidae, Cobitidae, Cyprinidae, Danionidae, Gobionidae, Leptobarbidae, Leuciscidae, Nemacheilidae, Tincidae, Xenocyprididae) form the great majority of this collection. We discuss the importance of this vast heritage for taxonomy, faunistics and conservation, as well as its memorial value, highlighting rare specimens, difficult to obtain (especially nowadays), and scientifically interesting series.

POSTER PRESENTATIONS

Biodiversity and Biogeography of Native and Non-native Faunas

Nematological research on plant-parasitic and virus-vector species associated with apple crops under intensive production systems

Elena IURCU-STRĂISTARU, Alexei BIVOL, Ştefan RUSU, Viorelia RUSU

Moldova State University, Institute of Zoology, str. Academiei 1, 2028 MD, Chişinău, Republic of Moldova, e-mails: iurcuelenastraistaru@gmail.com; bivolalexei65@gmail.com; rusus1974@yahoo.com; viorelia1@yahoo.com

Key words: intensive apple orchards, nematodes, biological control, abundance, frequency.

The fruit-growing sector of the Republic of Moldova has undergone many stages of transformation, including changes in the ratio between state and private ownership in favour of private property. These processes have led to a considerable reduction in orchard areas, alongside the implementation of new cultivation systems, modern assortments, quality standards, and increased exposure to biotic and environmental stress factors. In this context, nematological investigations were carried out on populations of invasive and vectorial plant-parasitic nematodes associated with apple crops in orchards managed under intensive technological systems. The aim of the research was to determine the structure and diversity of parasitic nematode complexes with invasive and vectorial impact on apple crops from different fruit-growing production areas, as well as to identify the most harmful species for intensive apple orchards. The objectives focused on identifying the most dangerous associated nematode complexes, including forms acting as vectors of pathogenic viruses, mainly from the orders Tylenchida and Dorylaimida, in apple crops.

As a result of the investigations, 15 species of invasive and vectorial nematodes were recorded, with parasitic impact and involvement in viral disease transmission. These species were detected practically in all investigated orchards, with comparative population densities ranging between 100 and 250 individuals/100 g of soil. The identified nematodes were classified into five groups according to their trophic parasitic specialization and belonged to the genera *Pratylenchus, Rotylenchus, Ditylenchus, Paratylenchus* and *Criconemoides.* At the same time, the presence of nematode species acting as vectors of pathogenic viruses was established. The most frequent and abundant species belonged to the order Dorylaimida, including *Longidorus elongatus, Xiphinema index, X. riversi, X. brevicolle, X. diversicaudatum* and *Trichodorus primitivus.*

The phytosanitary surveys carried out in apple orchard sectors also revealed helminthotic disorders affecting both fruit-bearing trees and young planted seedlings aged 2–4 years. The incidence of these disorders ranged from 5% to 20%, depending on the level of agrotechnological maintenance, and was recorded practically in all investigated agrocenoses.

The research was carried out with the support of research subprograms 010701 of the State University of Moldova, Institute of Zoology.

New species of Oniscidea (Isopoda, Crustacea) from Dobrogea (Romania)

Andrei GIURGINCA[1], Ştefan Cătălin BABA[1,2], Augustin NAE[1]

[1]"Emil Racoviţă" Institute of Speleology, 13 Septembrie No 13, 13059711, Bucharest, Romania, e-mails: sankao2@yahoo.com; augustin.nae@iser.ro; augustin.iser@gmail.com
[2]Faculty of Biology, University of Bucharest, Splaiul Independenţei 91-95, 050095, Bucharest, Romania, e-mail: b.stefan@bio.unibuc.ro

Key words: Oniscidea, Dobrogea, *Protracheoniscus*, *Trachelipus*, *Armadillidium*.

Dobrogea represents an apart biogeographical unit with mixed and complex features, situated at the intersection of several bioclimatic zones and regarded as a local Euxinic subrefuge (part of the great Mediterranean refuge) characterized by species with particular distribution and habitat preferences.

Analyzing the Oniscidea from Dobrogea from a zoogeographic point of view, the presence of *Monocyphoniscus babadagensis* Radu, 1965, *Platyarthrus atanassovi* Verhoeff, 1936, *P. coronatus* Radu, 1985 and one endemic species of the genus *Kithironiscus* Schmalfuss, 1995 and the species *Leptotrichus pilosus* Dollfus, 1905 supports a close relationship with the East-Balkan and East-Mediterranean fauna. The presence of the species *Protracheoniscus scythicus* Demianowicz, 1932, *Armadillidium traiani* Demianowicz, 1932, *A. jaqueti* Dollfus, 1897 points to a relationship with the fauna of regions situated northward and eastward to Dobrogea.

This double connection, on one side with Crimea and the Caucasus and, on the other side, with the East-Mediterranean is supported by the discovery of several new species of Oniscidea.

Trachelipus razzauti (Arcangeli, 1913), a species recently found for the first time in the collection of the Institute of Speleology, is now collected from South Dobrogea, confirming the species presence in the whole of Dobrogea. As the species is distributed from the Caucasus, Turkey, Greece, Bulgaria its presence endorses the connection with the Mediterranean region and climate.

Armadillidium insulanum Verhoeff, 1907 was previously recorded only from Greece (north and central Aegean islands): this is the first record of the species in Romania and emphasizes an obvious close relationship with the East-Mediterranean fauna.

A new species of the genus *Protracheoniscus* Verhoeff, 1917 supports the connection of Oniscidea of Dobrogea with Crimea and the Caucasus.

Barcodes and biases in the Black Sea: a regional reference database for Copepoda

Teona-Alexa CÂRCIOIU

"Grigore Antipa" National Museum of Natural History, Şos. Kiseleff no. 1, 011341 Bucharest 1, Romania, e-mail: teona.carcioiu@antipa.ro
University of Bucharest, Faculty of Biology, Department of Genetics and Biotechnology

Key words: Copepoda, metabarcoding, COI, regional reference database.

Copepods represent a major proportion of marine zooplankton abundance and biomass and mediate organic matter transfer from primary producers and microbial food webs to higher trophic levels. Their taxonomic composition, abundance and spatial distribution provide information on changing aquatic ecosystems, but small size, complex morphology and cryptic diversity complicate identification. This is especially relevant in the semi-enclosed Black Sea, where improved copepod biomonitoring could help assess impacts of climate change, biological invasions and anthropogenic pressures.

The increased availability of high-throughput sequencing (HTS) has made DNA metabarcoding and environmental DNA (eDNA) promising tools for biomonitoring, but reliable molecular assignment depends on curated reference libraries. Geographically and taxonomically targeted libraries can improve assignment accuracy and resolution while reducing false or ambiguous identifications.

Public COI records and annotated mitochondrial genomes were retrieved from NCBI and BOLD for an operational list of 20 copepod taxa considered part of the present-day Black Sea fauna, established through a 2010–2026 literature review and expanded with comparator taxa representing the 10 operational families. Four of the 20 operational taxa lacked public COI records. Sequences were curated and processed using CRABS to generate primer-specific libraries for the mini-barcode primer sets Leray-XT and the copepod-targeted CopeMini. The final stringent Leray-XT library contained 395 references representing 13/20 operational taxa, while CopeMini contained 420 references representing 12/20. Primer–template mismatch was the main exclusionary factor for CopeMini, whereas Leray-XT losses were driven primarily by incomplete target-region coverage and stringent amplicon-length requirements.

These results show that public COI availability does not necessarily translate into usable metabarcoding references and that both reference gaps and primer compatibility can limit species-level detection. The resulting libraries provide a curated regional resource for Black Sea copepod metabarcoding and identify priorities for additional reference sequencing.

Reassessment of *Strigamia* Gray, 1843 (Chilopoda: Geophilomorpha) in Romania: species diversity, morphological variation and distribution

Maria NĂSTASE[1], Ștefan Cătălin BABA[1,2]

[1]Faculty of Biology, University of Bucharest, Splaiul Independenței 91-95, 050095 Bucharest, e-mail: maria_nastase2004@yahoo.com
[2]"Emil Racoviță" Institute of Speleology, Romanian Academy, Calea 13 Septembrie 13, 050711, Bucharest, Romania

Key words: Chilopoda, Geophilidae, intraspecific variability, geographical distribution, endemic species.

The genus *Strigamia* Gray, 1843 (Geophilidae: Linotaeniinae) comprises widespread soil-dwelling centipedes distributed across most of Europe. This study aims to reassess the diversity and taxonomic status of the *Strigamia* species occurring in Romania in light of recent advances in the systematics of the genus, while also providing new insights into their intraspecific morphological variation.

The material examined comprised 187 specimens selected from the unidentified centipede collection of the "Emil Racoviță" Institute of Speleology in Bucharest. The specimens were collected between 1969 and 2025, predominantly from the Southern and Western Carpathians.

Our findings confirmed that the main species complexes of *Strigamia* can be differentiated primarily by the number of leg-bearing segments and by the number and density of coxal pores. *Strigamia acuminata* and *S. carniolensis* represented most of the examined material, with the number of leg-bearing segments ranging from 39–43 and 47/49–51/53, respectively, and the number of coxal pores ranging from 8–18 and 8–21. Statistically, the number of leg-bearing segments is a stable diagnostic character, while the number of coxopleural pores proved highly variable, correlated with the length of the centipede. The assessment of intraspecific variation also included *S. crassipes*, which overlapped considerably with the other two species complexes in these characters but could be reliably distinguished using additional diagnostic morphological features such as the presence of an oval depression along the sternites.

This study provides additional morphological information for poorly characterized taxa, thereby contributing to a clearer understanding of the variability and distribution of *Strigamia* in Romania. The rediscovery of the rare *S. pusilla* and the Romanian endemic *S. crinita* enabled their morphological descriptions to be supplemented. Nevertheless, further sampling of freshly preserved material is required for molecular analyses and for testing the possible presence of cryptic species.

Know your enemy: DNA barcoding ticks associated with birds and other hosts

Florina-Georgiana CABA[1,2], Tony Alexandra TICU[1], Alexandru-Mihai PINTILIOAIE[3,4], Emanuel-Ştefan BALTAG[5], Lucian FUSU[1], Maria-Magdalena DASCĂLU[6]

[1]Research Group in Invertebrate Diversity and Phylogenetics, Faculty of Biology, "Alexandru Ioan Cuza" University, Bd. Carol I, Nr. 11, 700506 Iaşi, Romania, e-mail: florinag_caba@yahoo.ro
[2]Research Center with Integrated Techniques for Atmospheric Aerosol Investigation in Romania (RECENT AIR), Institute of Interdisciplinary Research, "Alexandru Ioan Cuza" University of Iaşi, Bd. Carol I, nr. 11, 700506 Iaşi, Romania
[3]ICI RECENT AIR Center, Laboratory of Interdisciplinary Research on the Marine Environment and Marine Terrestrial Atmosphere, "Alexandru Ioan Cuza" University of Iaşi, Marine Biological Station "Prof. Dr. Ioan Borcea", Agigea, Constanța, Romania
[4]Doctoral School of Biology, Faculty of Biology, "Alexandru Ioan Cuza" University of Iaşi, Iaşi, Romania
[5]Marine Biological Station "Prof. Dr. Ioan Borcea", Agigea, "Alexandru Ioan Cuza" University of Iaşi, Romania
[6]Integrated Center of Environmental Science Studies in the North-Eastern Region (CERNESIM), Institute of Interdisciplinary Research, "Alexandru Ioan Cuza" University of Iaşi, Bd. Carol I, nr. 11, 700506 Iaşi, Romania

Key words: DNA barcoding, birds, hard ticks, nanopore sequencing.

Hard ticks (Ixodidae) are some of the most important arthropod vectors of pathogens affecting both humans and domestic animals. Their expanding distributions, driven by climate change, changes in land use, and increased movement of hosts, highlight the need for reliable and rapid identification methods. To generate DNA barcodes, we focused mostly on ticks found on migratory birds, collected during ringing at the Agigea Bird Observatory but additionally our sampling strategy included the collection of ticks from other vertebrates or directly from the field, not necessarily associated with a host.

We have managed to analyse 472 ticks, with representatives from all the six genera of hard ticks present in Romania and a single specimen of soft ticks. The range of hosts for our analysed Ixodidae includes 42 species of birds but also reptiles and mammals. To extract de genetic material, we used a non-destructive method to maintain the integrity of the specimens that were subsequently slide mounted to be archived as vouchers; the barcodes were generated using nanopore sequencing.

Our dataset will be uploaded in BOLD and will represent a comprehensive list of species of ticks associated with birds but also other hosts that are found around human settlements. In our study we have identified around half of the hard ticks recorded so far in Romania, reflecting our targeted sampling strategy.

Financial support provided by Romanian Agency UEFISCDI through the grant 2D-3B (PN-IV-P7-7.1-PED-2024-1951).

Myrmecophilous Chrysomelidae of the Republic of Moldova

Livia CALESTRU

Institute of Zoology, Moldova State University, 1 Academiei Str, Chișinau, MD-2028, e-mail: livia.calestru@sti.usm.md

Key words: Chrysomelidae, Clytrinae, Cryptocephalinae, myrmecophily, Formicidae, Republic of Moldova.

The subfamily Clytrinae (Coleoptera: Chrysomelidae) is distinguished by remarkable biological adaptations associated with myrmecophily. The larvae develop within protective fecal cases and complete their life cycles in association with ant colonies, benefiting from the stable microclimate and protection provided by their hosts. Similar associations are also known in several species of the subfamily Cryptocephalinae.

Research on Chrysomelidae in the present-day territory of the Republic of Moldova began in the early twentieth century, with the first records from Bessarabia published by Miller and Zubowsky. An important contribution was made by Medvedev and Shapiro, whose work also included myrmecophilous taxa. More recent investigations have expanded the available data on the distribution and diversity of these beetles.

The ant fauna (Hymenoptera: Formicidae) of the Republic of Moldova comprises 65 species from four subfamilies, providing a suitable ecological framework for myrmecophilous Chrysomelidae. Published data indicate associations with ants of the subfamilies Formicinae and Myrmicinae: *Tituboea* with *Plagiolepis*; *Clytra* with *Camponotus*, *Cataglyphis*, *Formica*, *Lasius*, and *Aphaenogaster*; and *Cryptocephalus* is associated with *Myrmica* and *Lasius*. The genus *Coptocephala* has been reported from ant nests, though the host species remains undetermined.

The data confirm the presence in the Republic of Moldova of the genera *Tituboea*, *Clytra*, *Coptocephala*, and *Cryptocephalus*, associated with ant colonies. Their distribution is linked to natural habitats such as deciduous forests, forest edges, xeric grasslands, and steppe ecosystems. These findings contribute to a better understanding of myrmecophilous relationships within Chrysomelidae in the Republic of Moldova and provide a basis for future ecological and conservation studies.

This study was supported by Subprogramme 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.

Sedentary but spreading: radio telemetry shows limited movement in the invasive Asian praying mantis

Denis-Gabriel SPASENI[1], Alexandru-Mihai PINTILIOAIE[2,3], Petronel SPASENI[4], Emanuel-Ștefan BALTAG[4], Ana JURJESCU[4,5], Paul-Cristian DINCĂ[4]

[1]Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, str. Carol I, no. 11, 700506, Iaşi, Romania, e-mail: hideonbench21@gmail.com
[2]Doctoral School of Biology, Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Iași, Romania
[3]ICI RECENT AIR Center, Laboratory of Interdisciplinary Research on the Marine Environment and Marine Terrestrial Atmosphere, "Alexandru Ioan Cuza" University of Iași, Prof. Dr. Ioan Borcea Marine Biological Station, Agigea, Constanța, Romania
[4]Marine Biological Station "Prof. Dr. Ioan Borcea", Agigea, "Alexandru Ioan Cuza" University of Iași, B-dul Carol I, No. 20A, 700506 Iași, Romania
[5]University of Bucharest, Faculty of Biology, Splaiul Independenței 91-95, Bucharest, R-050095, Romania

Key words: alien species, dispersal, Mantodea, site fidelity, site selection.

Allochthonous species are a growing problem for native ecosystems and biodiversity, pushed further by climate change and increasingly connected global trade. *Hierodula tenuidentata* Saussure, 1869, commonly known as the Asian praying mantis, was first recorded in Romania around 2019 and has since expanded its range across multiple European countries and scattered sites across Romania. We used radio telemetry to investigate the spatial and temporal movements of this species and shed light on how it spreads so quickly.

The study ran across two phases in Southeastern Romania (August-September 2025). Phase 1 took place at Grindul Chituc in the Danube Delta with virgin females. Phase 2 was near Lake Agigea, with females that had been kept with males in the lab before release. We continuously followed five individuals equipped with radio tags. Eleven females were fitted with 0.3 g transmitters attached to the pronotum with cyanoacrylate adhesive. When a female died, usually from predation by Red-backed shrikes (*Lanius collurio*), the transmitter was moved to a replacement female. Mean survival in Phase 1 was 5.5 days, while in Phase 2 the females survived until the transmitter batteries ran out.

Movement was strikingly limited. Tagged females stayed in the same tree throughout monitoring; only two relocated, moving 10-20 meters to nearby trees. Both virgin and mated females presented the same behavior. Untagged females observed during transects behaved the same way. Two mated females laid their oothecas in the same tree they had occupied for the duration of Phase 2. We suggest that females select oviposition sites likely based on local prey availability and remain there thereafter. If this interpretation is correct, active dispersal may be more pronounced during the earlier life stages, with reproductively active adults showing more limited movements. However, further studies are needed to clarify the dispersal dynamics of the species.

Habitat-specific differences in ant community structure in a post-mining landscape: open grassland versus woodland at Roșia Montană, Romania

Silviu Giorgian ȚICU[1,2], Simona Dumitrița CHIRILĂ[3], Robert Andrei VLAD[4], Bianca Elena STROESCU[4], Diana Monica ENEA[4], Andrei Vasile POPESCU[4], Dumitru MURARIU[5], Ioan TĂUȘAN[4]

[1]Doctoral School of Biology, Faculty of Biology, University of Bucharest, Splaiul Independenței 91-95, 050095 Bucharest, Romania, e-mail: giorgiansilviu@gmail.com
[2]Natural History Museum, Brukenthal National Museum, Cetății 1, 550163 Sibiu, Romania, e-mail: brukenthalnaturale@gmail.com
[3]Danube Delta National Institute for Research and Development, Babadag Street no. 165, 820112 Tulcea, Romania, e-mail: simonachirilasc@yahoo.com
[4]Department of Environmental Sciences, "Lucian Blaga" University of Sibiu; Applied Ecology Research Centre, Dr. Raţiu 5-7, 550012 Sibiu, Romania, e-mail: itausan@gmail.com
[5]Romanian Academy, Calea Victoriei no. 125, 010071 Bucharest, Romania, e-mail: dumitru.murariu@acad.ro

Key words: ant communities, post-mining landscape, community ecology, seasonal dynamics, Romania.

Post-mining landscapes represent a mosaic of severely disturbed and naturally recovering habitats whose contrasting effects on biodiversity remain incompletely understood. We investigated ant community structure across three habitat types (open grassland, tailings dump, and woodland) at Roșia Montană (Alba County, Romania), one of Europe's largest historical gold and silver mining sites, using pitfall trapping across three survey seasons (March, June, October). Here, we focus on open grassland and woodland to assess the effects of habitat type and survey period on ant diversity, activity-density, and community composition.

Open grassland supported higher alpha diversity than woodland in all survey periods. Species richness per trap peaked in June in both habitats (median $S = 4$ and $S = 2$, respectively) but differed significantly between habitats in all three seasons (linear mixed-effects model, Tukey post-hoc, all $p < 0.05$). Shannon diversity followed the same pattern.

Seasonal dynamics differed markedly between all habitats. Open grassland showed a June peak in activity-density, while March and October did not differ statistically (Kruskal-Wallis $\chi^2(2) = 102.2$, $p < 0.001$; Dunn post-hoc March vs. October $p = 0.876$). Woodland showed near-zero richness and activity-density in March and October and a pronounced June peak with all seasonal contrasts significant ($p < 0.001$).

Community composition differed significantly between habitats (PERMANOVA, $R^2 = 0.089$, $F = 33.06$, $p = 0.001$). Habitat explained more variation than survey period ($R^2 = 0.028$). The significant habitat × season interaction ($R^2 = 0.036$, $p = 0.001$) confirmed that seasonal compositional trajectories are habitat-specific.

Although cumulative observed richness was similar in both habitats (approximately 26–27 taxa), open grassland maintained higher local diversity and more consistent activity across survey periods, whereas woodland communities

were strongly concentrated in June. These results indicate that habitat structure and seasonal conditions jointly shape ant diversity, activity-density, and community composition.

Updating the distribution and occurrence of harvester ants (genus *Messor*) in Romania and the Republic of Moldova

Ovidiu-Andrei GEORGESCU[1,2], Lucian FUSU[1]

[1]Research Group in Invertebrate Diversity and Phylogenetics, Faculty of Biology, "Alexandru Ioan Cuza" University of Iasi, Iaşi, Romania
[2]The Natural History Museum of Iaşi, "Alexandru Ioan Cuza" University of Iaşi, Iaşi, Romania, e-mail: andrei.gg.2002@gmail.com

Key words: Formicidae, distribution, cryptic species.

Ants constitute a taxonomically diverse and ecologically influential group whose activities shape virtually all terrestrial habitats in which they occur, making their study essential to understanding broader ecosystem function and structure. Harvester ants of the genus *Messor* exemplify this ecological significance: these species typically occupy open, sun-exposed habitats and collect seeds, which they store in shallow underground granaries, thereby contributing substantially to seed dispersal and, consequently, to the maintenance of plant community composition within their respective ecosystems. Despite this ecological importance, *Messor* species remain poorly studied in Romania and Moldova, and a comprehensive, up-to-date distribution map for the region is currently lacking, limiting our understanding of their regional biogeography and conservation status. This gap is further compounded by the cryptic morphology characteristic of the *Messor structor* species group, which considerably complicates accurate species identification when based on morphological criteria alone. To address this challenge, specimens were collected from multiple regions across Romania, Moldova, Greece, and Bulgaria and subsequently subjected to DNA barcoding. This integrative approach has generated a reliable reference dataset linking genetic data to morphological traits, thereby facilitating more accurate and consistent species identification. Consequently, the resulting molecular and morphological reference material substantially streamlines the process of mapping the distribution of *Messor* species across the study region, laying essential groundwork for future taxonomic, ecological, and biogeographic research on this ecologically important genus.

Contributions to the study of microhymenopterans (Insecta: Hymenoptera) from Ceahlău National Park in 2024

Antonia-Elena BEREȘ, Ovidiu-Alin POPOVICI

"Alexandru Ioan Cuza" University of Iași, Research Group in Invertebrate Diversity and Phylogenetics, Faculty of Biology, Iași, Romania, e-mail: beresa26@gmail.com

Key words: Hymenoptera, Ceahlău National Park, taxonomic diversity, parasitoids, biodiversity.

Microhymenopterans represent a vast and ecologically vital component of insect biodiversity, some of them acting as indispensable parasitoids and regulators of natural and agricultural ecosystems. Despite their crucial role in maintaining ecological balance and functioning as bioindicators of environmental health, the microhymenopteran fauna of the Romanian Carpathians remains insufficiently documented.

This study aims to contribute to the faunistic and ecological understanding of this diverse group through a comprehensive investigation conducted in Ceahlău National Park, one of Romania's most emblematic mountain ecosystems. The primary research objective was to document the taxonomic composition, structural diversity, and distribution patterns of microhymenopterans across varying altitudinal gradients.

Field sampling was carried out using standardized sweep-net techniques across three distinct altitudinal stations. The first sample was collected in proximity to the Bistra Mică River at an elevation of 1,000 m above sea level. The second sample was obtained near the Stănile Hermitage at 1,700 m, while the third was collected close to La Pălărie (Curmătura Piciorului Șchiop), situated at 1,722 m.

The samples yielded a high number of specimens belonging to six major superfamilies: Chalcidoidea, Platygastroidea, Ichneumonoidea, Ceraphronoidea, Diaprioidea and Cynipoidea. Quantitative assessments examined abundance, dominance indices, and structural variations among sampling sites.

The findings reveal a rich taxonomic composition and highlight clear community differentiation shaped by altitudinal and microclimatic factors. This research underscores the ecological importance of microhymenopterans and provides a base for future studies concerning the faunistic monitoring and biodiversity preservation in protected mountain areas.

Study on the morphometrics of mandibles in *Lucanus cervus* (Linnaeus 1758) across a north-south transect in Eastern Romania

Lucian HĂNCEANU[1,3], Maria-Magdalena DASCĂLU[2], Lucian FUSU[3]

[1]"Alexandru Ioan Cuza" University of Iași, Institute of Interdisciplinary Research - RECENT AIR, Iași, Romania, e-mail: hanceanu.lucian@yahoo.com
[2]"Alexandru Ioan Cuza" University of Iași, Institute of Interdisciplinary Research - CERNESIM, Iași, Romania
[3]"Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Research Group in Invertebrate Diversity and Phylogenetics, Iași, Romania

Key words: stag beetle, geomorphometry, distribution, mandibular shape.

Lucanus cervus exhibits one of the most pronounced sexual dimorphism among European coleopterans. Males possess large, strongly sclerotized mandibles, in contrast to females, who have markedly smaller mandibles. However, male mandibles are not consistently allometric (although some specimens are small, their mandibles do not scale proportionally with body size). Studies utilizing geometric morphometrics have further demonstrated that minor males (forma *capreolus*) exhibit greater mandibular variability, most frequently characterized by weak dorsoventral curvature, poorly developed dentition, and a head capsule lacking prominent basal margins, compared to major males. This substantial variation in body size is closely tied to mating success and is primarily driven by larval nutrition. Consequently, variations in habitat quality and food availability directly influence adult specimen size. Mandibular morphology also serves as a key diagnostic character for species differentiation. Here, we present a geomorphometric analysis of mandible shape variations in almost 100 males of *L. cervus* sampled from eight sites in eastern Romania, across a north-south transect. Nine landmarks were digitized on each mandible, and the resulting coordinate datasets were pooled prior to Generalized Procrustes Analysis (GPA). Based on the covariance matrix, a Principal Component Analysis (PCA) was performed to evaluate shape differences between northern and southern populations. Five specimens of *Lucanus ibericus* were included to explore the shape shift between the two closely related species. The results obtained indicate a slight differentiation in mandible shape in specimens of *Lucanus cervus* from Southern Dobrogea compared to populations north of the Danube, while those in Northern Dobrogea are intermediate.

Authors acknowledge the support provided by the project SIDNER, PR/NE/2024/P1/RSO1.1/1/2.

Shared allometric trajectories but contrasting sexual size dimorphism in *Osmoderma barnabita* and *Rosalia alpina* from the Eastern Carpathians, Romania

Iulia V. MIU[1], Marian D. MIREA[1,2], Lavinia C. PÎNDARU[1,2], Steluța MANOLACHE[1], Laurențiu ROZYLOWICZ[1]

[1]University of Bucharest, Center for Environmental Research, 1 N. Bălcescu, Bucharest 010041, Romania, e-mail: iuliamiv@gmail.com
[2]Doctoral School in Geography "Simion Mehedinți" - Nature and Sustainable Development, University of Bucharest, Bucharest 010041, Romania

Key words: saproxylic beetles, sexual size dimorphism, allometry, morphometrics, Carpathians.

Sexual size dimorphism (SSD) and morphometric variation provide insight into population ecology, habitat quality and evolutionary processes in insects, yet morphometric data for saproxylic beetles remain scarce across much of Europe, including the Romanian Carpathians, a major biodiversity hotspot for this group. We assessed SSD and allometric scaling in two protected saproxylic beetles with contrasting life histories, *Osmoderma barnabita* (Scarabaeidae) and *Rosalia alpina* (Cerambycidae), in Putna-Vrancea Natural Park, Eastern Romanian Carpathians. Between 2022 and 2025 we captured 776 *Osmoderma barnabita* and 268 *Rosalia alpina* at seven sites using non-lethal pheromone-baited windowpane traps, and measured body length, body width and fresh mass. *Osmoderma barnabita* showed weak male-biased SSD, with males slightly larger in body length (+3.4%) and body mass (+5.0%), while body width did not differ significantly between sexes. In contrast, *Rosalia alpina* displayed female-biased SSD across all three traits, strongest in body mass (+13.2%).

Standardized Major Axis regression revealed positive allometry of body width relative to body length in both species, indicating increasing robustness with size, whereas body mass scaled isometrically with length. Neither slopes nor elevations differed between sexes in either species, indicating that SSD reflects uniform size shifts along shared developmental trajectories rather than sex-specific scaling of body dimensions. Linear Discriminant Analysis achieved only moderate classification accuracy (63.5% for *Osmoderma barnabita*, 65.3% for *Rosalia alpina*), confirming substantial morphological overlap between sexes and showing that external body dimensions alone are insufficient for reliable sexing in the field. These results provide the first body mass data for *Rosalia alpina* and establish baseline morphometrics for both species, supporting long-term population monitoring, the detection of morphological responses to environmental change and evidence-based conservation planning in Eastern Carpathian old-growth forests.

A hidden pebble in the sand: first record of *Philopedon plagiatum* (Schaller, 1783) (Coleoptera: Curculionidae) from Romania

Ștefan AILINCUȚEI[1], Antonio-Marian DONCEA[1], Alexandru-Mihai PINTILIOAIE[2,3], Mădălina-Ionela VICIRIUC[4]

[1]"Alexandru Ioan Cuza" University of Iași, Faculty of Biology, str. Carol I, no. 11, 700506, Iaşi, Romania, e-mail: donceaantonio12@gmail.com
[2]ICI RECENT AIR Center, Laboratory of Interdisciplinary Research on the Marine Environment and Marine Terrestrial Atmosphere, "Alexandru Ioan Cuza" University of Iași, "Prof. Dr. Ioan Borcea" Marine Biological Station, Agigea, Constanța, Romania
[3]Doctoral School of Biology, Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Iași, Romania
[4]INRAE, UMR1355 Institut Sophia Agrobiotech (ISA), Sophia Antipolis, France

Key words: coastal dunes, DNA barcoding, Dobrogea, first record, *Philopedon plagiatum*.

The weevil *Philopedon plagiatum* (Schaller, 1783) (Coleoptera: Curculionidae) is reported from Romania for the first time, from Dobrogea region.

Species identification was confirmed through the examination of diagnostic morphological characters and DNA barcode analysis. This finding extends the known distribution of *P. plagiatum* to Romania and represents the first record for the western Black Sea coast.

The discovery contributes to improving current knowledge of the Romanian Curculionidae fauna and highlights the importance of integrating traditional taxonomic methods with molecular tools in biodiversity assessments. It also demonstrates the value of opportunistic field surveys and citizen-science biodiversity platforms in detecting overlooked insect species.

Given the limited entomological exploration of Romania's coastal sandy habitats, further targeted surveys may reveal additional species previously unrecorded from the country and provide a more comprehensive understanding of the region's coleopteran diversity.

Community composition, occupancy and abundance of saproxylic beetles along an altitudinal transect in Vrancea County, Romania

Marian D. MIREA[1,2], Iulia V. MIU[1], Lavinia C. PÎNDARU[1,2], Steluța MANOLACHE[1], Viorel D. POPESCU[1,3], Silviu CHIRIAC[4], Laurențiu ROZYLOWICZ[1]

[1]University of Bucharest, Center for Environmental Research, 1 N. Bălcescu, Bucharest 010041, Romania, e-mail: dumitru-marian.mirea@geo.unibuc.ro
[2]University of Bucharest, Doctoral School in Geography "Simion Mehedinți", 1 N. Bălcescu, Bucharest 010041, Romania
[3]Ecology, Evolution and Environmental Biology, Columbia University, New York, New York, USA
[4]National Agency for the Environment and Protected Areas, Vrancea County Directorate for the Environment, Focșani, Romania

Key words: saproxylic beetles, occupancy modelling, altitudinal gradient, forest structure, Natura 2000.

Saproxylic beetles are among the most threatened insect groups in European forests, yet their distribution across the Eastern Carpathians remains poorly documented. We present the first structured assessment of these communities along an altitudinal gradient in Vrancea County, Romania.

Between 24 June and 31 August 2021, we deployed 120 non-lethal flight intercept traps, baited with pheromone and ethanol lures, across ten monitoring areas spanning 80 to 990 m, from lowland oak forest to beech forest in the Putna-Vrancea Natural Park. Forest structure was recorded within a 12 m buffer of each trap. We modelled occupancy for all species and abundance for six well-detected species using hierarchical Bayesian multi-species occupancy and N-mixture models correcting for imperfect detection.

We recorded 409 individuals of 41 species, 18 of them Cerambycidae. Species richness (5 to 17 per site) and Shannon diversity (1.05 to 2.37) peaked at mid elevation rather than rising with altitude. Mean community occupancy rose from 0.29 at the lowest site to 0.43 at the highest. Tree diameter and elevation raised occupancy in most trophic guilds, whereas responses to cavities and dead wood were species-specific, with *Elater ferrugineus* and *Osmoderma barnabita* favoring cavity-rich stands. *Rosalia alpina, Aegomorphus clavipes* and *Phymatodes testaceus* were most abundant at high elevations, *Osmoderma barnabita, Cetonia aurata* and *Lucanus cervus* at low to mid elevations. Detection was low for most species and accumulation curves did not saturate.

Species richness alone is therefore a poor guide to conservation value, because structurally mature high-altitude stands with few species still supported protected specialists. Preserving structural heterogeneity across the full elevational range is needed to retain both generalist and specialist taxa, and these results give a baseline for monitoring under the EU Habitats Directive.

The diversity of longhorn beetles (Coleoptera: Cerambycidae) from Natura 2000 Site Pădurea Tătărușı

Andreea OPĂRIUC[1], Ovidiu-Alin POPOVICI[2]

[1]"Alexandru Ioan Cuza" University of Iași, Research Group in Invertebrate Diversity and Phylogenetics, Faculty of Biology, bd. Carol I no. 20A, 700505 Iași, Romania, e-mail: andreeaopariuc@gmail.com
[2]"Alexandru Ioan Cuza" University of Iași, Faculty of Biology, bd. Carol I no. 20A, 700505 Iași, România, e-mail: ovidiu.popovici@uaic.ro

Key words: Cerambycidae, saproxylic beetles, species diversity, Natura 2000, Tătărușı Forest.

Longhorn beetles (Coleoptera: Cerambycidae) were surveyed in the ROSCI0176 Tătărușı Forest, a Natura 2000 protected site, in order to determine the species composition, abundance and ecological role of this group within the area. Fieldwork was carried out between April and August 2024.

Specimens were collected using several complementary methods: entomological nets, manual collecting, branch shaking and an entomological aspirator, the last of which proved to be the most effective. In total, 88 specimens were obtained, representing 29 species, 23 genera and 4 subfamilies. Lamiinae was the best represented subfamily (37.93%), while Prioninae was the least represented (3.45%).

Two of the recorded species, *Morimus asper funereus* and *Cerambyx cerdo*, are protected at European level and are listed as species of community interest under the Habitats Directive. The presence of these saproxylic beetles points to the ecological value of the site, which is characterised by old, partially decayed trees offering a suitable habitat for wood-dependent insects.

The diversity and abundance of the Cerambycidae recorded here suggest a favorable conservation status of the forest ecosystem. The data gathered improve our understanding of the local entomofauna and provide a useful baseline for future biodiversity monitoring and conservation work. Further research is recommended in order to assess the long-term effects of forestry practices and habitat change on saproxylic beetle populations.

First record of the weevil species *Acallocrates colonnellii* Bahr, 2003 (Coleoptera: Curculionidae) from the Republic of Moldova

Svetlana BACAL[1], Galina BUŞMACHIU[1],
Alexandra-Florina POPA[2], Ana-Maria KRAPAL[2]

[1]Moldova State University, Institute of Zoology, Chişinău, Republic of Moldova, e-mails: svetabacal23@gmail.com; bushmakiu@yahoo.com
[2]"Grigore Antipa" National Museum of Natural History, Kiseleff 1, 011341 Bucharest, Romania, e-mails: alexandra.levarda@antipa.ro; ana.krapal@antipa.ro

Key words: Coleoptera, Curculionidae, Plaiul Fagului Reserve, molecular confirmation, COI.

Curculionidae diversity in the Republic of Moldova has been well studied by Poiras (1998, 2006), but species of the genus *Acallocrates* (Cryptorhynchinae) remain poorly documented, mainly due to their cryptic behaviour, substrate-like coloration, small size, and the specialized collecting methods required for their detection.

The genus *Acallocrates* Reitter, 1913 includes four species - *A. denticollis* (Germar, 1824), *A. fasciatus* Colonnelli, 1980, *A. minutesquamosus* (Reiche, 1860) and *A. colonnellii* Bahr, 2003 - distributed from the Caucasus in the east to Spain in the west. *A. colonnellii* has previously been recorded in Georgia, Ukraine, Serbia, Poland, and Romania. It is closely related to *A. denticollis*, but can be distinguished by the shape of the aedeagus, the pronotum, and the scales on the pronotal disc and elytral suture base.

Based on these morphological characters, two specimens collected in 2024 and 2025 from the Plaiul Fagului Reserve were identified as *A. colonnellii*, while a third specimen, collected by A. Poiras on 12.06.1996 at Codrii Reserve (forest edge, forest litter), was identified as *A. denticollis*.

To confirm the morphological identification, molecular analysis was carried out using DNA barcoding, a widely used and reliable method for species-level identification in Coleoptera. A fragment from the COI mitochondrial gene was successfully amplified for the specimen collected in 2024 using the universal Folmer primers. Comparison of the 650 bp sequence with reference data in BOLD Systems and GenBank confirmed its identity as *A. colonnellii*, consistent with the morphological identification.

The combined morphological and molecular evidence confirms the presence of *Acallocrates colonnellii* in the Plaiul Fagului Reserve, representing the first record of this weevil species for the fauna of the Republic of Moldova.

The study was supported by 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 – ZOOAQUATERRA".

Contributions to the knowledge of coleopterans (Insecta, Coleoptera) from Dornești commune (Suceava County), under the conditions of the year 2025

Miruna-Ioana ȘPAC, Ovidiu-Alin POPOVICI

Department of Biology, Faculty of Biology, "Alexandru Ioan Cuza" University of Iași; 20A Carol I Boulevard, 700505, Iași, Romania, e-mails: mirunaspac@yahoo.com; ovidiu.popovici@uaic.ro

Key words: Coleoptera, Carabidae, species diversity, pitfall traps, Dornești commune, bioindicators.

The order Coleoptera occupies a dominant position within global biodiversity, representing approximately 25% of all described living organisms. These insects play fundamental ecological roles by participating actively in ecosystem functioning, nutrient recycling, and biological pest control, while several families, particularly Carabidae, serve as highly sensitive bioindicators of environmental quality and anthropogenic disturbance. Despite their functional significance, comprehensive ecosystem-scale monitoring of specific regional entomofauna remains critical to filling regional faunistic gaps in northern Romania. To enhance our understanding of local biodiversity, this study investigated the qualitative and quantitative characteristics of beetle communities within the floodplains of the Suceava river- a region partially integrated into the Natura 2000 protected network (ROSCI0379 Râul Suceava)- located in Dornești commune, Suceava county.

Field sampling was conducted systematically from April to September 2025 across diverse microhabitats using eight Barber pitfall traps filled with water-detergent solution, supplemented by direct manual collection from soil, stones, and vegetation. Taxonomic identification revealed a total of 30 species belonging to 22 genera and 9 distinct families across the suborders Adephaga and Polyphaga. *Nebria brevicollis* was identified as the highly dominant species with 27 individuals, followed by *Nebria dahlii* and *Elaphrus cupreus*, while the presence of the destructive, invasive synanthrope *Hylotrupes bajulus* was also documented. The data demonstrate that stable, well-shaded microhabitats with rich, undisturbed herbaceous cover accumulate significantly higher species richness and abundance, whereas zones subjected to plastic pollution and intense human trampling showed a severe decline in specimen density.

Assessing the state of steppe ecosystems in central part of the Republic of Moldova using beetles as bioindicators

Sorina ISTRATI[1], Anna MOLDOVAN[1,2]

[1]Moldova State University, Institute of Zoology, Laboratory of Systematics and Molecular Phylogeny, 1 Academiei Str., MD-2028, Chișinău, Republic of Moldova, e-mail: istratisorina98@gmail.com
[2]Moldova State University, Faculty of Biology and Geosciences, Department of Biology and Ecology, 65 A Kogălniceanu Str., MD-2009, Chișinău, Republic of Moldova

Key words: beetles, bioindicators, steppe, Malaise trap, Republic of Moldova.

The abundance, diversity, and near-global distribution of insects have given them an essential role in maintaining the health, complexity, and ecological balance within an ecosystem. Their sensitivity to environmental changes also makes them indicators of the state of the ecosystems in which they live. Among other insects, beetles serve as good bioindicators for monitoring ecosystem conditions and their changes over time. Their ease of sampling, capacity for bioaccumulation, and short life cycles make them excellent subjects for laboratory testing, which can be conducted alongside monitoring experiments. Since habitat alteration and overexploitation have significantly impacted the current state of steppe ecosystems, we investigated Coleoptera diversity in the central region of the Republic of Moldova to assess the health of these ecosystems.

Biological material was collected using Malaise traps from May to October in 2023 and 2024, with one trap installed at each site. Collection containers were replaced weekly, and samples were preserved in ethanol at -20ºC until morphological identification. A total of 66 samples were collected over an average of 17 weeks per year. Taxonomic analysis identified specimens from 29 families of Coleoptera, with the most abundant being Mordellidae, Coccinellidae, Chrysomelidae, Oedemeridae, Curculionidae and Tenebrionidae. The results revealed the presence of 27 species acting as bioindicators of healthy, balanced and diverse habitats.

Despite the high degree of anthropization, the steppes host a rich diversity of beetles, and the presence of species indicative of overall ecosystem health emphasizes the need for urgent intervention with conservation measures.

This research was carried out with the financial support of the doctoral project awarded to Sorina Istrati, and the subprogram 010701 ZOOAQUATERRA, Institutional Funding 2024–2027.

Leptotes pirithous (Linnaeus, 1767), a constant presence in the coastal area of Dobrogea (Romania)

Marius SKOLKA

Department of Natural Sciences, Faculty of Natural and Agricultural Sciences, "Ovidius" University of Constanța, Aleea Universității nr. 1, B Building, Constanța, Romania, e-mail: mskolka@gmail.com
ONG Association Chelonia Romania, sect. 6, str. Pașcani, nr. 5, Bucharest, Romania

Key words: *Leptotes pirithous,* Dobrogea, Romania.

Of paleotropical origin (Madagascar) and occupying a vast area in the sub-Saharan area, North Africa and several archipelagos in the Atlantic Ocean and the Indian Ocean, *Leptotes pirithous* (Lepidoptera: Lycaenidae) is part of a genus that has demonstrated a real ability to expand its area. The species of the genus are extremely similar, an aspect that can give rise to confusion. All species of the genus prefer open habitats, with grassy vegetation where plants from the Fabaceae family appear.

In Europe *Leptotes pirithous* is a constant presence in the Mediterranean area, developing populations in Portugal. In Europe, is found in the Mediterranean area, southern Spain and France, Italy, the Adriatic coast and Greece. It is also present in the Middle East, Turkey, and the Arabian Peninsula.

A migratory species, *Leptotes pirithous* advances northwards, populating areas with favorable habitats. In warm years, it can reach as far as southern Great Britain or northern Germany.

In Romania it has been mentioned since the 19th century, without being a common presence. In Dobrogea, the species is a quasi-constant presence, with populations appearing frequently after 1990 in years characterized by hot summers and drought.

The fact that it develops well even in anthropized habitats, with vacant spaces where various species of spontaneous or cultivated Fabaceae are found, represents an advantage for this species, which occurs alongside other lepidopteran species characterized by resistance to anthropogenic impact.

In years with harsh winters, populations do not survive, but colonization occurs frequently and the species reappears. In some years, populations can persist in the same areas, with butterflies appearing as early as July, while in other years, adults are observed later, coming from immigrated specimens.

Adults have an agitated flight, often below the level of vegetation. The species is proterandric, with males having a pronounced territorial behavior.

In 2026, *Leptotes pirithous* appeared in the littoral area in late August and early September, with fresh specimens that may suggest a possible second generation.

Kretania sephirus (Frivaldszky, 1835) (Lepidoptera: Lycaenidae) - new species and genus in the fauna of the Republic of Moldova

Cristina ȚUGULEA

Moldova State University, Institute of Zoology, Str. Academiei 1, MD-2028, Chișinău, Republic of Moldova, e-mail: tuguleacristy@yahoo.com

Key words: Lepidoptera, Lycaenidae, butterflies, new species, natural reserve.

As a result of research carried out in various natural and anthropized biotopes in the "Cobîleni" nature reserve (Orhei district) and its surroundings during the vegetation period of 2025, the species *Kretania sephirus* (Frivaldszky, 1835) was reported - a new genus and species for the fauna of the Republic of Moldova. Although the presence of the species was estimated on the territory of the country, there are no publications confirming this fact. *Kretania sephirus*, previously known as *Plebejus sephirus*, is a species of diurnal butterfly belonging to the Lycaenidae family. Two specimens were collected on June 8, 2025 with the entomological net on a small meadow bordered by an abandoned vineyard plantation and a sector of mixed forest with a predominance of conifers. It was later reported at the end of May 2026. The larvae develop on *Astragalus* species, mainly *Astragalus exscapus*. The species is widespread in the Carpathian Basin, the Balkan region, the Crimean Peninsula and the Caucasus region towards the Volga.

Thus, the number of butterfly species from the Lycaenidae family known in the "Cobîleni" nature reserve has reached 25. Faunal diversity of diurnal butterflies in the reserve consists of 65 species belonging to 41 genera and 6 taxonomic families. The study of Lepidoptera fauna in the "Cobîleni" Natural Reserve started in 2012. Until then, the entomological fauna of the reserve has not been researched.

The researches were funded by the Research Subprogram 010701.

Contributions to the knowledge of moths (Lepidoptera, Insecta) from the Măcin Mountains National Park in the year 2025

Andrei MĂDULARU, Ovidiu-Alin POPOVICI

[1]Department of Biology, Faculty of Biology, "Alexandru Ioan Cuza" University, Bd. Carol I, Nr. 20A, Iași, Romania, e-mails: andrei.madularu13@gmail.com; popovici.ovidiu@yahoo.com

Key words: moths, Măcin Mountains, biodiversity, trap.

The order Lepidoptera comprises various species of winged insects, specifically butterflies and moths. Their membranous wings are covered in tiny microscopical scales hence their name derives from the greek words for scales and wings. They are one of the most successful groups of insects due to their overall distribution being all over the world, except for Antarctica.

This study focuses on the quantitative and qualitative analysis of the moths' diversity within the perimeter of the National Park of Măcin Mountains due to the strong biodiversity of the ecosystems in the relatively small surface area of the park. During this study, thirty species of moths have been caught using a light trap that uses an ultraviolet source of light. The trap has been set from March until September of 2025, at fixed intervals between 21:00 and 03:00. It has been noted how the variation of temperature, humidity and light quantity emitted by the Moon influence the activity of moths in both positive and negative ways. Later in the study, the external morphology and key characteristics used in their identification are being described with added photos, in color, of the displayed specimens for a better view of said characteristics.

Contributions to the study of the Macrolepidoptera (Lepidoptera) from the northern part of Sibiu County

Sergiu TÖRÖK[1], Ioan TĂUȘAN[2], Cosmina MOLDOVAN[2]

[1]Mediaș Municipal Museum, Mediaș, Romania, e-mail: ser.torok@yahoo.com
[2]Lucian Blaga University of Sibiu, Biology and Ecology Research Centre, Sibiu, Romania, e-mail: ioan.tausan@ulbsibiu.ro

Key words: Lepidoptera, Sibiu County, checklist, *Chariaspilates formosaria*.

In the present paper, we provide the first checklist of the Macrolepidoptera species recorded from the northern part of Sibiu County, Romania. This region was heavily polluted in the past, particularly in the Copșa Mică area, by soot, heavy metals, and sulfur dioxide (SO_2). By combining data from published literature, museum collections, and our own field surveys, we aimed to determine the Macrolepidoptera species occurring in this region. Numerous specimens originating from the study area were found in the Eckbert Schneider insect collection housed at the Museum of Natural History Sibiu. Our field investigations of diurnal butterflies were conducted between 2010 and 2025, whereas moth surveys were carried out during 2011–2012 and again between 2023 and 2025. Butterflies were surveyed using the transect method, while moths were sampled using portable ultraviolet (UV) light traps. The current checklist of the Macrolepidoptera of the study area comprises 530 taxa. Among the recorded species, we highlight the occurrence of one vulnerable/endangered species, *Chariaspilates formosaria* (Eversmann, 1837); five vulnerable species, namely *Colias chrysotheme* (Esper, 1781), *Argynnis laodice* (Pallas, 1771), *Flavonius quercus* (Linnaeus, 1758), *Cupido alcetas* (Hoffmannsegg, 1804), and *Thyris fenestrella* (Scopoli, 1763); one vulnerable/near-threatened species, *Eriogaster catax* (Linnaeus, 1758); four near-threatened/data-deficient species, namely *Daphnis nerii* (Linnaeus, 1758), *Idaea nitidata* (Herrich-Schäffer, 1861), *Conistra ligula* (Esper, 1791), and *Schrankia costaestrigalis* (Stephens, 1834); and two data-deficient species, *Xestia stigmatica* (Hübner, 1813) and *Nola cristatula* (Hübner, 1793).

Preliminary assessment of mosquito species diversity using community surveillance traps in Akrotiri, Cyprus

Nadejda MOCREAC[1], Chirag Prabhakar PADUBIDRI[2], Andreas KAMILARIS[3], Elizabeth BUCKHAM[4], Helen TOKAIQALI[4], Mihail GURIȚĂ[5], Angeliki F. MARTINOU[4,6,7]

[1]Department of Horticulture and Animal Resources, Faculty of Agricultural, Forestry and Environmental Sciences, Technical University of Moldova, Chișinău, Republic of Moldova, e-mail: nadejda.mocreac@spp.utm.md
[2]CYENS Centre of Excellence, Nicosia, Cyprus, e-mail: c.padubidri@cyens.org.cy
[3]University of Twente, The Netherlands, e-mail: a.kamilaris@cyens.org.cy
[4]Laboratory of Vector Ecology and Applied Entomology, Joint Services Health Unit, British Forces Cyprus, Akrotiri, Cyprus
[5]Faculty of Medicine No. 1, Nicolae Testemițanu State University of Medicine and Pharmacy of the Republic of Moldova, Chișinău, Republic of Moldova, e-mail: mihaigurita2007@gmail.com
[6]Enalia Physis Environmental Research Centre, Xylotymvou, Cyprus
[7]CARE-C The Cyprus Institute, Cyprus, e-mail: af.martinou@gmail.com

Key words: mosquito surveillance, invasive mosquitoes, *Aedes albopictus*, BG-Protector traps, Akrotiri wetland.

Mosquito surveillance is important for characterising local species composition and supporting the early detection of invasive species in communities located near wetlands. In June 2026, ten BG-Protector traps baited with CO_2 and BG-Lure® were installed at georeferenced locations in the communities of Asomatos and Akrotiri, adjacent to the Akrotiri wetland. The traps operated continuously and were checked weekly as part of a community mosquito surveillance programme.

This study presents preliminary results on mosquito species composition from the first five weekly collections, beginning on 16 June 2026. Adult mosquitoes were sorted under a dissecting microscope and identified using diagnostic morphological characters to the lowest reliable taxonomic level. Seven mosquito taxa were recorded: *Culex pipiens*, *Aedes caspius*, *Culiseta longiareolata*, *Aedes albopictus*, *Aedes detritus*, *Culex perexiguus*, and *Anopheles claviger*. *Culex pipiens* was the most frequently recorded taxon in the preliminary collections, followed by *Aedes caspius*. *Culiseta longiareolata* occurred less frequently, while the remaining taxa were detected occasionally. The detection of *Aedes albopictus* is particularly relevant because of its invasive status and highlights the need for continued local surveillance.

Trap catches also contained *Clogmia albipunctata*, *Culicoides* spp., phlebotomine sand flies, and representatives of several other arthropod groups. This bycatch illustrates the taxonomic complexity of samples obtained through continuous trapping and the importance of careful morphological examination. Monitoring will continue until the end of September 2026. The complete dataset will allow a more comprehensive assessment of mosquito diversity, temporal occurrence, and spatial distribution among the monitored locations and will be presented at the conference.

Benthic macroinvertebrates of the Cahul Lake on the territory of the Republic of Moldova

Oxana MUNJIU, Igor ŞUBERNEŢKII

Institute of Zoology, Moldova State University; str. Academiei, 1, Chişinău, Republic of Moldova, MD-2028, e-mail: oksana.munjiu@gmail.com

Key words: species diversity, benthos, Danube Delta.

Sampling of macroinvertebrates was conducted in 2019 and 2024-2025 in the northern part of Lake Cahul. Lake Cahul is a part of the Danube Delta with an area of over 100 km². It is connected to the Danube by the Vekita channel and fish passage channels. The length of the lake is approximately 25 km, with a width of 2 km in the northern part, and 18 km in the southern part. A small area (about 1 km) in the northern part of the lake is located within the territory of the Republic of Moldova.

As a result of investigation more than 80 taxa of benthic macroinvertebrates were identified. Some species have been firstly recorded in macroinvertebrates community of this lake: *Synurella* (*Synurella*) *ambulans* (Müller, 1846), *Plea minutissima* Leach, 1817, *Agraylea sexmaculata* Curtis, 1834, *Leptocerus tineiformis* Curtis, 1834, *Orthotrichia costalis* (Curtis, 1834), *Ablabesmyia* (*Ablabesmyia*) *monilis* (Linnaeus, 1758).

Comparative materials included published data from 1947-1950 (Markovsky, 1955), 1973-1974 (Vladimirov & Toderash, 1979) and 2006-2012 (Dzhurtubaev et al., 2017).

Ten Ponto-Caspian species were also identified, including mysida: *Paramysis* (*Mesomysis*) *intermedia* (Czerniavsky, 1882) — rare for water bodies in the Republic of Moldova.

Invasive alien species such as *Sinanodonta woodiana* (Lea, 1834), previously recorded in the Vekita channel (Dzhurtubaev et al., 2017), and *Dreissena rostriformis bugensis* Andrusov, 1897, were also found.

The study was supported by the subprogram 010701, and "Assessment of the state of plant, fungi and animal species, development of the list of species with rarity status and the algorithm for their presentation in the 4th edition of the Red Book of the Republic of Moldova".

Moving north – monitoring the effects of global climate change through model groups of arthropods in natural corridors for migration of thermophilous fauna in Bulgaria

Maria NAUMOVA[1], Boyan VAGALINSKI[1], Vassil VASSILEV[2,3], Vera ANTONOVA[1], Ivaylo GEORGIEV[4], Teodor TRIFONOV[1], Simeon INDZHOV[5], Teodora MARIUS TEOFILOVA[1]

[1]Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 1 Tsar Osvoboditel Blvd., 1000 Sofia, Bulgaria, e-mail: boyanv84@gmail.com
[2]Space Research and Technology Institute, Bulgarian Academy of Sciences, Acad. Georgy Bonchev Str., Block 2, 1113 Sofia, Bulgaria
[3]Institute of Information and Communication Technologies, Bulgarian Academy of Sciences (BAS), Acad. G. Bonchev St., Block 2, 1113 Sofia, Bulgaria
[4]Technical University, 11 Professor Georgi Bradistilov Str., 1756 Sofia, Bulgaria
[5]Faculty of Biology, Sofia University, 8 Dragan Tsankov, 1164 Sofia, Bulgaria

Key words: climate change, introduced species, migration, new records.

Climate change, with its main driver, the global warming, is one of the major issues of our century. Europe is warming up faster than any other continent, which presents an extreme challenge for humans and nature, but also a unique opportunity to observe how the various organisms react to changes at an unprecedented pace.

Here we present results from the first two years of an ongoing project aiming to monitor the composition and dynamics of arthropod communities in south Bulgaria, with special attention to circum-Mediterranean and introduced tropical species. The research is focused on four natural corridors (the valleys of Struma, Mesta, and Maritsa rivers, and the south section of the Bulgarian Black Sea Coast) for northern migration of thermophilous fauna.

The main sampling method includes a total of 126 pitfall traps distributed over 12 sampling plots (three in each corridor), exposed and collected monthly. Underground traps and hand collecting are applied as additional methods.

Over the two-year period, a total of more than 1800 samples were processed, with more than 1000 arthropods identified to the species level. A number of them are recognized as indicator species for the goals of a long term ecological monitoring. Such are the spiders *Uroctea durandi* and *Latrodectus tredecimguttatus* (Arachnida, Araneae), the millipede *Brachyiulus apfelbecki* (Diplopoda, Julida), the mantid *Ameles spallanzania* (Insecta, Mantodea), and the cockroach *Polyphaga aegyptiaca* (Insecta, Blattodea). All of these species either appear as new to the local fauna or were previously known from a few records, usually from the southern most parts of the country, and are currently showing potential for establishing their populations further north. In addition, there are various other interesting finds of high taxonomic and faunistic importance, including one species of Diplopoda new to science, and many rare endemic and stenotopic species of Araneae, Hymenoptera, Coleoptera, etc.

Expanding species coverage and genetic diversity of Romanian invertebrate fauna through DNA Barcoding

Maria-Magdalena DASCĂLU[1], Emanuel-Ștefan BALTAG[2], Florina-Georgiana CABA[3], Lucian FUSU[4], Lucian HĂNCEANU[3], Marius MIHĂȘAN[4], Mircea-Dan MITROIU[4], Ionuț PAVEL[1], Ovidiu-Alin POPOVICI[4], Cosmin Teodor MIHAI[5], Adriana MELEN[5], Irina NUCĂ[5]

[1]"Alexandru Ioan Cuza" University of Iași, Institute of Interdisciplinary Research, CERNESIM, Iași, Romania, e-mail: dascalumm@yahoo.com
[2] "Prof. dr. I. Borcea" Marine Biological Station, Agigea, "Alexandru Ioan Cuza" University of Iași, Romania
[3]"Alexandru Ioan Cuza" University of Iași, Institute of Interdisciplinary Research, RECENT AIR, Iași, Romania
[4]"Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Iași, Romania
[5]Medical Investigations PRAXIS, Iași, România

Key words: longhorn beetles, ticks, DNA barcodes, biodiversity.

DNA barcoding is an indispensable tool for the rapid and accurate identification of species of economic, ecological, and public health importance, particularly as climate change drives shifts in species distributions. Its effectiveness, however, depends on the availability of comprehensive reference libraries.

Romanian invertebrate diversity remains underrepresented in the global DNA barcode databases. Where genetic data are available, they are often based on markers other than the standard DNA barcode region, limiting their inclusion into existing reference libraries. Our project aims to develop DNA barcode libraries for two groups of invertebrates: Cerambycidae (longhorn beetles), which play essential ecological roles in forest ecosystems, although some species are economically important pests and Ixodidae (hard ticks), which are important vectors of human and animal pathogens. To achieve this, we combine Sanger, Illumina, and Oxford Nanopore sequencing to establish efficient DNA barcoding workflows for both freshly collected and museum specimens. We also evaluate the real-time sequencing capability of MinION to simultaneously identify tick species and detect associated pathogens from a single sample. By integrating morphological identification with newly generated DNA barcodes, the project will provide reliable molecular resources for biosecurity, biodiversity monitoring and disease surveillance while helping to fill the gaps in the DNA barcode reference library for the Romanian fauna.

Financial support provided by Romanian Agency UEFISCDI through the grant 2D-3B (PN-IV-P7-7.1-PED-2024-1951).

Endosymbiotic relationships across scales and taxa - extreme and temperate assemblages

Teodora POPOVA[1], Simona GEORGIEVA[2], Simeon BORISSOV[2]

[1]Sofia University St. Kliment Ohridski, Faculty of Biology, 1164 Sofia, Bulgaria, e-mail: tppv16@gmail.com
[2]Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 1113 Sofia, Bulgaria, e-mails: simona.georgieva@gmail.com; borissovsb@gmail.com

Key words: endosymbionts, parasites, polar extreme, biodiversity, host-symbiont associations.

Endosymbiosis is a foundational biological interaction in the evolution of life, yet endosymbiont diversity has remained unevenly studied across host taxa and biological scales. We investigate endosymbiont diversity in predominantly parasitic host systems, helminths and ticks together with flies as a comparative group. The emphasis is on Antarctic extremes, while parallel sampling has been carried out in temperate regions. We examine how host-symbiont associations are structured from individual hosts to populations and higher-taxon levels across contrasting environmental regimes, including chronic cold, pronounced seasonality, and freeze-thaw dynamics in Antarctica *versus* relatively moderate temperate conditions. Across systems, we evaluate the relative contributions of host phylogenetic history, environmental filtering, and their interaction, while assessing the mediating roles of transmission mode and host life history.

Helminths with complex life cycles exhibit elevated symbiont turnover across life stages, whereas ticks maintain comparatively stable symbiont associations consistent with long-term host dependence. Flies display more flexible symbiont associations tracking local environmental heterogeneity. We further characterize co-infection structure and infer functional patterns related to nutrient provisioning and cold adaptation through targeted molecular screening and phylogenetic analyses. This cross-taxon framework identified both shared and host-specific signatures of endosymbiont diversity and showed that Antarctic environmental extremes form robustly structured symbiotic assemblages relative to temperate systems.

This study was supported by the Bulgarian National Science Fund (Grant No. ФНИ КП–06-Н91/7).

Insect diversity and environmental gradients in urban, agricultural and natural habitats of Constantine (Algeria)

Naima BENKENANA, Imen GUERFI, Abir ABED, Chahinez DEROUICHE

Laboratory of Biosystematics and ecology of Arthropods, University of Frères Mentouri – Constantine 1, Algeria, e-mail: benkenanan@yahoo.co.nz

Key words: insect diversity, Coleoptera, Orthoptera, semi-arid ecosystems, Constantine.

This study investigates insect biodiversity and spatial distribution in the Constantine region (Northeastern Algeria) during the 2024–2025 period. Entomological surveys were conducted across natural, agricultural, peri-urban, and urban habitats to assess species richness and ecological variation.

A total of 102 insect species belonging to 40 families and 8 orders were recorded. Coleoptera was the most diverse order with 32 species, followed by Orthoptera (22 species), Lepidoptera (20 species), Hymenoptera (13 species), Hemiptera and Diptera (6 species each), Neuroptera (2 species), and Dermaptera (1 species). This taxonomic distribution reflects the ecological heterogeneity of the studied area.

Spatial analysis revealed important differences among sampling sites. Bekira, El Gammas, and the Chaab-Erssas Campus exhibited the highest species richness, indicating relatively stable and diversified habitats. In contrast, Hamma Bouziane and El Kheroube showed reduced diversity, likely due to stronger anthropogenic pressures such as urbanization, habitat fragmentation, and environmental disturbance.

The study also highlights the ecological significance of insect communities in semi-arid ecosystems. Recorded species contribute to key ecosystem functions, including pollination, biological control, decomposition processes, and environmental quality assessment. Several taxa may serve as potential bioindicators of habitat quality and ecological change.

Overall, this work provides an updated baseline of insect biodiversity in northeastern Algeria and emphasizes the importance of habitat conservation for maintaining ecological balance in semi-arid environments under increasing environmental stress.

The fourth site in Romania in terms of invertebrate species of community importance: ROSCI0135 Bârnova-Repedea Forest

Irinel Eugen POPESCU

"Alexandru Ioan Cuza" University, Faculty of Biology, Carol I No. 11, 700506 Iaşi, Romania, e-mail: irinellus@yahoo.com

Key words: Habitats Directive, Natura 2000, invertebrate species, threats, conservation.

Natura 2000 is the largest network of protected wildlife areas in the world, spanning all European Union to safeguard rare habitats, plants, and animals. The network was created to fulfil the European Union's commitment to the Convention on Biological Diversity (1992), helping conserve natural and semi-natural sites rich in flora and fauna. It covers over 18% of EU land and about 10% of marine areas through more than 27,000 special sites. Natura 2000 network was legally established in Romania by the Emergency Government Ordinance (EGO) 57/2007 on the regime of the protection of natural areas and conservation of natural habitats and wild flora and fauna in Romania. In Romania there are around 435 Sites of Community Importance (SCIs) designated under the European Union's Natura 2000 network, with the most diverse biogeographic regions inside the European Union: Alpine, Continental, Pannonian, Pontic and Steppic, currently covering more than 20% of the country's land surface, compared to nearly 18.5% across the EU.

ROSCI0135 Bârnova-Repedea Forest, with 12,236.20 ha, is a relatively large Natura 2000 site. It ranks fourth in Romania for the number of invertebrate species of community importance, with 18 species (Popescu & Gostin 2025), after ROSCI0069 Domogled-Cernei Valley with 27 species (62,121.30 ha), ROSCI0227 Sighişoara-Târnava Mare with 20 species (89,264.90 ha), and ROSCI0206 Iron Gates (Porţile de Fier) with 20 species (125,502.50 ha). These sites are 5–10 times bigger than Bârnova Forest. Bârnova Forest covers a variety of habitats favourable to the existence of rare Natura 2000 species. All the rare invertebrate Natura 2000 species in the Bârnova Forest can be regarded as indicator species for the diversity of habitats that requirement protection, and can be considered as charismatic, flagship species and as "umbrella species" for the protection of the other rare or important species within ROSCI0135 Bârnova-Repedea Forest.

Entomofauna associated with *Rattus norvegicus* carcasses: a comparative study from north-eastern Romania

Louana-Paraschiva COJANU, Mircea-Dan MITROIU

"Alexandru Ioan Cuza" University of Iaşi, Faculty of Biology, Carol I Bd. no. 11, 700506, Iaşi, Romania, e-mail: cojanulouana@gmail.com

Key words: forensic entomology, necrophagous entomofauna, carcass decomposition, minimum post-mortem interval, Diptera, Coleoptera.

Forensic entomology relies on insects associated with decomposing remains to estimate the minimum post-mortem interval (PMI_{min}) and to better understand decomposition process. Recent studies have increasingly focused on forensic entomology worldwide, whereas research in Romania remains limited, with relatively few publications over the past decade. This study aimed to characterize and compare the entomofauna associated with *Rattus norvegicus* carcasses and to assess its relationship with decomposition stages and local environmental conditions.

The study was conducted over two consecutive years (2023 and 2025) using 11 *Rattus norvegicus* carcasses placed at three locations in Iaşi County. Throughout the decomposition process, changes occurring in the carcasses were monitored, and the insects present were sampled at regular intervals. The entomological material was preserved, prepared, and identified based on morphological characteristics and specialized taxonomic keys. A total of 164 insect specimens were collected, comprising 70 dipteran and 94 coleopteran specimens. Across the five decomposition stages, the necrophagous entomofauna included representatives of four dipteran families and eight coleopteran families. Calliphoridae was the most abundant dipteran family, with a total of 59 specimens, and *Lucilia cf. caesar/illustris* was the dominant taxon, while Staphylinidae and Dermestidae were the most abundant coleopteran families with 40 and 24 specimens collected, respectively.

These findings improve our understanding of necrophagous insect succession under the ecological conditions of north-eastern part of Romania and provide baseline data relevant for forensic investigations and minimum post-mortem interval estimation.

Out of place: tracing the unnatural occurrence of *Anguilla anguilla* in the Southern Caspian

Mohammad Sadegh ALAVI-YEGANEH[1], Lasse MAROHN[2], Matthias FRISCHE[3], Reinhold HANEL[2]

[1]Tarbiat Modares University, Faculty of Marine Sciences, Department of Marine Biology, Nur, Iran, e-mail: malavi@modares.ac.ir
[2]Thünen Institute of Fisheries Ecology, Herwigstraße 31, 27572 Bremerhaven, Germany
[3]GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany

Key words: non-native species, LA-ICP-MS, strontium/calcium ratios, stocking, fish migration, Caspian Sea.

Although the European eel (*Anguilla anguilla*) is native to the North Atlantic and Mediterranean basins, isolated specimens have occasionally been recorded in the southern Caspian Sea—a region far outside its established natural range. The mechanisms underlying these occurrences remain ambiguous: they may result either from natural dispersal via the Volga–Don Canal, connecting the Black Sea to the Caspian, or from deliberate or accidental human-mediated introductions, particularly through stocking initiatives in the Volga River system or adjacent watersheds. To resolve this uncertainty, we analysed the migratory life-history signatures of five eel specimens collected from the southern Caspian using laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) to measure strontium-to-calcium (Sr/Ca) ratios along sagittal otolith transects. The resulting profiles exhibited a pronounced and persistent freshwater signal, with Sr/Ca values declining to below 2×10^{-3} immediately following the glass eel stage—a pattern fundamentally inconsistent with marine transits from the Mediterranean. This chemical fingerprint unequivocally rules out natural upstream migration through brackish or marine corridors and instead points unequivocally to anthropogenic release, either directly into the Caspian Sea or into its inflowing rivers. These findings carry significant conservation implications, as the introduction of a non-native catadromous species into this ecologically fragile and semi-isolated environment poses potential threats to native biodiversity and food-web dynamics. Our study highlights the critical value of otolith microchemistry as a forensic tool for tracing species introductions and calls for immediate management actions to prevent further releases.

Range expansion of *Ameiurus melas* (Rafinesque, 1820) (Ictaluridae) in Bulgarian inland water bodies

Teodora TRICHKOVA[1], Polina NIKOVA[1], Milcho TODOROV[1], Luchezar PEHLIVANOV[1], Stefan KAZAKOV[1], Tihomir STEFANOV[2], Lyubomir KENDEROV[3], Michal HNILIČKA[4], Pavel JURAJDA[4]

[1]Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 1 Tsar Osvoboditel Blvd., 1000 Sofia, Bulgaria, e-mail: trichkova@gmail.com
[2]National Museum of Natural History, Bulgarian Academy of Sciences, 1 Tsar Osvoboditel Blvd., 1000 Sofia, Bulgaria
[3]Biological Faculty, Sofia University 'St. Kliment Ohridski', 8 Dragan Tsankov Blvd., 1164 Sofia, Bulgaria
[4]Institute of Vertebrate Biology, Czech Academy of Sciences, Květná 8, 603 65 Brno, Czech Republic

Key words: invasive alien species, black bullhead, Danube River, pathways of introduction and spread.

The black bullhead, *Ameiurus melas* is an ictalurid fish native to the eastern parts of North America. It has been introduced to Europe in the 18–19th centuries, probably by anglers, and further spread to many countries with human assistance or by natural dispersal accross borders, using the large river systems, such as the Danube River. Because of its adverse impact on invaded ecosystems, including predation and competition with native ichthyofauna, since 2022 this species is listed as invasive alien species (IAS) of Union concern under the Regulation (EU) 1143/2014.

In Bulgaria, the black bullhead was first recorded in 2013 at Srebarna Lake and in 2014 at the discharge canal of Malak Preslavets Lake, both lakes adjacent to the Danube River. The aim of this report is to review the distribution of the species in the inland water bodies of Bulgaria since its first introduction based on field studies and available data. A total of 37 records have been reported in the period 2015–2026. Established populations of the black bullhead have been found and confirmed in the Danube River, three of its tributaries (lower reaches), two lakes and nine reservoirs. For the studied period the species spread in water bodies along the Danube River basin as well as in the Black Sea basin. The main pathways are associated with aquaculture and angling, therefore, measures from the national action plans on pathways of unintentional introduction and spread of IAS of Union concern in Bulgaria must be urgently implemented.

The study was supported by the Bulgarian Academy of Sciences and Czech Academy of Sciences (bilateral agreement, project No. IC-CZ/07/2025-2026) and the EU funded DANUBE4all project.

Fish species diversity in the Râmnicu Sărat River Basin (Romania)

Ionuț Dănuț COSTACHE[1], Mircea Nicușor NICOARĂ[1,2], Dorel URECHE[3]

[1]Doctoral School of Geosciences, Faculty of Geography and Geology, "Alexandru Ioan Cuza'' University of Iași, Romania, e-mail: costacheionutdanut@yahoo.com
[2]Department of Biology, Faculty of Biology, "Alexandru Ioan Cuza'' University of Iaşi, Romania
[3]Department of Biology, Ecology and Protection of Environment, Faculty of Sciences, "Vasile Alecsandri" University of Bacău, Romania

Key words: ichthyofauna, biodiversity, fish species, Râmnicu Sărat River Basin, electrofishing, Romania.

The Râmnicu Sărat River Basin, a tributary of the Siret River, comprises a wide variety of freshwater habitats, ranging from mountain streams to lowland river sections. Knowledge of the fish species composition is essential for assessing the ecological status of aquatic ecosystems and for developing effective biodiversity conservation strategies.

The aim of this study was to inventory the fish species occurring in the Râmnicu Sărat River Basin. Field surveys were conducted at 18 sampling sites distributed throughout the basin, from the river source (Furu Stream) to its confluence with the Siret River, covering mountain, sub-Carpathian, and lowland sectors. Fish were collected using the electrofishing method with a FEG 5000 electrofishing device and identified to species level based on their morphological characteristics.

The survey recorded a total of 19 fish species belonging to several families characteristic of Romanian freshwater ecosystems. Species distribution varied according to habitat characteristics and the geomorphological features of the river basin. Mountain sectors were dominated by rheophilic species adapted to fast-flowing waters, whereas lowland sectors were characterized by eurytopic and limnophilic species. The results contribute to the existing knowledge of the ichthyofauna of the Râmnicu Sărat River Basin and provide a valuable baseline for future biodiversity monitoring and freshwater conservation programs.

Occurrence and ecological characteristics of fire-bellied toads (*Bombina bombina* and *Bombina variegata*) in the Bârnova Forest, Iași County

Mădălina-Iuliana FRANC[1], Iulian GHERGHEL[2], Ștefan Remus ZAMFIRESCU[1]

[1]Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Iași, Romania, e-mail: madalinafranc6@gmail.com
[2]Department of Exact and Natural Sciences, Institute of Interdisciplinary Research, "Alexandru Ioan Cuza" University of Iași, Iași, Romania

Key words: fire-bellied toads, distribution, Bârnova Forest field survey.

This study investigates the distribution and ecological characteristics of the fire-bellied toads *Bombina bombina* and *Bombina variegata* within the aquatic and forest habitats of the Bârnova Forest, Iași County (Northeastern Romania), with a focus on potential contact areas between the two species. Field surveys were conducted between April and September 2025 across 36 aquatic sites, including both permanent and temporary ponds. Each site was georeferenced using Gaia GPS, and habitat parameters such as water pH, depth, vegetation type, and substrate structure were recorded. Individuals were identified visually and photographed, with special attention to ventral color patterning—a diagnostic trait used to distinguish between the two species and to identify individuals with intermediate characteristics. Preliminary observations indicate that *B. bombina* tends to occur in lowland ponds with open vegetation, whereas *B. variegata* is more frequently found in shaded, forested habitats and temporary ponds. Several transitional sites hosted individuals exhibiting intermediate ventral patterns, suggesting possible hybridization zones, which will be analyzed in detail during subsequent data interpretation. This study provides an ecological baseline for understanding the distribution and coexistence of *Bombina* species in the Bârnova Forest.

Unraveling the origin of Romania's only known gecko population through mitochondrial and nuclear genetic markers

Eusebiu ROȘCA[1], Ionuț-Cătălin PETREANU[2], Dragoș-Lucian GORGAN[1]

[1]Molecular and Evolutionary Genetics Research Group, Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Romania, e-mails: eusebiurosca3@gmail.com; lucian.gorgan@uaic.ro
[2]Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Iași, Romania, e-mail: icpetreanu@yahoo.com

Key words: synanthropic, allochthonous, genetic markers, molecular taxonomy, *Mediodactylus*.

Climate change and anthropogenic habitat alteration significantly impact the distribution and conservation of ectothermic species globally. Many reptiles leverage interconnected transport networks and urban heat-island effects to colonize areas beyond their native geographical range. Species belonging to the *Mediodactylus kotschyi* complex are frequently associated with human infrastructure, leading to successful introductions across several European countries, including Italy, Serbia, Albania, Hungary and Romania. Their synanthropic nature facilitates the establishment of viable northern populations within urban environments.

This study aims to elucidate the genetic origin and potential introduction pathways of an allochthonous *Mediodactylus* population established in Bucharest, Romania.

Tissue samples were collected non-lethally from individuals in the Sălăjan district. Target mitochondrial and nuclear gene regions were amplified via PCR, verified by agarose gel electrophoresis, and sequenced. Sequence comparisons against the BOLD and NCBI databases revealed a high sequence identity with *Mediodactylus danilewskii* (Strauch, 1887), a species native to the Black Sea region, thereby clarifying the taxonomic identity of this urban population.

Our findings highlight the crucial role of molecular taxonomy in detecting synanthropic reptile introduction and reconstructing invasion routes. Furthermore, this work provides a valuable baseline for future research on the adaptability, population dynamics, and potential ecological impacts of non-native reptiles in urban ecosystems.

Disparity in taxonomic and functional diversities of tropical herpetofauna from Central Mexico

César A. DÍAZ-MARÍN, Aurelio RAMÍREZ-BAUTISTA

Laboratorio de Ecología del Paisaje y Ordenamiento Ambiental, Centro de Investigaciones Biológicas, Instituto de Ciencias Básicas e Ingeniería, Universidad Autónoma del Estado de Hidalgo, km 4.5 carretera Pachuca-Tulancingo, 42184, Mineral de La Reforma, Hidalgo, México, e-mail: cesaardm@hotmail.com

Key words: alpha diversity, beta diversity, functional groups, Hidalgo state, tropical landscape.

Tropical forests are home to two-thirds of global biodiversity, although they are highly threatened by anthropogenic activities (e.g., agriculture and livestock). In this study, we analyzed the effect of land-use change on the taxonomic and functional diversities of amphibians and reptiles in the municipality of Molango de Escamilla, Hidalgo, Mexico. Specifically, the alpha taxonomic and functional diversities of amphibians and reptiles were compared among three land-use types (montane cloud forest, tropical rainforest, and cattle pasture); determine whether there was taxonomic and functional dissimilarity (beta diversity) among land-use types in both vertebrate groups; and identifying possible functional groups and their abundance in the three types of land-use analyzed. Alpha taxonomic and functional diversities for both groups were calculated based on Hill numbers, while taxonomic and functional dissimilarities were evaluated considering the components of turnover and nestedness.

Alpha taxonomic and functional diversities of amphibians were similar among land-uses, whereas the taxonomic alpha diversity of reptiles was higher in both forests than in the pasture. The functional alpha diversity of reptiles was higher in the rainforest than that in the pasture. The greatest taxonomic dissimilarity in amphibians occurred between forests and pasture, where turnover was the most important component. Taxonomic dissimilarity in reptiles was higher among all land-uses, and turnover was the most important component in all cases. The functional dissimilarities of both groups were low among land-uses, where both components were important. Considering all land-uses, four functional groups were identified in both vertebrate groups, but they differed in the number of species. This pattern could occur because of the differential effect of environmental filtering in each biological group.

The Lesser Kestrel *Falco naumanni* in Romania: historical status and the first breeding record in nearly 100 years

Luca-Mátyás SZABÓ[1], Ana-Maria BUZEA[1], István KOVÁCS[2], Mátyás CSONT-KELEMEN[1], Dávid MÉSZÁROS[1], József SZABÓ[3], Ciprian FÂNTÂNĂ[3], Zoltán BENKŐ[3], Zsolt KOVÁCS[4], Sándor D. ATTILA[5,6,7], Gergely OSVÁTH[4,8]

[1]Faculty of Biology and Geology, Babeș-Bolyai University, Cluj-Napoca, Romania, e-mail: luca.buca7@gmail.com
[2]HUN-REN-DE Behavioural Ecology Research Group, Department of Evolutionary Zoology and Human Biology, University of Debrecen, 4032 Debrecen, Egyetem tér 1., Hungary
[3]Romanian Ornithological Society, Bucharest, Romania
[4]Evolutionary Ecology Group, Babeș-Bolyai University, Cluj-Napoca, Romania
[5]HUN-REN Climate Change: New Blood-Sucking Parasites and Vector-Borne Pathogens Research Group, Budapest, Hungary
[6]Department of Parasitology and Zoology, University of Veterinary Medicine, Budapest, Hungary
[7]STAR-UBB Institute, Babeș-Bolyai University, Cluj-Napoca, Romania
[8]Museum of Zoology, Babeș-Bolyai University, Cluj-Napoca, Romania

Key words: *Falco naumanni*, recolonisation, breeding record, historical distribution, Dobrogea.

The lesser kestrel (*Falco naumanni*) is a bird species of conservation concern that underwent severe declines across much of its European range during the second half of the 20th century. At the north-eastern margin of its European range, in Romania, the species has long been regarded as rare and irregular and is currently listed as extinct as a breeder, but its status has never been reviewed as a whole. We compiled all available presence records of the species in Romania (89 occurrences from 1844 to 2025, drawn from museum collections, historical literature and online databases) and documented for each the type and strength of the underlying evidence. Fifty-four records rest on evidence that allows the identification to be re-examined. Breeding has been claimed on twenty-two occasions between 1872 and 2025, and the documentation behind each claim is set out record by record. The three well-documented historical nests date to 1898, 1900 and 1930, in three different counties; for most other historical claims the breeding adults were not identified, and these records are best read with caution. In August 2025 breeding was verified directly at Histria, Constanța county, Dobrogea, where a female raised four young to fledging in an unused building. Records with re-examinable identifications are overwhelmingly Transylvanian before 2000 and Dobrogean thereafter, a contrast likely reflecting, at least partly, changes in recording effort. The historical record provides no evidence for a former established population: the documented nesting events are isolated and widely spaced. The 2025 nesting is therefore best read as a breeding event at the margin of the range, in line with the recent recovery of the species in south-eastern Europe. Interpreting any future breeding in Romania will depend on this historical baseline and on targeted monitoring of its presence in Dobrogea.

Breeding evidence and nest-site preferences of rose-ringed parakeet *Alexandrinus krameri* in Romania

Florinel-Dănuț DRĂGAN[1], Mihail GHILAN[1,2,3]

[1]Romanian Ornithological Society, Intrarea Căluşei nr. 12, Sector 2, Bucharest, Romania, e-mail: dani.dragan@sor.ro
[2]Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, 700505 Iași, Romania
[3]Society for Bird and Nature Protection, MD-2009 Chișinău, Republic of Moldova

Key words: urban birds, invasive species, population control, monitoring, ecological plasticity.

The rose-ringed parakeet *Alexandrinus krameri* (syn. *Psittacula krameri*) is a non-native species introduced to Romania through the pet trade, with the first documented free-ranging records dating from 2010 in Bucharest. Since then, the species has been recorded in 19 Romanian counties. However, its national population remains small and spatially fragmented. Long-term monitoring coordinated by the Romanian Ornithological Society (SOR), together with data from national ornithological databases and citizen-science observations, has documented the gradual establishment of the species in urban environments. Successful breeding was first confirmed in Bucharest in 2016, in Tineretului Park, followed by a second confirmed breeding event in 2017. In 2026, breeding was confirmed again in Bucharest, representing the third documented successful nesting event. In the same year, the first confirmed successful breeding in Iași was also recorded, demonstrating an ongoing expansion of the breeding range in Romania, due to multiple independent escaping events.

The species exhibits remarkable ecological plasticity in nest-site selection. In Bucharest, all confirmed breeding events occurred in natural cavities of mature poplar (*Populus* spp.) trees, whereas in Iași breeding was so far documented only in artificial cavities excavated within the polystyrene insulation of a building, highlighting its capacity to exploit novel nesting substrates in urban landscapes, and potentially occupy a new niche. Although current population size and impacts remain limited compared to many Western European countries, *Alexandrinus krameri* should continue to be regarded as a species requiring permanent nationwide monitoring. Continuous surveillance of its distribution, breeding success and population dynamics is essential for the early detection of population growth and to support timely management interventions aimed at preventing future ecological impacts and, if necessary, implementing population control measures.

Diversity and seasonal dynamics of avifauna in the confluence area of Siret and Moldova rivers (Romania)

Matei FLOREA[1], Liviu OLARIU[2], Carmen GACHE[1]

[1]Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, 700506 Iași, Romania, e-mail: floreamatei123@gmail.com
[2]National Agency for the Protected Natural Areas – Neamț Territorial Service, Romania

Key words: bird diversity, seasonal dynamics, Natura 2000, wetland habitats.

Wetland ecosystems represent biodiversity hotspots and provide essential habitats for numerous bird species throughout their annual cycle. River confluences, presenting a high diversity of habitats and ecological parameters, play an important role in supporting breeding, migratory, and wintering bird communities. Assessing bird diversity and their seasonal dynamics in these areas is essential for understanding species distribution patterns and for supporting conservation and management measures, particularly within the Natura 2000 network.

This study presents data on the diversity of bird fauna around the confluence of the Siret River and its tributary Moldova, based on field monitoring conducted over a full annual cycle, since March 2023 until February 2024. The investigated territory includes sections of two Natura 2000 sites: ROSPA0072 Siret Middle Floodplain and ROSCI0364 Moldova River between Tupilați village and Roman city. The study area comprises a mosaic of habitats, including wetlands and watercourses, woodlands, and dry meadows. We encountered 131 bird species, representing 17 orders, and their quantitative occurrence was assessed during the breeding season, migration, and wintering time. Passerines were the dominant group, represented by 65 species from 24 families present across all habitat types, while 40 species were aquatic birds, mainly belonging to Anseriformes and Charadriiformes. We also recorded eight diurnal and one nocturnal raptor species. Twenty of the identified species are listed in Annex I of the Birds Directive, while twelve are included in the Romanian Red Book of Vertebrates, among them *Recurvirostra avosetta* and *Himantopus himantopus*, both confirmed as breeding species within the area. The main threats identified for the local bird fauna were fluctuations in water level and habitat loss.

New bat underground sites in the central part of the Republic of Moldova

Natalia DIBOLSCAIA[1], Vladislav CALDARI[1], Victoria NISTREANU[1,2], Alina LARION[1,2], Victor SÎTNIC[1]

[1]Institute of Zoology, Moldova State University, Chișinău, Republic of Moldova, e-mail: dibolsckaya.natali@gmail.com
[2]Theriological Society of the Republic of Moldova, e-mail: vicnistreanu@gmail.com

Key words: chiroptera, diversity, hibernation, maternity colony, rare species, limestone mines.

The rocky habitats in the central part of the Republic of Moldova serve as important sites for the reproduction and hibernation of bats common and rare species. The aim of the study is to assess the diversity of the chiropterofauna in underground shelters within the petrophytic ecosystems in the valley of the Răut River and to highlight the importance of these habitats for bat hibernation.

Field research was conducted in 2025-2026 period at two locations near the villages of Jeloboc and Furceni, represented by abandoned limestone mines situated in the rocky banks of the Răut River canyon.

The two sites show significant differences in chiropterofauna composition. In the Furceni mine, during hibernation the bat community consisted of 6 species: *Rhinolophus hipposideros*, *Barbastella barbastellus*, *Myotis blythii*, *M. daubentonii*, *M. dasycneme* and *Plecotus austriacus*. Significant dominance belonged to the lesser horseshoe bat (*R. hipposideros*) with over 80%, the rest of species had much lower share. In summer period a large maternity colony of *R. hipposideros* was found, with more than 700 females. This is the largest maternity colony of the species registered in Moldova so far.

In the Jeloboc mine, in hibernation period 8 bat species were recorded: *R. hipposideros*, *M. daubentonii*, *M. bechsteinii*, *M. dasycneme*, *B. barbastellus*, *P. austriacus*, *P. auritus* and *Eptesicus serotinus*. The community structure was more even, with dominance of Daubenton's bat (*M. daubentonii*), with more than 50%.

The study revealed a rich species diversity in the two limestone mines, where a total of 9 bat species were identified during the hibernation and summer periods. All identified species, with the exception of the serotine bat (*E. serotinus*), are included in the Red Book of the Republic of Moldova (3rd edition), which demonstrates the major importance of these underground refuges for bat conservation.

The research activities were carried out within the framework of the project: 26.80013.7007.04ARM "Current status of rare bat species (Mammalia: Chiroptera) from Moldova and Armenia in the context of anthropogenic and climatic changes".

Structural connectivity of a recently identified landscape corridor for the Persian leopard with implications for the Asiatic cheetah conservation in Eastern Iran

Arezoo SANEI[1,2], Fidelma BUTLER[2], Mohamad Reza BESMELI[3], Morteza GHEYSOURI[4], Aileen TENNANT[5], Shirin HERMIDAS[1]

[1]Asian Leopard Specialist Society, Tehran, Iran; e-mail: dr.arezoo.sanei@gmail.com
[2]School of Biological, Earth and Environmental Sciences, University College Cork, Cork, Ireland
[3]The Department of Environment, Mashhad, Iran
[4]The Department of Natural Resources and Watershed Management, Bandar-e-Mahshahr, Iran
[5]Fota Wildlife Park, Cork, Ireland

Key words: habitat fragmentation, landscape corridor, structural connectivity, Persian leopard, Asiatic cheetah.

Two critical landscape corridors (LCs) were identified during a national status assessment of the Persian leopard in Iran based on data collected since 2007. One of these corridors, the eastern LC, connects the leopard range across northeastern, central and southern regions of the country. Spanning approximately seven provinces in eastern and central Iran, it plays a crucial role in preventing large-scale habitat fragmentation while maintaining regional habitat connectivity for the Persian leopard and simultaneously benefiting Asiatic cheetah conservation. Accordingly, a stepwise framework has been implemented since 2024 aiming at: (i) assessing the structural connectivity of leopard habitats by employing Habitat Optimum Reference Modelling and (ii) identifying potential cheetah habitats to develop landscape-based conservation strategies. Standardized field surveys, including habitat assessments, transect surveys and camera trapping, were conducted with the participation of trained local people across the most vulnerable sections of the corridor. Habitat Optimum Reference Modelling was independently developed for both species and extrapolated across the seven provinces encompassing the LC using ArcGIS and Google Earth Engine. A Weighted Structural Patch Connectivity Ratio was developed to quantify structural connectivity within habitat patches. Accordingly, three core habitat patches, together with their connecting and terminal features, covering 474226 km^2 were identified for the Persian leopard and ranked based on their internal structural connectivity. Concerning the Asiatic cheetah, total habitat area of 223360 km^2 was identified along the same landscape corridor. In addition, three patch complexes internally connected by narrow habitats were recognized, highlighting areas requiring urgent conservation attention. Consequently, these discoveries supported prioritizing of conservation strategies based on habitat functionality and structural connectivity, thereby establishing the first species-specific framework for habitat restoration that concentrates on the Persian leopard and Asiatic cheetah along the LC. This integrated approach provides a practical and transferable framework for landscape connectivity assessment of wide-ranging carnivores.

Cytochrome *b* reveals hidden diversity in *Glis glis* populations from Romania

Elena Iulia IORGU[1], Răzvan ZAHARIA[2], Eliana SEVIANU[3], Ioan Alexandru RĂDAC[4], Oana Paula POPA[5], Dumitru MURARIU[2,6], Gabriel Bogdan CHIȘAMERA[7], Ioana COBZARU[7], Ramona-Andreea BIVOLEANU[2]

[1]Faculty of Medicine and Biological Sciences, "Ștefan cel Mare" University, 13 Universității Street, Suceava, Romania, e-mail: elena.iorgu@usm.ro
[2]Faculty of Biology, University of Bucharest, Splaiul Independenței 91–95, Bucharest R-050095, Romania
[3]Faculty of Environmental Science and Engineering, Babeș-Bolyai University, 30 Fântânele Street, Cluj-Napoca 400294, Romania
[4]Department of Biology, Faculty of Chemistry, Biology, Geography, West University of Timișoara, 16A Pestalozzi Street, Timișoara 300115, Romania
[5]"Grigore Antipa" National Museum of Natural History, 1 Kiseleff Street, Bucharest 011341, Romania
[6]Romanian Academy, 125 Calea Victoriei Street, Bucharest 010071, Romania
[7]Institute of Biology – Bucharest, Romanian Academy, 296 Splaiul Independenței, Bucharest 060031, Romania

Key words: Gliridae, cytochrome *b*, phylogeography, genetic diversity, Carpathians.

The edible dormouse (*Glis glis*) is an arboreal rodent associated with deciduous and mixed forests, whose European lineage shows remarkably low mitochondrial variability, attributed to a recent post-glacial expansion. Romanian populations were absent from previous phylogeographic studies. We analysed a 713 bp fragment of the mitochondrial cytochrome *b* gene in 117 individuals from seven sites located inside and outside the Carpathian Arc, using non-invasively collected hair samples from nestboxes and museum tissue samples, combined with GenBank sequences. Maximum likelihood and Bayesian reconstructions placed all Romanian samples within the European lineage. Five haplotypes were identified: two shared with other European populations, including the widespread Hap_2 (91 of 117 individuals), and three unique to Romania, one found in southern Romania (Piscoiu) and two in Dobrogea (Negureni and Dumbrăveni). Overall diversity was low (Hd = 0.38; $\pi = 0.001$), below that of the European lineage as a whole (Hd = 0.46). Populations from the Carpathians carried only Hap_2, whereas all derived haplotypes occurred in the extra-Carpathian populations. AMOVA attributed 20.1% of the molecular variance to differences between the intra- and extra-Carpathian groups (FST = 0.329), and the Piscoiu population, fixed for a private haplotype, was the most differentiated (FST = 0.78–1). These results point to the forests of Southern Romania and Dobrogea as areas of local differentiation, relevant for conservation planning. Nuclear markers are needed to confirm the observed structure.

Improving knowledge of small mammal distribution in Moldavia (Eastern Romania)

Zsolt HEGYELI, Ovidiu-Sebastian ŞTEFÎRCĂ, Zsuzsanna ACZÉL-FRIDRICH

Milvus Group Bird and Nature Protection Association, B-dul 1 Decembrie 1918, nr. 121, Târgu Mureş, Romania, e-mail: zsolt.hegyeli@milvus.ro

Key words: small mammals, trapping, owl pellets, rare species, Moldavia.

Eastern Romania remains one of the least documented regions for small mammal distribution in the country, with available records being sparse and geographically uneven. Research within the Moldavian region has been limited in recent decades, and despite the high diversity of small mammals documented in the 1950s–70s, the distribution of many species has remained virtually unknown ever since.

As part of the Atlas of European Mammals (EMMA2) programme, we conducted a field survey between 2022 and 2023, with the aim of mapping the distribution of Moldavia's small mammal species (Eulipotyphla, Rodentia), and filling some important distributional gaps. The sampling units consisted of nine 50×50 km grids, where data were collected using both live trapping and owl pellet analysis. As a supplementary method, we also registered other signs (e.g. burrows, mounds, carcasses).

We recorded a total of 20 species (6 insectivores, 14 rodents) out of the 26 species found in the region. The detection of the grey dwarf hamster (*Nothocricetulus migratorius*) in several counties is of particular biogeographic significance, as this rare species has been documented only in a handful of cases during the past five decades.

Our results are compared with previously published records, allowing for the assessment of novel distribution data as well as remaining knowledge gaps. Based on our experience, we formulate some methodological recommendations aimed at improving the efficiency of future small mammal inventories.

Bridging the gap between occurrence data and conservation action: automated workflows, temporal awareness, and AI-ready evidence

David LIVADARIU, Lucian PÂRVULESCU

Crayfish Research Centre, Institute for Advanced Environmental Research, West University of Timişoara, Oituz 4, 300086 Timişoara, Romania, e-mail: david.livadariu02@e-uvt.ro

Key words: biodiversity informatics, freshwater crayfish, temporal dynamics, large language models, conservation assessment.

Biodiversity databases have become essential for conservation assessment, yet most remain optimised for human browsing rather than structured machine consumption, leaving data fragmented, poorly documented, and disconnected from temporal reality. Using global freshwater crayfish as a model system, we address these limitations through three integrated innovations. We introduce cheCkOVER, an open-source R workflow that automates the transformation of occurrence records into standardised species knowledge packages. Processing 465 species across 97 countries, cheCkOVER harmonises taxonomy, derives IUCN-aligned spatial metrics (EOO/AOO), and performs geospatial contextualisation across administrative units, hydrographic basins, ecoregions, and protected areas. Outputs include publication-ready maps, interoperable exports (GeoJSON, KML, JSON), and canonical geo-narratives combining human-readable summaries with machine-readable structured fields, all retaining full traceability to source references.

These outputs expose a fundamental infrastructure gap: current databases cannot natively represent documented local extinction, producing temporal inflation whereby legacy presences obscure real decline and propagate error into conservation assessment. We show that treating documented loss as first-class *loss_event* records linked to historical localities enables time-aware mapping; implementation with European crayfish extinctions reveals measurable IUCN metric inflation. Finally, we validate how machine-readable data transform AI accessibility through controlled large language model query tests across nine poorly documented endemic species and one well-documented control. Closed-book queries failed catastrophically (mean 1.72/8; 50% failures), web search improved inconsistently (4.25/8; 19% failures), while manifest-directed retrieval achieved consistent success (6.88/8; zero failures). Improvement scaled inversely with existing documentation, directly addressing accessibility gaps where conservation needs are greatest. Together, these advances establish practical infrastructure for reproducible, AI-assisted conservation workflows, making occurrence data simultaneously human-interpretable, machine-consumable, and temporally explicit.

Checklist of alien taxa in Romania

Cristina PREDA[1], Laurențiu ROZYLOWICZ[2], Costică ADAM[3], Paulina ANASTASIU[4,5], Gabriel Bogdan CHIȘAMERA[6], Dan COGĂLNICEANU[1], Ioana Cristina CONSTANTINESCU[3], Carla F. GAVRILESCU[1], Quentin GROOM[7], Nicolae MANTA[8,9], Daniyar MEMEDEMIN[1,10], Lucian M. PĂTRAȘCU[1,9], Oana Paula POPA[3], Lien REYSERHOVE[11], Culiță SÎRBU[12], Ioana M. SÎRBU[4], Florina STĂNESCU[1], Marian TUDOR[1], Mihaela M. URZICEANU[4], Marius SKOLKA[1]

[1]"Ovidius" University of Constanța, Research Center of the Department of Natural Sciences, Faculty of Natural and Agricultural Sciences, Constanța, Romania, e-mail: cristina.preda@univ-ovidius.ro
[2]University of Bucharest, Center for Environmental Research, Bucharest, Romania
[3]"Grigore Antipa" National Museum of Natural History, Bucharest, Romania
[4]University of Bucharest, Faculty of Biology, Department of Botany and Microbiology, Bucharest, Romania
[5]University of Bucharest, "Dimitrie Brândză" Botanic Garden, Bucharest, Romania
[6]Institute of Biology Bucharest, Romanian Academy, Bucharest, Romania
[7]Meise Botanic Garden, Meise, Belgium
[8]Ministry of Environment, Waters and Forests, Bucharest, Romania
[9]University of Bucharest, Doctoral School in Geography, Bucharest, Romania
[10]Research-Development Institute for Grasslands, Brașov, Romania
[11]Research Institute for Nature and Forest, Brussels, Belgium
[12]"Ion Ionescu de la Brad" University of Life Sciences, Iași, Romania

Key words: introduced, biological invasions, Darwin Core, GBIF, invasive alien species.

Invasive alien species are among the main drivers of global biodiversity loss and impose substantial ecological, economic, and health costs. Hence, standardised national inventories underpin evidence-based biosecurity and the reporting obligations set by EU Regulation 1143/2014 and the Kunming–Montreal Global Biodiversity Framework. For Romania, a country sitting at a biogeographic crossroads in south-eastern Europe, alien-species information has so far been scattered across taxon- and realm-specific reviews and an earlier preliminary national register, with no standardised and openly accessible checklist spanning all taxa and realms. We present the Checklist of alien taxa in Romania, a standardised and openly licensed inventory of 825 introduced animal and plant taxa recorded between 1778 and 2025. Records were compiled by domain experts in a Darwin Core template with controlled vocabularies, verified by at least one co-author, validated programmatically, and published through GBIF as a Darwin Core Archive.

The checklist spans two kingdoms (Animalia 458 taxa, Plantae 367) and 11 phyla across the terrestrial (687), freshwater (87), and marine (73) realms, and includes 28 Invasive Alien Species of Union concern present in Romania. Two-thirds of the taxa (67.9%) have reached reproducing or more advanced stages of the invasion process, and 153 are classified as invasive or widespread invasive. Natural dispersal, transport contaminants, ornamental use, and stowaway transport dominate the pathway records, with intentional pathways prevailing for plants and unintentional ones for animals. The inventory expands the GRIIS Romania register (2020) from 615 to 825 taxa. A Solow–Costello discovery-record model

shows the underlying introduction rate rising by 1.05% per year since the late 18th century ($\beta_1 = 0.0105 \pm 0.0006$, $p < 0.001$). Conceived as a living resource maintained through the GBIF Integrated Publishing Toolkit, the checklist provides a national baseline for invasion research, alien species management, and national, EU and global reporting.

This dataset was published within the OneSTOP project (OneBiosecurity Systems and Technology for People, Places and Pathways, ID 101180559), funded by the European Union, and the RECOVER project (14CoEx/2026, PN-IV-P6-6.1-CoEx-2024-0124).

Abandoned vineyards as potential phytosanitary reservoirs: a comparative field survey in the Republic of Moldova

Valentina IORDOSOPOL[1,2], Alexei BIVOL[2], Mihail GURIȚĂ[3], Nadejda MOCREAC[2]

[1]National Food Safety Agency, Directorate for Control of the Use and Placing on the Market of Plant Protection Products and Fertilizers, Chișinău, Republic of Moldova, e-mail: iordosopolvalentinaa@gmail.com
[2]Department of Horticulture and Animal Resources, Faculty of Agricultural, Forestry and Environmental Sciences, Technical University of Moldova, Chișinău, Republic of Moldova, e-mails: mocreacnadejda@gmail.com; alexei.bivol@spp.utm.md
[3]Faculty of Medicine No. 1, Nicolae Testemițanu State University of Medicine and Pharmacy of the Republic of Moldova, Chișinău, Republic of Moldova, e-mail: mihaigurita2007@gmail.com

Key words: abandoned vineyards, phytosanitary surveillance, alien insect species, pathogen vectors, vineyard management.

Abandoned vineyards are becoming increasingly important components of agricultural landscapes. The absence of regular management may alter vegetation structure and arthropod communities and may contribute to the persistence of insect pests, potential pathogen vectors, and infected plant material. This study assessed the potential phytosanitary role of unmanaged vineyards by comparing two adjacent vineyard plots located in Bravicea, Călărași District, Republic of Moldova. One plot had been abandoned, whereas the neighbouring plot was maintained using basic agricultural practices.

Arthropod communities were investigated using yellow sticky traps and repeated sweep-net sampling of spontaneous vegetation and grapevine foliage. The phytosanitary condition of the grapevines was assessed through visual examination. Plant material displaying characteristic or atypical symptoms was collected for subsequent laboratory investigation.

Preliminary field observations showed that the abandoned vineyard supported denser spontaneous vegetation and a more structurally heterogeneous habitat than the managed plot. These conditions may favour the persistence and dispersal of arthropods of economic and phytosanitary importance. During sample examination, particular attention was given to alien insect species associated with grapevine agroecosystems, including *Erythroneura vulnerata*, *Metcalfa pruinosa*, and *Arboridia kakogawana*. The absence of regular crop maintenance may also increase habitat continuity for potential pathogen vectors and allow symptomatic or infected plant material to persist. In comparison, agricultural interventions in the managed vineyard reduced vegetation density and habitat continuity.

These preliminary observations support the inclusion of abandoned vineyards in phytosanitary risk assessments and landscape-level surveillance programmes. Systematic monitoring and appropriate management of these habitats could help reduce phytosanitary pressure on neighbouring productive vineyards and strengthen integrated pest and disease management in the Republic of Moldova. Laboratory examination of the collected plant material will clarify whether the observed symptoms are associated with specific plant pathogens.

Spatiotemporal variation in gastrointestinal parasite positivity among grazing livestock in the Danube Delta Biosphere Reserve, Romania

Ștefan RĂILEANU[1], Simona Dumitrița CHIRILĂ[1], Livia Oana DAVID[1,2]

[1]Danube Delta National Institute for Research and Development, Babadag Street no. 165, 820112 Tulcea, Romania, e-mails: stefan.raileanu@ddni.ro; simonachirilasc@yahoo.com
[2]Doctoral School of Veterinary Medicine, University of Agronomic Sciences and Veterinary Medicine of Bucharest, Splaiul Independenței 105, 050097 Bucharest, Romania, e-mail: livia.david@ddni.ro

Key words: gastrointestinal parasites, coproparasitology, grazing livestock, strongyle-type eggs, spatial variation, temporal variation, Danube Delta Biosphere Reserve.

Gastrointestinal parasite occurrence in grazing livestock varies among host species, locations, and sampling periods. This study analysed the spatial and temporal distribution of coproparasitological findings in horses, cattle, sheep, and goats from 14 locations in the Danube Delta Biosphere Reserve. Faecal samples were examined during 2024 and 2025, while pasture moisture class and dominant vegetation were recorded as environmental descriptors.

A total of 10,446 faecal samples were analysed. Although the number of positive samples increased from 996 in 2024 to 1,215 in 2025, the proportion of positive samples decreased from 27.01% to 17.98%. Positive samples were recorded at all 14 locations in both years, but cumulative positivity ranged from 11.8% at Valea Nucarilor to 34.9% at Mahmudia, with relatively high values also observed at Sarichioi and Niculițel. Strongyle-type eggs were the predominant coproparasitological finding. The proportion of samples containing strongyle-type eggs decreased in horses and cattle but increased in sheep. In cattle, *Eimeria* spp., *Strongyloides* spp., *Trichuris* spp., and nematode larvae were detected in 2025 but not in 2024. No consistent pattern of parasite positivity was observed along the dry–wet pasture gradient.

Parasite positivity varied among locations, livestock groups, and years, but showed no consistent relationship with pasture moisture class.

Seasonal biodiversity patterns of zooplankton communities in Danube Delta lakes (Romania)

Iasemin SULIMAN[1], Iuliana-Mihaela TUDOR[1], Orhan IBRAM[1,2]

[1]Department of Laboratories and Research Stations, "Danube Delta" National Institute for Research and Development, Babadag 165, 820112, Tulcea, Romania, e-mail: iasemin.suliman@ddni.ro
[2]"Dunărea de Jos" University of Galați, Faculty of Science and Environment, Domnească 47, 800008, Galați, Romania

Key words: zooplankton, biodiversity, species richness, Rotifera, Cladocera, Copepoda, seasonal dynamics, Danube Delta.

Zooplankton communities are key components of freshwater food webs and respond rapidly to spatial and seasonal changes in aquatic ecosystems. The Danube Delta, one of Europe's most important wetland systems, comprises a highly heterogeneous network of shallow lakes supporting diverse zooplankton assemblages. This study aimed to assess spatial and seasonal patterns in zooplankton abundance, taxon richness, and diversity across eight lakes of the Danube Delta: Erenciuc, Furtuna, Gorgostel, Merhei, Parcheș, Razim, Roșu, and Uzlina. Zooplankton samples were collected in March, July, and October 2025 and analysed considering the major taxonomic groups Rotifera, Cladocera, and Copepoda. Zooplankton communities were assessed based on abundance, taxon richness, and diversity. Pronounced spatial and seasonal differences were observed among the investigated lakes. Mean total zooplankton abundance was highest in July (98.94 ind. L^{-1}), compared with March (59.79 ind. L^{-1}) and October (55.93 ind. L^{-1}), with Rotifera representing the dominant group overall. The highest total abundance was recorded in Roșu Lake in July (212.16 ind. L^{-1}). Taxon richness varied considerably among lake–season combinations, reaching a maximum of 28 taxa in Furtuna in July. The highest Shannon diversity was also recorded in Furtuna in July ($H' = 2.46$), whereas the lowest value was observed in Razim during the same period ($H' = 0.96$). Despite the relatively high taxon richness recorded in Razim in July, low evenness ($J' = 0.34$) indicated strong dominance within the assemblage. In contrast, Gorgostel showed the highest community evenness in October ($J' = 0.89$). A total of 56 zooplankton taxa were identified in the studied material. Of these, 11 taxa belonged to Cladocera, with *Bosmina longirostris* and *Chydorus sphaericus* among the most abundant. Copepoda were represented by 7 taxa, with *Megacyclops viridis* being the most abundant. Rotifera was the most diverse group, with 38 taxa recorded, among which *Brachionus calyciflorus*, *Polyarthra vulgaris*, *B. diversicornis*, *B. forficula*, *Asplanchna priodonta*, and *Keratella quadrata* were among the most abundant. These findings contribute to a better understanding of zooplankton biodiversity and seasonal community dynamics in Danube Delta lakes.

Evolution, Systematics and Integrative Taxonomy

The chromosome numbers and evolution of the family Hygromiidae Tryon, 1866 (Gastropoda, Stylommatophora)

Nana BAKHTADZE, Levan MUMLADZE

Institute of Zoology, Ilia State University; George Tsereteli exit 3, 0179, Tbilisi, Georgia, e-mail: nanabakhtadze@yahoo.com

Key words: chromosome number, evolution, Hygromiidae.

The highly diverse family of terrestrial pulmonate gastropod mollusks, Hygromiidae Tryon, 1866, includes approximately 570 species and subspecies. The summarized karyological data from both our investigations and the literature indicate that chromosome numbers have been determined for 3.9% of the species and subspecies in this family.

The hygromiid haploid chromosome number (n) varies from 21 to 26. The characteristic haploid chromosome numbers for the family are n=21, n=23, n=24, and n=26. The lowest number, n=21, observed in the tribe Hygromiini Tryon, 1866, represents the ancestral chromosome number (plesiomorphy) for the family. This number is registered in the genus *Hygromia* Risso, 1826, which occupies a basal position within the Hygromiidae. n=23 is the most common haploid chromosome number, found in the majority of karyologically studied species (68.2%), genera, and tribes. It is the modal haploid chromosome number of the family. n=24, which occurred in two separate lineages: the subfamilies Hygromiinae Tryon, 1866 and Trochulininae Lindholm, 1927, is a case of homoplasy among hygromiid land snails. The highest recorded haploid chromosome number in the family is n=26. It is found in the Leptaxinae C. R. Boettger, 1909. It represents a derived, apomorphic trait of the more advanced tribe Cryptosaccini Neiber, Razkin, and Hausdorf, 2017. Hygromiidae is a conservative group regarding haploid chromosome numbers at the tribe level but not at the family level. The diploid chromosome numbers (2n=42, 2n=46, 2n=48, and 2n=52) and other karyotype details are currently available for only ten species. During the evolution of the family, chromosome numbers tend to increase, from n=21 in more basal taxa to n=26 in more recent ones.

Histochemical analysis: an important tool for understanding the structure of insect-induced galls

Irina Neta GOSTIN, Irinel Eugen POPESCU

Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Bdul Carol I, no. 11, 700506 Iași, Romania, e-mails: irinagostin@yahoo.com; irinellus@yahoo.com

Key words: plant galls, insects, histochemistry, metabolites.

One of the most interesting insect–plant interactions is gall formation, during which the gall-inducer actively manipulates the host plant's metabolism and morphogenesis, redirecting these processes from their normal developmental pathways. This results in the formation of novel structures that are not part of the species' normal genetic developmental program. In addition to the structural (anatomical) modifications of the organs in which galls develop, the metabolic modifications that occur during this process are of particular importance.

In contrast to other phytophagous insects, which consume normal plant tissues, gall-inducing insects actively manipulate the host plant's metabolism and developmental pathways, redirecting its resources towards the formation of a new organ, specifically adapted to their needs. As a consequence, the gall becomes a highly specialized structure, rich in nutrients, carbohydrates, lipids, proteins, and secondary metabolites, which are selectively accumulated and redistributed to sustain insect development and providing physical protection.

Histochemical studies of gall tissues show relevant information regarding the reallocations and transformations of nutrients and secondary metabolites in normal and neo-formed tissues, the changes in growth hormones responsible for abnormal growths and neo-formations that occur.

Ehrlich reagent was used to identify IAA (indole 3 acetic acid), a plant hormone of the auxin family, involved in promoting abnormal tissue growth (especially vascular one) in the gall structure. Primary metabolites were identified using Lugol's solution for starch detection, Fehling reagent for reducing sugars, Sudan Red III for lipid substances, PAS reagent for polysaccharides, and Coomassie Brilliant Blue for proteins.

Secondary metabolites were identified using ferric chloride and toluidine blue to detect polyphenols, while acidified phloroglucinol was used to detect lignin. The NADI reagent was used to identify terpenes.

These histochemical approaches provide valuable insights regarding the metabolic changes that take place during gall development and the establishment of the insect-plant interaction.

Towards an integrative taxonomic understanding of *Baetiella* (Ephemeroptera: Baetidae) in Indochina

Sirikamon PHLAINGAM[1], Tosaphol Saetung KEETAPITHCHAYAKUL[2]

[1]Department of Biology, Faculty of Science, Burapha University, Chonburi Province, Thailand, 20131, e-mail: sirikamon.ph@go.buu.ac.th
[2]The Center for Entomology & Parasitology Research, College of Medicine and Pharmacy, Duy Tan University, 120 Hoang Minh Thao, Lien Chieu, Da Nang, Vietnam, e-mail: keetapithchayakul.ts@gmail.com

Key words: *Gratia*, DNA barcoding, larval morphology, species delimitation, biogeography, Southeast Asia.

Despite recent taxonomic advances in Thailand, the diversity and distribution of the mayfly genus *Baetiella* Uéno, 1931 (Ephemeroptera: Baetidae) remain poorly understood across Indochina. Whereas the nominotypical subgenus *Baetiella* has been reported from several countries in the region, the subgenus *Gratia* is currently known only from Thailand. This study aims to reassess the diversity, distribution, and species boundaries of *Baetiella* in Indochina using an integrative taxonomic approach.

Newly collected larval material from Thailand and Vietnam was examined using comparative morphology and mitochondrial COI sequence data. The Vietnamese material includes specimens assignable to the subgenus *Gratia*, representing the first record of the subgenus from Vietnam and extending its previously known distribution beyond Thailand. These specimens exhibit a unique combination of larval characters that cannot be assigned to any currently described species, suggesting the presence of a potentially undescribed taxon. Morphological and molecular evidence was integrated to evaluate species boundaries within the genus.

These findings indicate that *Baetiella* diversity in Indochina remains underestimated and highlight the importance of regional sampling combined with integrative taxonomy for documenting species diversity and biogeographic patterns. By integrating comparative morphology with DNA sequence data, this study provides new insights into the taxonomy, distribution, and evolutionary history of *Baetiella* in mainland Southeast Asia.

Integrative taxonomy of damselflies in the subfamily Agriocneminae (Zygoptera: Coenagrionidae) in mainland Southeast Asia

Tosaphol Saetung KEETAPITHCHAYAKUL[1], Sirikamon PHLAINGAM[2]

[1]The Center for Entomology & Parasitology Research, College of Medicine and Pharmacy, Duy Tan University, 120 Hoang Minh Thao, Lien Chieu, Da Nang, Vietnam, e-mail: keetapithchayakul.ts@gmail.com
[2]Department of Biology, Faculty of Science, Burapha University, Chonburi, 20131, Thailand, e-mail: sirikamon.ph@go.buu.ac.th

Key words: Coenagrionidae, Agriocneminae, DNA barcoding, Thailand, Vietnam.

Damselflies in the subfamily Agriocneminae consist of three genera: *Agriocnemis*, *Argiocnemis*, and *Mortonagrion*, distributed from the African continent continuously to the Asian continent and Australasia. In the Southeast Asian region, 12 species of Agriocneminae damselflies have been reported. Currently, the taxonomy of adults has been widely studied, but the study of larvae and DNA barcoding remains limited. This integrative taxonomic study collected larval and adult specimens from lentic and lotic water sources in the mainland Southeast Asian region. Species identification and the association of final-instar larvae and adults were conducted using the DNA barcoding technique, utilizing the cytochrome c oxidase subunit 1 (*COI*) gene. The study revealed two species with undescribed larval stages i.e. *Agriocnemis nana* and *Mortonagrion aborense*. The integrative taxonomic study classified species in this subfamily into five subgroups from three genera using characteristics of larvae and adults, including caudal appendage and genital ligula of adult males, the thoracic morphology of females, and head structure of larvae.

Linking wing polymorphism and genetic diversity in water crickets (Insecta: Heteroptera: Gerromorpha: Veliidae)

Gavril Marius BERCHI[1,2], Ioan Alexandru RĂDAC[2], Jakob DAMGAARD[3], Aura Ştefania JILCOVICI[2], Laura Elena JIVULESCU[2], Alexandra Ioana SABĂU[2], Petr KMENT[4], Denis COPILAŞ-CIOCIANU[1]

[1]Laboratory of Evolutionary Ecology of Hydrobionts, State Scientific Research Institute Nature Research Centre, Akademijos 2, 08412 Vilnius, Lithuania, e-mail: marius@heteroptera.ro
[2]Department of Biology, Faculty of Chemistry, Biology, Geography, West University of Timişoara, Pestalozzi 16A, 300115 Timişoara, Romania
[3]Natural History Museum of Denmark, Zoological Museum, Universitetsparken 15, 2100 Copenhagen Ø, Denmark
[4]Department of Entomology, National Museum, Cirkusová 1740, 19300 Prague 9 – Horní Počernice, Czech Republic

Key words: phylogeography, dispersal, phenotypic plasticity, population density, water bugs.

The presence or absence of wings (wing polymorphism) in insects can profoundly affect dispersal potential, with consequences for genetic diversification. In semiaquatic bugs (Insecta: Heteroptera: Gerromorpha), wing-morph expression may be influenced by both genetic and environmental factors, but how variation in wing expression relates to genetic diversity remains poorly understood. We investigated this relationship in three species of water crickets (*Velia* cf. *serbica*, *V. mancinii mancinii* and *V. saulii*) by examining mitochondrial genetic diversity and wing-morph frequencies (macropterous vs apterous), as well as experimentally testing if wing-morph frequency is density-dependent.

The exclusively apterous *Velia* cf. *serbica* showed the highest nucleotide diversity ($\pi = 0.0227$), while *V. mancinii mancinii* had the highest frequency of macropterous individuals (32.9%) and 3.5 × lower nucleotide diversity ($\pi = 0.0064$). The widespread *V. saulii* exhibited an intermediary frequency (5.95%) of macropterous individuals and showed the lowest nucleotide diversity ($\pi = 0.0028$).

We then tested the effect of density on wing-morph expression and found divergent responses. *Velia* cf. *serbica* produced no macropterous individuals at any density. *V. mancinii mancinii* produced macropterous individuals across all treatments, with no significant association between density and wing-morph. In contrast, *V. saulii* showed a density-dependent response, with the proportion of macropterous individuals increasing from 0% at low density to over 50% at medium and high densities.

Our results indicate that wing absence profoundly increases genetic diversity due to its limiting effect on dispersal ability. Moreover, we found that wing-morph expression is species-specific and not always density-dependent.

This study was funded by the Research Council of Lithuania (grant no. S-PD-25-16). GMB and IAR were also supported by the UVT 1000 Develop Fund of the West University of Timişoara.

New host-parasite associations and diversity of avian chewing lice (Phthiraptera: Amblycera, Ischnocera) from south-eastern Romania

Tony Alexandra TICU[1], Alexandru-Mihai PINTILIOAIE[2], Laura-Elena TOPALĂ[3], Emanuel-Ştefan BALTAG[5], Costică ADAM[4], Lucian FUSU[1]

[1]Research Group in Invertebrate Diversity and Phylogenetics, Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Bd. no. 11, 700506 Iaşi, Romania, e-mail: tonyalexandra.ticu@gmail.com
[2]Doctoral School of Biology, Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Avenue no. 20A, 700505 Iași, Romania
[3]University of Bucharest, Faculty of Biology, Splaiul Independenței 91-95, Bucharest, R-050095, Romania
[4] "Prof. Dr. Ioan Borcea" Marine Biological Station, Agigea, "Alexandru Ioan Cuza" University of Iași, 907015 Agigea, Romania
[5]"Grigore Antipa" National Museum of Natural History, Şos. Kiseleff No. 1, Bucharest, Romania

Key words: chewing lice, Phthiraptera, parasite, host.

Chewing lice (Phthiraptera: Amblycera, Ischnocera) represent one of the most diverse and host-specific groups of avian ectoparasites, playing an important role in host health and ecological interactions. Despite their significance in influencing host fitness, population structure, and avian community dynamics under changing environmental conditions, their diversity and distribution across Romania remain insufficiently documented.

This study investigates the species diversity, occurrence, and host associations of chewing lice on wild birds to establish new distribution records for the Romanian fauna.

Fieldwork was conducted at the Agigea Bird Observatory in south-eastern Romania, situated along a major migratory flyway. A total of 556 birds, predominantly passerines, were examined during the spring and autumn seasons using the fumigation method, complemented by direct examination of their plumage.

Specimen identification yielded a total of over 40 chewing louse species. The findings indicate the presence of host-parasite associations that represent new records for the Romanian fauna, along with some novel host-parasite associations globally.

These results confirm that chewing louse diversity in Romania is currently underestimated. Further comprehensive systematic studies are needed to better document their distribution and host associations in the region.

Tiny mutants: Morphological abnormalities in *Systasis* Walker (Hymenoptera: Systasidae: Systasinae)

Mădălina-Elena ROȘU, Mircea-Dan MITROIU

"Alexandru Ioan Cuza" University, Faculty of Biology, Bd. Carol I 20A, 700506 Iași, Romania, e-mail: rosu.madalina11@yahoo.com

Key words: teratology, parasitoid wasps, Systasidae.

The family Systasidae is a recently established group within the superfamily Chalcidoidea, which consists of small parasitoid wasps predominantly associated with small phytophagous insects, particularly gall-forming and leaf-mining Diptera. Systasidae was recently separated from the families Pteromalidae (subfamily Systasinae with genera *Systasis* and *Semiotellus*) and Eulophidae (subfamily Trisecodinae with sole genus *Trisecodes*) through morphological and molecular evidence (Burks et al., 2022; Cruaud et al., 2024).

This study is the first one to describe teratological cases for the family Systasidae, respectively from the genus *Systasis*. Dried wasp specimens included in the MICO private collection (Mitroiu Collection) were analyzed using an Olympus Stereo Microscope SZX9 (with a zoom range between 6.3 and 57), equipped with an ocular scale of 100 units and identified down to species using a dichotomous key. Measurements were taken of parameters such as full body length, the width and length of the mesosoma, the metasoma, the head, of all segments of the antennae, the distance between the posterior ocelli and between one posterior ocellus and one eye, as well as the length of the marginal, postmarginal and stigmal vein.

Morphological anomalies were identified in several of the dried specimens, in both males and females, including antennal abnormalities, such as funicle segments 1 and 2 fused on one antenna, absence of a whole funicle segment, absence of a median ocellus or slight deformations of the head.

Taxonomic utility of forewing shape among closely related genera of the *Cotesia* group (Hymenoptera: Braconidae: Microgastrinae)

Maja LAZAREVIĆ, Milica ANĐELKOVIĆ,
Darija MILENKOVIĆ, Vladimir ŽIKIĆ

Department of Biology and Ecology, Faculty of Sciences and Mathematics, University of Niš, Višegradska 33, 18000 Niš, Serbia, e-mail: maja.lazarevic@pmf.edu.rs

Key words: geometric morphometrics, forewing morphology, genus delimitation.

Microgastrinae represents one of the most diverse subfamilies of Braconidae, comprising koinobiont endoparasitoids of lepidopteran larvae distributed worldwide. The *Cotesia* group is one of the most species-rich and recently diversified lineages within Microgastrinae, including numerous closely related genera. Although genera within this group can be distinguished based on traditional morphological characters, the potential of wing morphology as an additional diagnostic trait remains largely unexplored.

The aim of this study was to assess the discriminatory power and taxonomic utility of forewing size and shape among closely related genera of the *Cotesia* group. The analysis included 20 species belonging to three genera: *Cotesia* (15 species), *Glyptapanteles* (4 species), and *Diolcogaster* (1 species). Forewing morphology was analysed using geometric morphometrics based on 22 specific landmarks. Differences among taxa were evaluated using statistical tests, principal component analysis (PCA), and canonical variate analysis (CVA).

Significant variation in forewing morphology was detected among the analysed taxa; however, genera showed substantial overlap in morphospace. *Diolcogaster* showed a distinct position compared with the remaining taxa, while *Glyptapanteles fraternus* also exhibited a separated morphospace position. The remaining *Glyptapanteles* species showed forewing similarity to species belonging to the *melitaearum* group within *Cotesia*. Within *Cotesia*, species of the *tibialis* group showed similar forewing morphology and occupied a relatively compact region of morphospace, whereas the *melitaearum* group displayed greater morphological variability. *Cotesia hispanica* exhibited the most distinct forewing morphology within this group, occupying an intermediate position between *Glyptapanteles fraternus* and other *Cotesia* species.

These results indicate that forewing morphology reflects patterns of morphological affinity among some closely related taxa but has limited discriminatory power for reliable genus-level identification within the *Cotesia* group. Integration of geometric morphometrics with molecular and additional morphological characters is required for robust taxonomic identification of these ecologically important parasitoids.

Interspecific variation in skull and mandible shape and size within Rhinolophidae: a 3D geometric morphometric approach

Ruxandra NIȚESCU[1], Raluca Ioana BĂNCILĂ[2]

[1]"Grigore Antipa" National Museum of Natural History, Şos. Kiseleff no. 1, 011341, Bucharest, Romania, e-mail: ruxandra.nitescu@antipa.ro
[2]"Emil Racoviță" Institute of Speleology of Romanian Academy, Department of Biospeleology and Soil Biology, Bucharest, Romania

Key words: skull, mandible, morphology, description, Mammalia, Chiroptera.

The mammalian skull integrates several structures involved in biological functions, including sensory perception, feeding, and communication. Its morphology is therefore shaped by multiple functional and environmental pressures. In bats, cranial form is particularly associated with feeding and echolocation, making the skull a valuable structure for investigating morphological variation among species. This study examines intra- and interspecific morphological variation of the skull in horseshoe bats (*Rhinolophus* spp.) within a phylogenetic framework. We examined 53 specimens belonging to seven horseshoe bat species: *R. simulator* K. Andersen, 1904; *R. clivosus* Cretzschmar, 1828; *R. euryale* J. H. Blasius, 1853; *R. hipposideros* (André, 1797); *R. ferrumequinum* (von Schreber, 1774); *R. pearsonii* Horsfield, 1851; and *R. denti* O. Thomas, 1904. The material is housed in the mammal collections of the Museo Nacional de Ciencias Naturales (CSIC), Madrid, and the Zoologisches Forschungsmuseum Alexander Koenig, and originates from field collections spanning Europe, North and sub-Saharan Africa, the eastern Mediterranean and Middle East, Central Asia, and East Asia. Three-dimensional geometric morphometric methods were used to quantify and compare variation in skull and mandibular size and shape based on anatomical landmarks placed on 3D models. The resulting morphometric data provide a framework for assessing cranial variation among the seven *Rhinolophus* species and for identifying morphological differences potentially associated with the functional roles of the skull in echolocation and feeding. Building on this framework, future work will apply the knowledge gained from landmark-based 3D geometric morphometrics of rhinolophids to investigate how environment and lineage distribution shape patterns of morphological variation across bat metacommunities.

Paleoecology, Paleobiology and Historical Biogeography

Preliminary data on a Late Pleistocene faunal assemblage from Bisericuța Cave (Trascău Mountains, NW Romania)

Enoh CONSTANTINESCU[1,2], Ionuț-Cornel MIREA[1], Marius ROBU[1], Maria-Laura TÎRLĂ[1,2], Luchiana-Maria FAUR[1], Daniel VEREȘ[3], Marius KENESZ[3], Răzvan ARGHIR[1], Marian COSAC[4], Alexandru PETCULESCU[1], Silviu CONSTANTIN[1]

[1]"Emil Racoviță" Institute of Speleology, Romanian Academy, Bucharest, Romania, e-mail: ionut.mirea@iser.ro
[2]Faculty of Geography, University of Bucharest, Bucharest, Romania
[3]"Emil Racoviță" Institute of Speleology, Romanian Academy, Cluj-Napoca, Romania
[4]"Valahia" University of Târgoviște, Târgoviște, Romania

Key words: MIS 3 cave bears, faunal assemblage, osteometry, Romanian Carpathians.

Bisericuța Cave (~320 m development) is located in Trascău Mountains (Apuseni Mountains, NW Romania) and presents a two-tiered cave morphology. The lower level, including the Urșilor Chamber, acted as a sediment and fossil trap, accumulating a substantial clastic infill derived from the upper passage. A new paleontological excavation (~4 m², BIS2) in the lower passage yielded a taxonomically diverse but highly fragmented faunal assemblage dominated by *Ursus spelaeus*, with fewer fossil remains of *Panthera spelaea*, *Crocuta crocuta spelaea*, *Canis lupus* and several micromammal species. The AMS radiocarbon dating of two bone samples (*U. spelaeus* and *C. lupus*) provided ages of ~35 and 41 ka cal BP (Marine Isotope Stage 3), consistent with chronologies from other Romanian cave sites (e.g., Muierilor, Urșilor and Oase caves). The taphonomic and stratigraphic observations indicate that the BIS2 assemblage represents a secondary accumulation formed through repeated reworking and downslope transport from the upper passage, which supports its interpretation as a sedimentary trap with complex depositional dynamics. Moreover, the preliminary osteometric analysis of *Ursus spelaeus* metapodials places the Bisericuța cave bear population within the variability range of Central and Eastern European cave bears. This assemblage includes a minimum number of 10 individuals (MNI), but ongoing work could increase this number. The preliminary data on metapodials indicates moderate sexual dimorphism and intra-population variability, closely matching the morphometric patterns documented in the Urșilor and Cioclovina cave bear assemblages.

The research was carried out during 2018–2026 and funded by: 31/2010 (KARSTHIVES), National Geographic Grant #964115, PCE Grant 197/2016, SEE-RO-NO-2018-0126/2018 (KARSTHIVES2), all to SC, grant PN-IV-P2-2.1-TE-2023-0654 (to MLT), F-RO-CH-2024-0161/IZ11Z0_230102 (to DV) and TE Grant 2301/2014 to AP. Also supported by grants: PN-III-P1-1.1-TE-2021-0187 (to MR), Paleontological Society (PalSIRP) 2023 Sepkoski and PN-III-P1-1.1-PD-2021-0262 (to ICM). The Polaris Caving Club and volunteers are gratefully acknowledged for logistical support during fieldwork campaigns.

Palaeoecological evidence of anthropogenic heavy metal contamination in medieval European wildlife

Marius ROBU[1,2,3,4], Ionuț-Cornel MIREA[1], Daniel VEREȘ[3], Sébastien OLIVE[5,6], Marius VLAICU[1], Phillipe TELOUK[7], Jeremy E. MARTIN[7]

[1]"Emil Racoviță" Institute of Speleology, Bucharest, Romania, e-mails: ionut.mirea@iser.ro; robu.marius@iser.ro; vlaicu.marius@iser.ro
[2]Research Institute of the University of Bucharest, Bucharest, Romania
[3]Romanian Academy, Institute of Speleology, Cluj-Napoca, Romania, e-mail: dsveres@gmail.com
[4]"Sabba S. Ștefănescu" Institute of Geodynamics, Romanian Academy, Bucharest, Romania
[5]Institute of Natural Sciences, Directorate Earth & History of Life, Palaeobiosphere Evolution, Brussels, Belgium, e-mail: sebastien.olive@naturalsciences.be
[6]Université de Liège, Freshwater and Oceanic Science Unit of Research, Laboratory of Ecology and Conservation of Amphibians, Liège, Belgium
[7]Université de Lyon, UCBL, ENSL, CNRS, UMR 5276 LGL-TPE, Villeurbanne, France, e-mails: philippe.telouk@ens-lyon.fr; jeremy.martin@ens-lyon.fr

Key words: *Ursus arctos*, heavy metal bioaccumulation, pre-industrial pollution, Romanian Carpathians.

Anthropogenic heavy metal pollution is widely regarded as a contemporary concern, yet its historical effects on wild fauna remain largely undocumented. This study investigates trace element incorporation in the dentition of a subfossil brown bear (*Ursus arctos*) from a cave site in the Romanian Carpathians, proximate to early metallurgical activity. Using laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) integrated with histological analysis of incremental tooth tissues, we reconstructed intra-tooth geochemical profiles of lead (Pb), lithium (Li) and zinc (Zn) across successive growth layers. Dentine records revealed cyclical Pb fluctuations, with peak concentrations (~15.2 ppm for lower M1) substantially exceeding natural background levels and aligning with active seasonal growth. Concurrently elevated Li and Zn within the same increments indicate a coherent multi-element pollution signal, excluding diagenetic contamination. Geochemical peaks correspond to late spring–autumn growth layers, coinciding with active foraging, while winter increments showed attenuated metal intake. Interpreted alongside evidence of adjacent medieval mining and smelting, these signatures indicate chronic anthropogenic metal exposure throughout the specimen lifetime. This study provides among one of the earliest documented evidence of heavy metal pollution in a wild terrestrial mammal, demonstrating that pre-industrial metallurgy measurably impacted European wildlife and that subfossil dentition constitutes a robust proxy for reconstructing historical environmental contamination.

This work was supported by grants PN-III-P1-1.1-TE-2021-0187 and PN-IV-PCBRO-MD2024-0067 (to MR), PN-III-P1-1.1-PD-2021-0262 (to ICM), F-RO-CH-2024-0161/IZ11Z0_230102 (to DV) and the TelluS Program of CNRS/INSU (to JEM and MR). SO and JEM received funding from the European Union's Horizon 2020 programme under Marie Sklodowska-Curie grant No.101032456-TNT. MR acknowledges support from the Research Institute of the University of Bucharest (ICUB), fellowship 12950/2025.

Dental and skeletal indicators of health and diet-related physiological stress in a human population from southeastern Romania (15th–19th centuries): a preliminary study

George-Ioan MERLUȘCĂ[1], Paul-Iulian DONCIU[1], Aurel-Daniel STĂNICĂ[2], Ozana-Maria CIORPAC-PETRARU[1], Luminița BEJENARU[1,3]

[1]"Alexandru Ioan Cuza" University of Iași, Faculty of Biology, str. Carol I, no. 11, 700506, Iași, Romania, e-mail: merluscageorge4@gmail.com
[2]"Gavrilă Simion" Eco-Museum Research Institute, 820009 Tulcea, Romania
[3]"Olga Necrasov" Center of Anthropological and Biomedical Research, Romanian Academy-Iași Branch, 700481 Iași, Romania

Key words: human remains, dental pathologies, bone lesions, physiological stress, environmental conditions, Southeastern Romania.

Human skeletal remains preserve valuable evidence of the biological consequences of environmental conditions such as dietary habits, infectious diseases and physiological stress experienced during life. This preliminary bioarchaeological study focuses on dental health and skeletal indicators for nutritional deficiencies and broader diet-related physiological stress in a human skeletal series recovered from the necropolis of St. Athanasius Church in Niculițel, Tulcea County. Preventive archaeological excavations conducted in 2022–2023 uncovered an extensive cemetery dating from the Ottoman period to the early modern period (15th–19th centuries). This study aims to investigate the relationship between dental health—assessed through dental caries, periapical lesions, antemortem tooth loss (AMTL), dental calculus, and enamel hypoplasia—and osteological indicators of nutritional deficiencies. By integrating dental and skeletal evidence, the study seeks to evaluate the combined effects of diet, habitual activities, and environmental conditions on the health of past populations. The dental and bone markers were evaluated according to their prevalence, anatomical distribution, age and sex. Dental caries of varying severity were identified mainly in posterior teeth. Advanced carious lesions were associated with radicular cysts, while antemortem tooth loss (AMTL) was more frequent among males and predominantly affected the molars. Enamel hypoplasia was observed in both males and females, indicating episodes of mild to moderate physiological stress during enamel formation.

Cribra orbitalia, cribra cranii, and periosteal new bone formation potentially associated with vitamin C deficiency (scurvy) were also identified. The preliminary results provide a more comprehensive perspective on the health and physiological stress experienced by past human populations from the Ottoman to the early modern period in southeastern Romania. Further analyses of dental wear and dental calculus micro-remains are needed to provide a more comprehensive reconstruction of dietary patterns.

Changing world, vulnerable heritage: an interdisciplinary assessment of the value and vulnerability of Neamț county's geosites

Maria Cristina CIMPOEȘU[1], Ionuț GRĂDIANU[1,2], Nicușor NECULA[1], Ciprian CHELARIU[1], Dorin Sorin BACIU[1], Adrian GROZAVU[1]

[1]"Alexandru Ioan Cuza" University of Iași, Faculty of Geography and Geology, Bd Carol I 20A, 700505 Iași, Romania, e-mail: igradianu@hotmail.com
[2] Natural Sciences Museum of Piatra-Neamț, Petru Rareș 26A, 610119, Neamț, Romania

Key words: geoheritage sites, paleontological reserves, vulnerability, Neamț County.

Geological heritage conservation has emerged as a globally recognised priority. However, the sites that preserve the traces of evolutionary processes remain highly vulnerable to both natural dynamics and human pressures. Effective protection hinges on the implementation of rigorous and repeatable methods for site identification and evaluation. This study introduces an interdisciplinary methodological framework for assessing geoheritage in Neamț County, Romania. This region is home to remarkable yet inadequately protected sites, including the Munticelu and Toșorog caves, the natural monuments of Piatra Teiului and Stânca Șerbești, and the paleontological reserves of Cozla and Pietricica. The framework comprises three analytical components: (1) a quantitative vulnerability assessment that considers geomorphological processes, weathering susceptibility, and anthropogenic impact; (2) a GIS-based evaluation of tourist accessibility and terrain modelling; and (3) a multi-criteria appraisal of each site's scientific, educational, and geotourism potential. By integrating these dimensions into a cohesive workflow, the study presents a transferable model for geoheritage assessment that can be adapted to other regions facing similar conservation challenges. The results demonstrate that this approach effectively differentiates between sites with varying levels of vulnerability and potential, while also highlighting the methodological complexities of merging quantitative and qualitative criteria. This proposed framework serves as a practical tool for researchers, protected-area managers, and local authorities involved in evidence-based geoheritage management.

Ecology, Behaviour and Conservation under Global Change

From evidence to action: integrated conservation assessment and management of *Austropotamobius bihariensis*

Andrei Robert ÁCS[1], Constanța-Mihaela ION[2], Lucian PÂRVULESCU[1]

[1]West University of Timișoara, Crayfish Research Centre, Vasile Pârvan Blvd 4, Timișoara, Romania, e-mail: andrei.acs@e-uvt.ro; lucian.parvulescu@e-uvt.ro
[2]Institute of Biology Bucharest, Romanian Academy, 296 Splaiul Independenței, 060031 Bucharest, e-mail: mihaela.ion@ibiol.ro

Keywords: *Austropotamobius bihariensis*, freshwater crayfish conservation, population decline, threat assessment, legal protection, catchment-scale management.

Newly described endemic species may become scientifically visible before they are adequately represented in conservation policy. We reconstruct the evidence-to-action pathway developed for the idle crayfish, *Austropotamobius bihariensis* Pârvulescu, 2019, a headwater endemic of Romania's Apuseni Mountains, from its formal description to legal protection. This synthesis integrates standardized population monitoring conducted during 2010–2023, IUCN Red List assessment, geospatial modelling of population size and suitable habitat, site-specific threat evaluation, and analysis of the process leading to formal legal recognition.

Across 24 repeatedly surveyed subpopulations, catch-per-unit-effort declined by 13.1%, while 66.8% showed decreasing trends, including local extirpations. The species has an extent of occurrence of 3,352 km² and an area of occupancy of 124 km², supporting its classification as Endangered under IUCN Criterion B. Subsequent modelling estimated 31,150 ± 449.9 individuals and 1,163,754 m² of suitable habitat. Only 37.9% of this habitat occurs within 13 protected areas under the most realistic scenario. Population decline was associated with interacting, spatially variable pressures, particularly deterioration of water quality, forestry-related disturbance, hydromorphological alteration, drought, development, and the persistent risk of crayfish plague. These results show that protected-area boundaries alone do not provide functional protection for a fragmented headwater species and support catchment-scale, site-specific management.

Following its description, *A. bihariensis* also illustrated "taxonomic anxiety": taxonomic clarification created uncertainty over the continuity of legal safeguards previously attached to *A. torrentium*. The accumulated demographic, spatial, threat, and policy evidence, combined with stakeholder engagement and strategic communication, supported its inclusion in Annexes 3 and 5A of Romanian Government Emergency Ordinance No. 7/2025. This case demonstrates that conservation assessment should be designed not only to diagnose extinction risk, but also to generate an operational pathway from taxonomic discovery to legal recognition and adaptive management.

The curious recovery of *Clibanarius erythropus* (Latreille, 1818) (Decapoda, Anomura, Diogenidae) populations at the Romanian coast of the Black Sea

Victor SURUGIU

"Alexandru Ioan Cuza" University of Iaşi, Faculty of Biology, Bd. Carol I, 20A, 700507, Iaşi, Romania, e-mail: vsurugiu@uaic.ro

Key words: hermit crab, population structure, IUCN status, Romanian Black Sea coast, hydrotechnical works, beach nourishment.

Three species of hermit crabs have been reported to occur in the Black Sea: the small hermit crab *Diogenes pugilator* (Roux, 1829), the Mediterranean intertidal hermit crab *Clibanarius erythropus* (Latreille, 1818), and the yellow hermit crab *Anapagurus laevis* (Bell, 1846). On the Romanian seacoast only *Diogenes pugilator* and *Clibanarius erythropus* were reported so far. While the first species is a common inhabitant of coastal soft sediments, the second was mentioned only on a very few occasions on rocky shores at Agigea, Constanţa and Mangalia.

Due to its rarity, *Clibanarius erythropus* was included in the Red List of Romanian marine species as critically endangered. However, in July 2025 an abundant population of this hermit crab was discovered at Agigea following the extensive coastal protection works in the area. Therefore, the aim of this paper is to assess population characteristics and current IUCN status of this species on the Romanian Black Sea coast.

Varroa destructor infestation rates in S-E Romanian apiaries

Ioana Cristina CONSTANTINESCU[1], Minodora MANU[2],
Raluca Ioana BĂNCILĂ[3], Andreea-Cătălina DRĂGHICI[1,5],
Rozalia Magda MOTOC[1], Costică ADAM[1], Laura Mihaela ȘTEFAN[4]

[1]"Grigore Antipa" National Museum of Natural History, Bucharest, Romania, e-mails: cristinactinescu@yahoo.com; andreea.draghici@antipa.ro; rozalia.motoc@antipa.ro; cadam@antipa.ro
[2]Institute of Biology – Bucharest, Romanian Academy, Bucharest, Romania, e-mail: minodoramanu@gmail.com
[3]"Emil Racoviță" Institute of Speleology of Romanian Academy, Department of Biospeleology and Soil Biology, Bucharest, Romania, e-mail: bancila_ralucaioana@yahoo.com
[4]Department of Cellular and Molecular Biology, National Institute of Research and Development for Biological Sciences, Bucharest, Romania, e-mail: laura.stefan@incdsb.ro
[5]Doctoral School of Biology, Faculty of Biology, University of Bucharest, Romania

Key words: honey bees, *Varroa* mite, apiary management, acaricides, infestation rates.

The Western honey bee (*Apis mellifera*) is a key pollinator in many natural and managed ecosystems, and is under pressure due to multiple factors, including the infestation with the ectoparasitic mite *Varroa destructor*. The objective of this study was to evaluate the *Varroa* infestation levels in apiaries from southeast Romania and to investigate the effects of different apiary management practices and use of hard and soft acaricides on *Varroa* infestation rates.

Fifty apiaries (five hives/apiary) were monitored between June and October 2024 in southeast Romania, to assess the *V. destructor* infestation rates and beekeeping practices potentially associated with them. Field data were collected through a questionnaire applied to beekeepers and *Varroa* infestation rate (VIR %) was calculated as number of mites per 100 honey bees. Generalized linear mixed models (GLMMs) were performed in R v 4.1.3 to investigate the relationship between *Varroa* infestation rate and different apiary characteristics.

52.3% of the beekeepers never monitored the *Varroa* infestation in their apiaries and almost 30% of them have never participated in any training, while most of the neighboring beehives (60%) were located at less than 1 km from the surveyed apiary. During the five months monitoring, the average VIR across the 250 collected samples was 5.03%. Of these samples, 38.4% exceeded the 3% threshold and 14.4% exhibited a VIR higher than 10%. Regarding the applied anti-*Varroa* treatments, hard acaricides were the most frequently used, while soft acaricides based on oxalic acid were implemented in 7 organic apiaries and during the honey harvest period or in winter in some conventional apiaries. Based on statistical analyses, VIR decreased significantly: as the number of adult honey bees increased, with the presence of the anti-*Varroa* bottom and with increasing distance from the neighbouring apiaries, whereas increased significantly during the sampling period, from June to October.

This work was supported by the National Authority of Research, Core Program, project no. 23020201 for LMS.

Ants, habitat and climate: distribution and ecology of the rare forest-steppe species *Iris brandzae* in Romania

Simona Dumitrița CHIRILĂ[1], Ovidiu-Andrei GEORGESCU[2,3], Nicu Alexandru GÎLEA[4], Ana-Maria CHIOSA[5,6], Nikolay VELEV[7], Adina Camelia POPOVICI[8], Ana Mariana CHIRILĂ[9], Ioan TĂUȘAN[10]

[1]Danube Delta National Institute for Research and Development, Babadag Street no. 165, 820112 Tulcea, Romania, e-mail: simonachirilasc@yahoo.com
[2]Research Group in Invertebrate Diversity and Phylogenetics, Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, B-dul Carol I, no. 20A, 700505 Iași, Romania, e-mail: andrei.gg.2002@gmail.com
[3]The Natural History Museum – Iași, "Alexandru Ioan Cuza" University of Iași, B-dul Independenței, no. 16, 700098 Iași, Romania
[4]Faculty of Geography, Doctoral School "Simion Mehedinti", University of Bucharest, Bd. N. Bălcescu, 1, 010041 Bucharest, Romania, e-mail: gileaalexandru422@gmail.com
[5]University of Hohenheim, Faculty of Natural Sciences, Schloss Hohenheim 1, 70599 Stuttgart, Germany, e-mail: anamariach.01@yahoo.com
[6]Stuttgart State Museum of Natural History, Department of Entomology, Stuttgart, Germany
[7]Department of Plant and Fungal Diversity and Resources, Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 23 Acad. G. Bonchev Str. 1113 Sofia; Bulgaria; e-mail: nvelev@bio.bas.bg
[8]Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, B-dul Carol I, no. 20A, 700505 Iași, Romania, e-mail: popoviciadinacamelia@gmail.com
[9]Independent researcher, Metalurgiei street no. 8, 700293 Iași, Romania, e-mail: mariannechirila@yahoo.com
[10]Department of Environmental Sciences, "Lucian Blaga" University of Sibiu; Applied Ecology Research Centre, Dr. Rațiu 5-7, 550012 Sibiu, Romania, e-mail: itausan@gmail.com

Key words: plant–ant interactions, myrmecochory, seed dispersal, ecological requirements, rare species, conservation ecology.

Iris brandzae Prodan (Iridaceae) is a rare forest-steppe species from Romania, but its ecological requirements and associations with flower-visiting ants remain insufficiently known. This study analysed the relationships between *I. brandzae*, floristic composition, ants collected from flowering individuals and environmental variables, and assessed the potential distribution of suitable habitats under current and future climatic conditions.

The research was carried out in April–May 2025 and 2026, in 15 locations in Buzău, Iași, Vaslui and Galați counties. In 214 plots of 100 m², floristic composition, plant height, number of vegetative and flowering individuals, and ants associated with flowering individuals of *I. brandzae* were recorded. Ecological relationships were assessed using Spearman correlations and generalized linear models. The potential distribution of *I. brandzae* was modelled in MaxEnt using 104 spatially filtered presence points and climatic, edaphic, topographic, and land-cover predictors, with projections for current conditions and two future periods, 2041–2070 and 2071–2100, under three SSP scenarios.

The results showed that *I. brandzae* density was strongly related to floristic composition, increasing along a mesic-xeric gradient and reaching high values in steppe grasslands dominated by *Stipa lessingiana* Trin. & Rupr., *S. pulcherrima*

K. Koch, and *Festuca valesiaca* Gaudin. This pattern suggests that *I. brandzae* could act as a potential indicator species for these habitats.

Ant associated with flowering individuals were mainly represented by thermophilic taxa, particularly *Camponotus aethiops* (Latreille, 1798), *Lasius alienus* (Foerster, 1850), *Plagiolepis pygmaea* (Latreille, 1798), and *Tapinoma erraticum* (Latreille, 1798). *Iris brandzae* abundance was weakly but significantly correlated with ant richness, suggesting that flower-visiting ants and the rare iris respond partly to the same habitat conditions. Distribution modelling identified climatic and edaphic variables as major determinants of habitat suitability and indicated scenario-dependent future changes, ranging from potential habitat expansion under lower-emission pathways to contraction under high-emission scenarios. Overall, these results suggest that *I. brandzae* is primarily associated with xeric steppe grasslands, while flower-visiting ants reflect the same xerothermic habitat gradient. Conservation of this rare iris should therefore focus on maintaining open, species-rich steppe grasslands and monitoring the effects of future climatic change on habitat suitability.

Ant assemblages and vegetation structure across an age gradient of mine spoil heaps in Roșia Montană, Romania

Simona Dumitrița CHIRILĂ[1], Silviu Giorgian ȚICU[2,3], Dumitru MURARIU[4], Ioan TĂUȘAN[5]

[1]Danube Delta National Institute for Research and Development, Babadag Street no. 165, 820112 Tulcea, Romania, e-mail: simonachirilasc@yahoo.com
[2]Doctoral School of Biology, Faculty of Biology, University of Bucharest, Splaiul Independenței 91-95, 050095 Bucharest, Romania, e-mail: giorgiansilviu@gmail.com
[3]Natural History Museum, Brukenthal National Museum, Cetății 1, 550163 Sibiu, Romania
[4]Romanian Academy, Calea Victoriei no. 125, 010071 Bucharest, Romania, e-mail: dumitru.murariu@acad.ro
[5]Department of Environmental Sciences, "Lucian Blaga" University of Sibiu; Applied Ecology Research Centre, Dr. Raţiu 5-7, 550012 Sibiu, Romania, e-mail: itausan@gmail.com

Key words: Formicidae, chronosequence, mine spoil heaps, plant communities, post-mining succession, ecological indicators.

Mine spoil heaps are highly disturbed habitats, and ant assemblages can provide useful indicators of ecological change. This study assessed variation in vegetation and ant assemblages along an age gradient of mine spoil heaps.

The study was conducted between 2023 and 2026 in Roșia Montană, Romania, on heaps assigned to four approximate age categories: ~15, ~35, ~50, and ~70 years, with three sampling stations per category. Ants were sampled using pitfall traps, while floristic composition and cover were recorded using the Braun–Blanquet approach. Ant and plant-community metrics were compared among age categories using Kruskal–Wallis tests, and their relationships with heap age were evaluated using Spearman's rank correlations.

The dominant ant species varied among age categories. *Formica cinerea* dominated the ~15- and ~50-year-old heaps (97–99% of individuals), whereas the ~35-year-old heaps were co-dominated by *F. cinerea* and *F. polyctena*, and the ~70-year-old heaps were dominated by *F. rufa* and *F. pratensis*. Shannon and Simpson diversity indices differed significantly among age categories ($H = 8.74$, $df = 3$, $p = 0.033$ for both indices). The total number of ants captured was negatively associated with the estimated age of the spoil heaps (Spearman's $\rho = -0.63$, $p = 0.029$). Plant species richness and total vegetation cover were negatively associated with estimated heap age ($\rho = -0.59$, $p = 0.041$ and $\rho = -0.58$, $p = 0.047$, respectively). However, no significant relationships were detected between vegetation and ant-community metrics.

The contrasting responses of ants and vegetation suggest that these groups may provide complementary indicators of post-mining ecosystem development. However, limited replication and the chronosequence design's inability to separate age effects from site-specific differences warrant cautious interpretation.

First observation of nest protection and ant consumption by domestic horses at a *Formica pratensis* colony

Bianca Elena STROESCU, Robert Andrei VLAD, Ioan TĂUȘAN

"Lucian Blaga" University of Sibiu, Biology and Ecology Research Centre, Dr. Rațiu nr. 5-7, Sibiu, Romania, e-mail: ioan.tausan@ulbsibiu.ro

Key words: ant behaviours, myrmecophagy, red-wood ants, Romania.

Myrmecophagy and nest-guarding behaviour in domestic ungulates remain poorly documented, with most reported cases of anting or ant consumption restricted to avian taxa.

Here we report an opportunistic observation of nest-protective and myrmecophagous behaviour by domestic horses (*Equus caballus*) toward a red wood ant nest (*Formica pratensis*) in an open grassland pasture in Romania. Two adult mares and one juvenile actively obstructed researcher access to a partially degraded nest, of which only one section remained active, during a routine ant collection survey. Despite repeated approach attempts, the horses maintained defensive positioning around the mound. One mare was subsequently observed consuming both nest material and live worker ants directly from the active portion of the colony. This behaviour may reflect formic acid-mediated self-medication (e.g., antiparasitic or anti-inflammatory use), incidental resource guarding linked to repeated grazing-associated exploitation of the nest, or a combination of both. We discuss possible physiological and ecological drivers of this interaction and highlight the scarcity of comparable records of myrmecophagy in equids, underscoring the need for systematic observation of ungulate–ant interactions in pastoral landscapes.

This work was carried out with the support of a grant from the Ministry of Research, Innovation and Digitalisation, CNCS/CCCDI – UEFISCDI, project number COFUND-BIODIVMON-MonitAnt, under the PNCDI IV programme.

Climate change reorganizes the pollinator community spatially co-occurring with invasive *Solidago canadensis* in Romania

Ioan TĂUȘAN, Robert POPA

"Lucian Blaga" University of Sibiu, Biology and Ecology Research Centre, Dr. Rațiu nr. 5-7, Sibiu, Romania, e-mail: ioan.tausan@ulbsibiu.ro

Key words: invasive plant species, climate change, polinators, Hymenoptera, Diptera, Romania.

Climate change is expected to reshape the distributions of both invasive plants and their pollinators, yet these two processes are typically modelled in isolation. The invasive Canadian goldenrod, *Solidago canadensis* L., is among the most widespread and damaging alien plants in Central-Eastern Europe, forming extensive monospecific stands in lowland disturbed habitats and depending on a broad guild of insect pollinators for reproduction and dispersal. Whether the pollinator community that spatially co-occurs with this invasive plant will remain constant under future climate scenarios or reorganize as pollinator taxa respond differentially to warming remains an open question with implications for both invasion ecology and pollinator conservation.

We asked (i) how climatically suitable area for *S. canadensis* and three co-occurring invasive plants (*Amorpha fruticosa*, *Fallopia japonica*, *Helianthus tuberosus*) is projected to change across Romania under moderate (SSP245) and high-emissions (SSP585) climate scenarios, and (ii) whether the spatial co-occurrence of six insect pollinator taxa (*Apis mellifera*, *Bombus* sp., *Polistes* sp., *Episyrphus balteatus*, *Eristalis tenax*, *Bombylius* sp.) with *S. canadensis* strengthens, weakens, or remains stable across these scenarios.

Ensemble species distribution models combining Random Forest, generalized linear models and generalized boosted models were fitted for ten taxa using biomod2, with citizen-science occurrence records cleaned via CoordinateCleaner and thinned to one record per climate grid cell. Current climate was described by seven weakly collinear WorldClim v2.1 bioclimatic variables; future climate was drawn from CMIP6 projections for MPI-ESM1-2-HR under two SSPs and two-time horizons (2041–2060, 2081–2100). Range change was quantified as percentage change in TSS-thresholded suitable area, and spatial co-occurrence with *S. canadensis* was measured as the cell-wise Pearson correlation of continuous suitability surfaces.

All models achieved good-to-excellent discrimination (TSS 0.68–0.93; AUC 0.92–0.98), with committee-averaging ensembles outperforming weighted-mean ensembles for every taxon. *S. canadensis* was projected to nearly quadruple its climatically suitable area under SSP585 by 2081–2100 (+296%), and *Amorpha fruticosa* to more than triple it (+212%); in striking contrast, *Fallopia japonica* was projected to lose almost all its current suitable area under the same scenario (−99%). Among pollinators, three response types emerged. Warm-adapted hoverflies (*Episyrphus balteatus*, *Eristalis tenax*) expanded in near-perfect spatial alignment with *S. canadensis* and maintained or slightly strengthened their spatial association ($\Delta r = +0.007$ to -0.005). Generalist Hymenoptera (*Apis mellifera*, *Polistes* sp.) expanded with modest weakening of association. *Bombus* sp. was the only outright

range contractor (−19%) and showed the steepest decline in spatial association with the plant ($\Delta r = -0.194$). The ranking of pollinators by range gain and by change in spatial co-occurrence coincided almost exactly, providing independent triangulation of the same directional pattern.

Climate change in Romania is not simply expanding *S. canadensis* in isolation; it is simultaneously reorganizing the pollinator community spatially co-occurring with the invader, favouring thermally tolerant Syrphidae while displacing cold-adapted *Bombus*. This differential response has direct consequences for the trajectory of plant invasion and for pollinator conservation in Central-Eastern Europe

Variation in *Tropinota* (*Epicometis*) *hirta* abundance and floral damage among five rare plant species

Simona Dumitrița CHIRILĂ[1], Ana Mariana CHIRILĂ[2], Nikolay VELEV[3], Adina Camelia POPOVICI[4], Teodora COZMA[4], Silviu Giorgian ȚICU[5,6], Ana-Maria CHIOSA[7,8], Alexandru-Mihai PINTILIOAIE[9,10]

[1]Danube Delta National Institute for Research and Development, Babadag Street no. 165, 820112 Tulcea, Romania, e-mail: simonachirilasc@yahoo.com
[2] Independent researcher, Metalurgiei street no. 8, 700293 Iași, Romania, e-mail: mariannechirila@yahoo.com
[3] Department of Plant and Fungal Diversity and Resources, Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 23 Acad. G. Bonchev Str. 1113 Sofia; Bulgaria; e-mail: nvelev@bio.bas.bg
[4] Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Avenue, 20A, 700505 Iași, Romania, e-mails: popoviciadinacamelia@gmail.com; teodora.cozma00@gmail.com
[5] Doctoral School of Biology, Faculty of Biology, University of Bucharest, Splaiul Independenței 91-95, 050095 Bucharest, Romania, e-mail: giorgiansilviu@gmail.com
[6] Natural History Museum, Brukenthal National Museum, Cetății 1, 550163 Sibiu, Romania
[7] University of Hohenheim, Faculty of Natural Sciences, Schloss Hohenheim 1, 70599 Stuttgart, Germany, e-mail: anamariach.01@yahoo.com
[8] Stuttgart State Museum of Natural History, Department of Entomology, Stuttgart, Germany
[9] ICI RECENT AIR Center, Laboratory of Interdisciplinary Research on the Marine Environment and Marine Terrestrial Atmosphere, "Alexandru Ioan Cuza" University of Iași, "Prof. Dr. Ioan Borcea" Marine Biological Station, Nicolae Titulescu str. no. 163, Agigea, Constanța, Romania
[10] Doctoral School of Biology, Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Avenue, 20A, 700505 Iași, Romania, e-mail: alexandrupintilioaie@gmail.com

Key words: *Tropinota hirta*, rare plants, floral damage, flower abundance, plant–insect interactions, conservation, grassland habitats.

The reproductive performance of rare plants may be influenced by biotic interactions affecting their flowers. *Tropinota* (*Epicometis*) *hirta* (Poda, 1761) is a polyphagous flower-visiting beetle that feeds on floral tissues and reproductive structures, but its occurrence on rare plant species in natural habitats remains poorly documented. This study assessed the abundance of *T. hirta* and associated floral damage on five rare plant species: *Crambe tataria* Sebeók, *Iris brandzae* Prodan, *I. aphylla* L., *I. graminea* L., and *Pontechium maculatum* (L.) Böhle & Hilger. We hypothesised that the observed abundance of the beetle and floral damage intensity would differ among plant species.

Field surveys were conducted from April to June in 2024–2026. For each flowering individual, the number of adult *T. hirta*, phenological stage, number of open flowers, and floral damage score were recorded. Approximately 40 flowering individuals were examined per plant species. Differences in beetle abundance and floral damage scores among species were evaluated using Kruskal–Wallis tests.

The observed abundance of *T. hirta* differed significantly among the five plant species (Kruskal–Wallis test: $H = 63.9$, $df = 4$, $p < 0.001$). The highest median abundance was recorded on *I. aphylla* (15 adults per plant), followed by *C. tataria* (4.5 adults per plant), whereas lower abundances were recorded on *I. brandzae*, *P. maculatum*, and *I. graminea*. Floral damage scores also differed significantly

among species ($H = 29.0$, $df = 4$, $p < 0.001$), with the highest scores recorded on *I. aphylla*.

These findings indicate interspecific differences in the observed abundance of *T. hirta* and in floral damage intensity. *Iris aphylla* and *C. tataria* may therefore experience greater exposure to floral damage associated with this beetle than the other investigated species. However, the consequences for plant reproductive success cannot be determined without direct measurements of fruit production, seed set, or seed viability.

The effect of feeding types on the gut microbiota of *Tenebrio molitor* (Coleoptera: Tenebrionidae)

Ebru Ceren FİDAN[1], Hülya ALTUNTAŞ[2], Belma NURAL YAMAN[1], Davut Ümit ŞİRİN[1], Ahmet ÇABUK[1], Pınar AYTAR ÇELİK[3]

[1]Eskişehir Osmangazi University, Department of Biology, Eskişehir, Türkiye, e-mails: ebruceren@ogu.edu.tr; bnural@ogu.edu.tr; usirin@ogu.edu.tr; acabuk@ogu.edu.tr
[2]Eskişehir Technical University, Department of Biology, Eskişehir, Türkiye, e-mail: hyalcitas@eskisehir.edu.tr
[3]Eskişehir Osmangazi University, Eskişehir Vocational School, Department Environmental Protection And Control. Eskişehir, Türkiye, e-mail: paytar@ogu.edu.tr

Key words: *Tenebrio molitor*, microbiota, biodegradation, phenol oxidase, development.

This study explores the impact of plastic waste on the dietary patterns of mealworms and the resulting changes in their gut microbiota. Additionally, it assesses the biodegradation capabilities of mealworms and the effects of plastic consumption on their growth and development. In this study, *Tenebrio molitor* larvae were fed various nutritional groups over 49 days. The experimental groups were categorized as Bran-vitamin-yeast, PHB (Polyhydroxybutyrate), Polyethylene, Bran-vitamin-yeast-antibiotic, PHB-antibiotic, and Polyethylene-antibiotic. To test the effects on the cellular and humoral immune system of the larvae, hemolymph was collected from late-stage larvae, and phenoloxidase activity analyses were conducted. The larvae's ability to consume polyethylene under mandatory dietary conditions and the feasibility of using bioplastic PHB as a food source were investigated.

The results demonstrated that the larvae could consume polyethylene under obligatory dietary conditions. PHB was identified as a rapidly consumed food substance that positively contributed to the larvae's growth and development. The Feed Conversion Ratio (FCR) and Feed Conversion Efficiency (FCE) of groups fed with PHB showed parallel results to the control group. The data indicate that the nutritional value of mealworm larvae and their plastic biodegradation potential vary depending on the food type, its content, and the larvae's gut microbiota. In the gut microbiota analysis, *Enterococcus faecalis* was found exclusively in the group fed with polyethylene, suggesting a potential link with polyethylene metabolism or biodegradation. The phenoloxidase experiments also suggest that the immune system of larvae is related to their gut microbiota. This study illustrates that feeding mealworms with bioplastics could offer a solution to environmental pollution and contribute to establishing low-cost production cycles. The findings point towards more economical production models, enhancing our understanding of the relationship between plastic consumption and mealworm growth and development.

Same plant, different potency: insecticidal activity of four commercial basil essential oils against *Drosophila melanogaster* and *Tenebrio molitor*

Elena Iulia IORGU[1], Andreia TOPĂLESCU[1], Alina Gabriela ȘTEFAN[1], Irina BOZ[1,2], Roxana COJOCARIU[1], Narcis IFTIMESCU[1], Andrei LOBIUC[1], Ionuț Ștefan IORGU[1]

[1]"Ștefan cel Mare" University of Suceava, Suceava, Romania, e-mail: elena.iorgu@usm.ro
[2]NIRDBS-Institute of Biological Research-Iași, Department of Experimental and Applied Biology, 700107, Iași, Romania

Key words: *Ocimum basilicum*, essential oils, *Drosophila melanogaster*, *Tenebrio molitor*, LC50.

Essential oils are increasingly investigated as environmentally friendly alternatives to synthetic insecticides, but their efficacy varies with chemical composition and target species. We evaluated the insecticidal potential of four commercially available basil (*Ocimum basilicum*) essential oils (EO1–EO4) on two model insects, and screened their antibacterial activity. Adults of *Tenebrio molitor* were treated topically with 2 µl of undiluted oil or of 1–20% dilutions in acetone, and mortality was recorded for 72 h. For *Drosophila melanogaster*, the oils were incorporated into the culture medium at 0.02–0.4%; adult mortality was recorded for 72 h and the emergence of larvae and pupae after 10 days. LC50 values were estimated by probit analysis after Abbott correction. In *T. molitor*, mortality was moderate and irregular (maximum 44.4%), without a dose–response relationship; only EO1 differed significantly from the control (Dunn test, $p = 0.026$). In contrast, *D. melanogaster* was highly susceptible, with mortality positively correlated with concentration for all oils (Pearson $r = 0.87–0.97$, $p < 0.05$). At 0.4%, mortality after 72 h reached 98.5% for EO3, 97.1% for EO2 and 87.6% for EO4, but only 47.1% for EO1. Estimated LC50 values were 0.081% (EO3), 0.093% (EO2) and 0.114% (EO4), whereas that of EO1 exceeded the highest concentration tested. EO2, EO3 and EO4 also suppressed larval and pupal emergence almost completely at 0.2–0.4%, while EO1 had an inconsistent effect. In disc diffusion assays, the oils inhibited only *Escherichia coli*, EO1 producing the largest inhibition zone (3.5 mm). Oils marketed under the same name thus differ markedly in biological activity, and their efficacy depends strongly on the target organism and on co-purified solutes, which highlights the need for chemical characterisation of commercial oils before their use as bioinsecticides.

Habitat characterization and confirmation of the persistence of *Pseudogaurotina excellens* (Brancsik, 1874) in the Retezat Mountains, Romania (ROSCI0217)

Andreea-Cătălina DRĂGHICI[1], Melanya STAN[1], Costică ADAM[1], Ioana Cristina CONSTANTINESCU[1], Minodora MANU[2]

[1]"Grigore Antipa" National Museum of Natural History, Kiseleff 1, 011341 Bucharest, Romania, e-mails: andreea.draghici@antipa.ro; cristinactinescu@yahoo.com, cadam@antipa.ro
[2]Institute of Biology Bucharest, Romanian Academy, Department of Taxonomy, Ecology and Nature Conservation, Posada Research Stationary, Street Splaiul Independenţei, no. 296, P.O. Box 56-53, 060031 Bucharest, Romania, e-mail: minodoramanu@gmail.com

Key words: conservation, spruce forest, longhorn beetle, *Lonicera nigra* L.

Pseudogaurotina excellens (Brancsik, 1874), or the Carpathian longhorn beetle is listed as a priority species requiring the designation of Special Areas of Conservation (SACs) under the European Union Habitats Directive 92/43/EEC. It is a Carpathian endemic species occurring in Poland, Ukraine, Slovakia and Romania.

In Romania, *P. excellens* was first recorded by Petri in 1912 from Transylvania. The species has subsequently been recorded from the Cibin Gorges (Cindrel Mountains), Gura Apei (Râul Mare Valley, Retezat Mountains), Canton Colibi (Săpânța, Maramureș County), Valea Secii (Rodna Mountains), and Broșteni (Suceava County). The most recent record prior to our study was the observation of five adults around Gura Apelor area (Retezat Mountains) during a field survey in 2019. During our field survey conducted in June 2026, we observed a new adult specimen, confirming the persistence of *P. excellens* in the area.

To improve the knowledge of the distribution and habitat requirements of *P. excellens*, the authors investigated 100 m² plot, within Habitat 9410, characterized by spruce forests with *Luzula sylvatica* and spruce forests with green-moss. The host plant (*Lonicera nigra*) was carefully inspected for signs of occurrence and adult beetles. The characterization of the plot included estimating canopy, shrub, herbaceous and deadwood cover, while each *L. nigra* shrub was assessed for the number of main (basal) branches, dead branches, height, basal stem diameter, presence of flowers and fruits, and the number of emergence holes. Among the 19 surveyed *L. nigra* shrubs, eight (42.1%) exhibited a total of 22 emergence holes, ranging from 1 to 6 per shrub. Emergence holes were associated with mature basal branches measuring 2.5 – 5 cm in diameter in shrubs 200–350 cm tall. The regeneration potential of the *L. nigra* population was indicated by 68.42% of shrubs bearing fruits and 21.05% producing young shoots.

This study provides the first detailed characterization of habitat requirements within Habitat 9410 and host plant associated with *P. excellens*, establishing a valuable baseline for future ecological and conservation studies.

Metabolomics profiling of the parthenium beetle, *Zygogramma bicolorata* to thermal stress

Parinita SINGH, Bhupendra KUMAR

Department of Zoology, Institute of science, Banaras Hindu University, Varanasi-221005, India, e-mail: singhparinita5@gmail.com

Key words: *Zygogramma bicolorata, Parthenium hysterophorus,* metabolomics, thermal stress.

The metabolomic profile of *Zygogramma bicolorata*, a biological control agent utilized against the hazardous weed *Parthenium hysterophorus* under temperature stress, is the primary objective of this study. Using metabolic profiling based on high-resolution accurate mass spectrometry (HRAMS), the objective was to get additional insight into the physiological changes associated with temperature stress in the beetle.

A Venn diagram analysis revealed that 414 of the total metabolites present in mature *Z. bicolorata* were shared by all groups. Temperature stress caused significant metabolic changes; 400 and 318 different metabolites were identified in hot and cold conditions, respectively. The overlap across the categories shows the existence of both distinct stress responses associated with temperature and shared fundamental metabolic pathways. Metabolite enrichment analysis revealed distinct yet comparable patterns at various temperatures. Carboximidic acids, organonitrogen compounds, indoles, and derivatives of cinnamic acid were consistently the most significant metabolite groups under all treatments. Additionally, metabolites linked to lipids, alkaloids, and hormones showed high enrichment, indicating metabolic reprogramming linked to cellular signalling, membrane integrity, and stress resistance under temperature stress.

Pathway analysis revealed that glycerophospholipid and sphingolipid metabolism predominated at all temperatures, highlighting their critical roles in membrane remodelling and signalling. Other pathways that showed oxidative stress resistance and balanced energy metabolism in the control group included glutathione metabolism and starch/sucrose metabolism. Significant alterations related to immunological control and stress adaptation were seen in the metabolism of lipids and amino acids (tryptophan, histidine, arginine, and proline) in hot weather. Cold stress mostly affected lipid, nucleotide (purine), and vitamin B6 metabolism, suggesting enhanced cellular repair and coenzyme-dependent stress mechanisms.

Three years of monitoring the Southern Festoon (*Zerynthia polyxena* Denis & Schiffermüller, 1775) in Văcărești Natural Park, Romania's first natural park in an urban area

Eugenia PETRESCU, Alexandru-Cătălin BIRĂU

Văcărești Natural Park Administration, 3 Uioara Avenue, District 4, Bucharest, Romania, e-mails: eugenia.petrescu@apnv.ro; alexandru.birau@apnv.ro

Key words: *Zerynthya polyxena*, *Aristolochia clematitis*, urban protected area, butterfly conservation, Văcărești Natural Park.

Văcărești Natural Park is the first natural park established in an urban area in Romania and one of Bucharest's most important biodiversity refuges. Among its protected species is the Southern Festoon, *Zerynthia polyxena* (Denis & Schiffermüller, 1775), a butterfly protected under Romanian legislation. The park supports one of the few confirmed breeding populations currently known in Bucharest.

The first observations of adult butterflies suggested the presence of the larval host plant, *Aristolochia clematitis*. Field surveys identified a 200 m² habitat patch containing approximately 600 stems of the host plant. The discovery of eggs and larvae confirmed reproduction and initiated a standardized monitoring study conducted annually from 2024 to 2026.

During the first monitoring season, three adults, eggs and 56 larvae were recorded. In 2025, a second 200 m² habitat patch containing approximately 500 stems of *A. clematitis* was identified. Adults, eggs and larvae were recorded annually in the habitat patches, confirming the persistence of the breeding population throughout the three-year study.

The population occupies only two small, fragmented habitat patches located near areas of intensive recreational use. Although the population appears stable, the restricted distribution of its larval host plant makes it particularly vulnerable to habitat alteration and disturbance.

This three-year monitoring study provides the first comprehensive account of *Zerynthia polyxena* in Văcărești Natural Park and demonstrates the conservation value of urban natural parks for habitat-specialist butterflies. The findings provide a scientific basis for future conservation measures, continued monitoring, and the inclusion of *Z. polyxena* among the conservation targets of the park's future Management Plan.

Entomofauna of the Retezat Face – case study under climate change conditions

Marius SKOLKA, Daniyar MEMEDEMIN, Dan COGĂLNICEANU

Department of Natural Sciences, Faculty of Natural and Agricultural Sciences, Ovidius University of Constanța, Aleea Universității nr. 1, B Building, Constanța, Romania, e-mail: mskolka@gmail.com
ONG Association Chelonia Romania, sect. 6, str. Pașcani, nr. 5, Bucharest, Romania

Key words: entomofauna, Retezat Mountain Face, Retezat National Park, Romania.

Mountain habitats are among the most sensitive to climate change. Rising temperatures can cause changes in the structure of the vegetation cover that can affect the entire community of organisms in these habitats.

The southwestern-facing slope of Mount Retezat – the so-called "Față a Retezatului" – is an area that lends itself well to a study of habitat changes over the past 60 years. Part of a hunting reserve until the 1940s, the area was severely affected by a fire caused by shepherds in 1948, before becoming a strict scientific reserve as a part of Gemenele Scientific Reserve of the Retzat National Park. Subsequently, after the prohibition of any type of human intervention, the area evolved towards the progressive restoration of vegetation dominated by *Pinus cembra* and *Pinus montana*, which gradually replaced the former alpine pasture created by burning.

Currently, the *Pinus montana* association have become the dominant plant association type, and the former alpine meadow has been considerably reduced.

Habitat modification also produced changes in the structure of the invertebrate fauna in the grassy layer, analyzed for the first time in 1972.

The diurnal lepidopteran fauna in the areas also underwent changes, but these were not so obvious, which denotes the high degree of resilience of the alpine entomofauna.

In the special conditions of climate change, the study of an area where the original habitat is being restored can provide important data related to the way in which invertebrate associations in mountain areas respond to environmental factors.

Thermal stress-induced changes in growth, silk productivity, and reproductive performance of the mulberry silkmoth, *Bombyx mori* L.

Tamal DAS, Bhupendra KUMAR

Department of Zoology, Institute of Science, Banaras Hindu University, Varanasi-221005, India, e-mail: tamaldas@bhu.ac.in

Key words: thermal stress, cocoon, *Bombyx mori*, silkmoth, mulberry.

The mulberry silkmoth, *Bombyx mori* L., is a poikilothermic insect that is highly sensitive to environmental fluctuations and unable to tolerate extreme temperature variations due to prolonged domestication. Bivoltine mulberry silkmoths produce superior silk under temperate conditions; however, they show low tolerance and adaptability to tropical environments. As a result, the Indian silk industry, especially in the eastern region, is largely based on multivoltine silkmoths. Therefore, the present study investigated the rearing performance of the multivoltine Nistari race of *Bombyx mori* L. under repeated short-duration thermal stress. In this experiment, larvae were exposed daily to short-duration heat and cold stress from the first instar to the pre-spinning period. At the same time, the control group was reared under optimal environmental conditions. The results indicated that the stressed larvae exhibited significantly reduced larval body size and weight, cocoon size and weight, pupal size and weight, shell weight, silk gland weight, degumming ratio, fibroin content ratio, and fecundity compared to the control group, suggesting that thermal stress adversely affected growth, silk productivity, and reproductive performance. The principal component analysis (PCA) biplot also revealed that the control group exhibited superior performance across most economic traits, whereas both the heat- and cold-stress groups exhibited similar responses. Moreover, no significant differences were observed in total larval duration, effective rate of rearing (%), or silk gland somatic index (%). Thus, the Nistari race is significantly affected by repeated short-duration thermal stress, which caused a marked reduction in key economic traits. These reductions may indicate an adaptive strategy that shifts energy allocation from growth and silk production to survival and maintenance. Therefore, these findings indicate the need to develop Nistari lines to improve silk productivity under variable climatic conditions.

Climate change and gut microbiota: responses of silkmoth *Bombyx mori* to thermal stress

Prema HALDHAR, Bhupendra KUMAR

Department of Zoology, Institute of Science, Banaras Hindu University, Varanasi- 221005, India, e-mail: premahaldhar19@gmail.com

Key words: thermal stress, gut microbiota, *Bombyx mori*.

The repeated occurrence of extreme temperature events because of climate change has created conditions which affect how ectothermic animals survive and develop and reproduce. Insects face major risks from these environmental changes because their body functions rely on the thermal conditions of their surroundings. The mulberry silkmoth *Bombyx mori* (Lepidoptera: Bombycidae) serves as a vital economic insect which produces silk and functions as a standard biological research subject. The species *B. mori* developed strong thermal sensitivity because of its extended history of being kept as a domestic animal and its practice of indoor breeding. The present study investigated the effects of repeated heat and cold stress on the gut bacterial community of *B. mori*. Larvae were exposed to heat and cold stress for one hour daily from hatching until the spinning stage, while the control group was maintained under standard rearing conditions. Gut bacterial communities were analysed using high-throughput 16S rRNA gene sequencing. The gut microbiota composition changed because of thermal stress which also produced a decrease in bacterial diversity when compared to the control group. The study demonstrates that climate change associated thermal stress can affect insect microbe interactions and may have consequences for larval health and sericulture under changing climatic conditions.

Effects of short-term air–water temperature dynamics on conditions for mosquito larval development under warming scenarios

Nikolay DIMITROV, Nikola TODOROV

Burgas State University, 1 Prof. dr. Yakim Yakimov Blvd, 8010 Burgas, Bulgaria, e-mail: nikola-todorov@uniburgas.bg

Key words: mosquito larval development, water temperature, environmental monitoring, climate warming, early intervention, mosquito control.

Understanding when aquatic habitats become thermally suitable for mosquito larval development is essential for planning timely and effective control measures. Interventions initiated after mosquito populations have increased substantially are more difficult to target, require greater effort, and often lead to higher costs. High-frequency environmental monitoring can support the early identification of periods when conditions in different water bodies become suitable for mosquito larval development.

This pilot study examined short-term relationships between air and water temperature during an early-spring monitoring period in April along the River Tundzha, Bulgaria. Air and water temperatures were recorded at six-minute intervals. The synchronised time series were used to evaluate temperature dynamics, the delayed response of the aquatic environment to changes in air temperature, and the occurrence of periods above a reference threshold of 10°C. A warming scenario of +1°C was also applied to assess how a relatively small temperature increase could alter the duration and continuity of thermally suitable conditions.

The observed water temperatures showed lower variability than air temperature, reflecting the buffering capacity of the aquatic environment. Although conditions during the monitoring period were not continuously favourable for mosquito larval development, increases in air temperature were followed by improved thermal conditions in the water. Periods of rainfall and the associated hydrological changes caused temporary decreases in water temperature, demonstrating the importance of analysing temperature records together with meteorological and hydrological data.

Under the +1°C scenario, the duration of conditions above the reference threshold increased substantially, indicating that even modest warming may lead to earlier and more persistent conditions suitable for larval development. The proposed monitoring approach can support faster, more precise and better-targeted mosquito control measures by identifying the water bodies and periods that require intervention. Timely treatment before mosquito populations increase can substantially reduce control costs and improve intervention effectiveness compared with delayed, broad-scale measures.

Arthropod biomass and taxonomic composition in the predeltaic Somova-Parcheș lake complex of the Danube Delta

Mihael Cristin ICHIM[1], Mădălina Oana POPA[1,2],
Ancuța Cristina RACLARIU-MANOLICĂ[1], Alecu DIACONU[1]

[1]"Stejarul" Research Centre for Biological Sciences, National Institute of Research and Development for Biological Sciences, Alexandru cel Bun St., 6, 610004, Piatra Neamț, Romania, e-mails: cichim@hotmail.com; cristin.ichim@incdsb.ro
[2]Doctoral School of Biology, Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Bd., 20A, 700506 Iași, Romania

Key words: insect diversity, biomass, biomonitoring, Danube Delta.

Arthropod taxonomic diversity and abundance are sensitive indicators of ecosystem integrity, reflecting environmental changes and shifts in habitat quality. This study assessed arthropod communities as indicators of ecosystem status in the Somova–Parcheș lake complex, an ecologically important area of the predeltaic part of the Danube Delta with a very dynamic terrestrial-aquatic interface and under relevant anthropic pressure.

Arthropods were collected using Barber passive entomological traps at three monitoring sites from 2023 to 2025. The ecosystem assessment integrated abundance, dry biomass, and taxonomic composition. Specimens were sorted into major taxonomic groups, and morphologically identified to higher taxonomic levels, with Coleoptera and Hymenoptera further resolved to the superfamily or family level.

Relevant spatial and temporal differences were observed across the three monitoring sites (GPS002, GPS006, GPS010). GPS002 had the highest total biomass, although the exceptionally high 2024 value was largely attributable to Isopoda. GPS006 consistently showed low biomass but a relatively balanced distribution among major taxonomic groups. GPS010 exhibited the strongest temporal decline, with total biomass dropping from 15.25 mg in 2023 to 1.11 mg in 2025. Arthropod biomass declined at all three sites, largely due to declines in Coleoptera. Nevertheless, taxonomic abundance revealed site-specific community dynamics, with Coleoptera, Hymenoptera and Diptera representing major insect components.

Within Insecta, the same general pattern is evident across all three traps: Coleoptera is the dominant order and the primary contributor to insect biomass - followed at considerable distance by Hymenoptera, while Diptera, Hemiptera, Orthoptera, Lepidoptera and Dermaptera make minor contributions and appear sporadically. The decline in insect biomass is driven almost entirely by the reduction in coleopteran biomass, suggesting that this order is the most sensitive to changes in habitat conditions or environmental factors.

This research was supported by the Ministry of Research, Innovation and Digitization CNCS/CCCDI-UEFISCDI, COFUND-BIODIVMON-METAPLANTCODE, contract no. 24/2024, within PNCDI IV. This research was funded by the Romanian Ministry Research and Digitalization, grant number PNRR-III-C9-2022-I5-18, ResPonSE-Project, no. 760010/2022. This work was performed through the Core Program within the National Research, Development, and Innovation Plan 2022–2027, carried out with the support of MRID, project no. 23020301, and contract no. 7N/2023.

Fish assemblages and macrophytes as indicators of ecological responses to canal desilting in the Danube Delta Biosphere Reserve, Romania

Alexandru BĂNESCU, Simona Dumitrița CHIRILĂ, Aurel NĂSTASE

Danube Delta National Institute for Research and Development, Babadag Street no. 165, 820112 Tulcea, Romania, e-mails: alexandru.banescu@ddni.ro; simonachirilasc@yahoo.com; aurel.nastase@ddni.ro

Key words: hydrological connectivity, canal desilting, ichthyofauna, fish assemblages, macrophyte vegetation, aquatic habitats, ecological indicators, Danube Delta Biosphere Reserve.

Hydrological connectivity is a key factor controlling the ecological functioning of aquatic habitats in the Danube Delta. In the Danube Delta Biosphere Reserve, canal clogging can reduce water circulation, habitat heterogeneity and access between the main branches of the Danube, canals and lake complexes, with direct effects on fish communities. The purpose of the study was to evaluate the ecological response of ichthyofauna after canal unclogging works, using macrophytes as an additional indicator of habitat condition.

The study was conducted between 2023 and 2026 on seven canals from four lake complexes: Mitchina and Crânjală, Gorgova and Uzlina, Letea and Sidor, and Cordon Litoral. Fish communities were comparatively evaluated before and after the hydrotechnical interventions using complementary sampling methods. Aquatic macrophytes were characterized by estimating the percentage of coverage, being differentiated into three ecological groups: emergent vegetation, submerged vegetation and floating vegetation.

The results indicated a positive response of fish communities after hydrological reconnection. Species richness increased after desilting, notable examples including Uzlina, from approximately 13 to 26 species, Cordon Litoral, from 10 to 21 species, and Mitchina, from approximately 10 to 20 species. After desilting, the structure of fish communities was characterized by the presence of limnophilous and stagnophilous-rheophilous species, along with species of conservation interest, such as *Umbra krameri* Walbaum, 1792, *Rhodeus amarus* (Bloch, 1782), *Cobitis elongatoides* Băcescu & Maier, 1969 and *Aspius aspius* (Linnaeus, 1758). Aquatic macrophytes contributed to the structuring of the aquatic habitat, providing shelter, spawning support and feeding areas, especially for limnophilous and phytophilic species.

In conclusion, canal unclogging improved hydrological connectivity and supported increased diversity of fish communities. The integration of ichthyofauna and aquatic vegetation data allows for a more complete assessment of habitat status and supports the need for adaptive management, aimed at protecting macrophyte refuge habitats and applying temporary fishing restrictions where necessary.

Heavy metal contamination in the Republic of Moldova: A systematic literature review with emphasis on wildlife bioindicators

Valeriu BRAȘOVEANU[1], Ala DONICA[1],
Alexandru-Mihai PINTILIOAIE[2], Emanuel-Ștefan BALTAG[2]

[1]Institute of Ecology and Geography, Moldova State University, Republic of Moldova, e-mail: valeriubrasoveanu@yahoo.com
[2]"Prof. dr. Ioan Borcea" Marine Biological Station Agigea, "Alexandru Ioan Cuza" University of Iași, 907015, Agigea, Romania

Key words: wildlife contamination, biomonitoring, environmental pollution, ecotoxicology, Eastern Europe.

Heavy metal contamination poses persistent threats to ecosystem integrity, biodiversity, and human health. Despite growing research in the Republic of Moldova, no systematic synthesis has mapped the national research landscape or quantified the contribution of wildlife-based bioindication approaches.

Here, we present a systematic literature review of heavy metal studies conducted in Moldova, characterizing the overall research landscape and identifying the proportion of studies employing plant and animal species as bioindicators. We searched the local scientific literature and Web of Science, Scopus, and Google Scholar using predefined keyword combinations in Romanian, Russian, and English, yielding a final dataset of 23 peer-reviewed publications, book chapters, and technical reports spanning 2001–2025. The most consistent database is presented by those of the Protected Natural Areas Cadaster of the Republic of Moldova (2001-2020 research period, all protected areas and complexes of the country).

The reviewed literature is dominated by studies on abiotic matrices: soil (65.2%), aquatic sediments (26.1%), and water (8.7%), reflecting food safety and land contamination priorities in a predominantly agricultural country. Studies employing biological matrices account for 34.8% of publications, with plant-based bioindication — principally lichens, mosses, leaf litter, and woody tissue — representing the most common biological approach. Animal-based bioindication constitutes a markedly smaller subset (8.7%), limited to two studies: one assessing heavy metal accumulation in freshwater fish (*Abramis brama, Carassius auratus gibelio, Rutilus rutilus heckeli*), and one examining metal content in bees, pollen, and honey from linden ecosystems. Birds, small mammals, amphibians, and reptiles remain entirely absent from the national research record as bioindication taxa. The most commonly analyzed metals across the dataset are copper (Cu), zinc (Zn), lead (Pb), nickel (Ni), and chromium (Cr), followed by cadmium (Cd) and cobalt (Co), though variability in analytical methods and reporting standards limits cross-study comparability.

Temporal analysis reveals a gradual but uneven increase in research output from 2007 onwards, with a notable concentration of publications between 2020 and 2025, coinciding with the elaboration of Emerald Network site management plans for Moldova, which have generated standardized environmental baseline data at the site level. Despite this recent growth, the adoption of animal bioindication approaches remains disproportionately low relative to European standards. These

findings highlight a critical gap in the national environmental monitoring framework and underscore the underutilized potential of animal bioindicators for integrated heavy metal assessment. We identify priority taxa, geographic areas, and research directions to guide future biomonitoring efforts aligned with Emerald Network and EU Habitats Directive requirements.

The research carried out within the project PN-IV-PCB-RO-MD-2024-0274 "Transboundary assessment of population trends for bird species as bioindicators in relation to climate change and land use" (2025-2027).

Combined pharmaceutical stressors in aquatic environments: behavioral disruption induced by ibuprofen and valproic acid in zebrafish larvae

Ionuț-Alexandru CHELARU[1,2], Ramona-Alexandra CIAUȘU[1], Camelia URECHE[2], Dorel URECHE[2], Alin Ștelian CIOBÎCĂ[3,4,5], Mircea Nicușor NICOARĂ[1,3]

[1]Doctoral School of Geosciences, Faculty of Geography and Geology, "Alexandru Ioan Cuza" University of Iași, Carol I Avenue, 20A, Iași, Romania, e-mail: chelaru.alexandru@yahoo.com
[2]Department of Biology, Faculty of Sciences, "Vasile Alecsandri" University of Bacău, No 157, Mărășești Street, 600115 Bacău, Romania
[3]Department of Biology, Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Carol I Avenue, 20A, Iași, Romania
[4]Romanian Academy of Scientists, Splaiul Independenței nr. 54, sector 5, 050094 Bucharest, Romania
[5]Center of Biomedical Research, Romanian Academy, Iași, Bd. Carol I, no 8, Romania

Key words: valproic acid, ibuprofen, mixture, zebrafish, pollution.

Pharmaceutical compounds are increasingly identified as emerging contaminants in aquatic environments, where their simultaneous occurrence may pose a threat to aquatic organisms in their early life stages. Ibuprofen (Ibu) and valproic acid (VPA) are commonly used therapeutic agents that can enter freshwater systems primarily via wastewater effluents; however, the effects of their combined exposure are still not well understood. The present study investigated the individual and joint effects of environmentally relevant concentrations of Ibu (20 µg/L) and VPA (3 µg/L) on the behavior of *Danio rerio* larvae. Newly hatched zebrafish (72 hours post-fertilization) were exposed for a period of 96 hours, after which behavioral responses were evaluated using a light/dark assay designed to assess locomotor activity and anxiety-related parameters under alternating photoperiod conditions. The results showed that both drugs caused behavioral changes in larvae, as seen by notable modifications in swimming patterns and anxiety-related indices. The combination treatment with Ibu and VPA produced more noticeable behavioral abnormalities, suggesting potential additive or synergistic interactions, even while single-compound doses produced measurable effects. These findings imply that the co-existence of these pharmaceutical pollutants in natural waterways may intensify neurobehavioral impacts throughout the early phases of development, perhaps impacting survival ability, avoiding predators, and general developmental performance.

This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS/CCCDI - UEFISCDI, through the project Center of Excellence in water management, materials, by-products and waste valorisation for circular bioeconomy implementation, proposal number PN-IV-P6-6.1-CoEx-2024-0056, contract 6 CoEx/02.06.2026.

Behavioral alterations induced by ceftazidime and polystyrene microplastics in zebrafish (*Danio rerio*) larvae, assessed by the light-dark test

Ramona-Alexandra CIAUȘU[1], Ionuț-Alexandru CHELARU[1,2], Dorel URECHE[2], Camelia URECHE[2], Alin Stelian CIOBÎCĂ[3,4,5], Mircea Nicușor NICOARĂ[1,3]

[1]Doctoral School of Geosciences, Faculty of Geography and Geology, "Alexandru Ioan Cuza" University of Iași, Romania, e-mail: ciausuramona05@gmail.com
[2]Department of Biology, Faculty of Sciences, "Vasile Alecsandri" University of Bacău, Romania
[3]Department of Biology, Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Romania
[4]Romanian Academy of Scientists, Bucharest, Romania
[5]"Ioan Hăulică" Institute, Apollonia University, Iași, Romania

Key words: zebrafish larvae, ceftazidime, polystyrene microplastics, light–dark test, behavioral toxicity.

Ceftazidime (CAZ) and polystyrene microplastics (PS-MPs) are frequently detected contaminants, yet their combined neurobehavioral impact remains poorly understood. The present study investigated the individual and combined effects of CAZ and PS-MPs on locomotor activity and anxiety-like behavior in zebrafish (*Danio rerio*) larvae, using the light-dark behavioral test. Larvae were exposed to CAZ (50 μg L^{-1}), PS-MP (1 mg L^{-1}) and their mixture, and behavioral parameters were assessed during alternating periods of light and darkness. The analyzed endpoints included total distance traveled, velocity, time spent in the center, thigmotaxis, and duration of immobility, with statistical evaluation performed using one- and two-way ANOVA. Exposure to both contaminants induced significant behavioral alterations compared to the control group. During the light period, larvae in the mixture group exhibited reduced locomotor activity, reflected by decreased distance traveled and velocity, accompanied by increased immobility. In addition, increased thigmotaxis and reduced exploration of the central area were observed, suggesting anxiety-like behavior. During the dark period, these alterations persisted, with marked changes in both locomotor dynamics and spatial distribution. Notably, the combined exposure produced more pronounced effects than the individual treatments, indicating potentially synergistic interactions. Overall, these findings demonstrate that exposure to CAZ and PS-MP disrupts normal behavioral responses in zebrafish larvae, highlighting the ecological risks associated with mixtures of pollutants in aquatic environments.

This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS/CCCDI - UEFISCDI, through the project Center of Excellence in water management, materials, by-products and waste valorisation for circular bioeconomy implementation, proposal number PN-IV-P6-6.1-CoEx-2024-0056, contract 6 CoEx/02.06.2026.

Comparative courtship behavior in newts: a quantitative focus on tail fanning dynamics

Ioana-Georgia ANDREI[1], Iulian GHERGHEL[2], Ştefan Remus ZAMFIRESCU[1]

[1]"Alexandru Ioan Cuza" University of Iaşi, Faculty of Biology, str. Carol I, no. 11, 700506, Iaşi, Romania, e-mail: andreiiana04@gmail.com
[2]"Alexandru Ioan Cuza" University of Iaşi, Institute of Interdisciplinary Studies, str. Carol I, no. 11, 700506, Iaşi, Romania

Key words: courtship, tail fanning, *Lissotriton* spp., *Ichthyosaura alpestris*, reproductive isolation, energetic trade-off.

Courtship behavior in animals represents a complex set of interactions that facilitate mate recognition and successful reproduction. Through species-specific mechanisms, courtship enhances reproductive success by favoring adaptive traits. This study investigated the reproductive behavior of newts, focusing on their nuptial dances. The main objectives were to compare the reproductive behavior of three species with the literature and to quantitatively analyze the duration and variation of the "tail fanning" movement to highlight interspecific differences.

The analyzed species included *Lissotriton vulgaris*, *Lissotriton montandoni* and *Ichthyosaura alpestris*. Individuals collected from Bâtca Doamnei were analyzed in the GHM Laboratory at "Alexandru Ioan Cuza" University of Iaşi. Randomly formed pairs were observed at one-day intervals to minimize female stress, and trials were video-recorded for detailed behavioral analysis.

Results indicated a clear dichotomy in courtship strategies, highlighting an energetic trade-off between the frequency and duration of motor acts. *Ichthyosaura alpestris* exhibited highly stereotyped behavior lacking the "retreat display", transitioning directly from static display to the "creep" phase. Males utilized a high-frequency, short-duration strategy, performing exclusively "fan" movements lasting approximately 1 second per act. Conversely, both *Lissotriton* species displayed the complete four-stage sequence, utilizing "whip", "wave", and "fan" movements. They compensated for lower act frequency with prolonged displays. A standardized comparison of 20 display movements revealed *I. alpestris* accumulated only 25-30 seconds of active display, whereas *L. montandoni* exceeded 250 seconds, reflecting a massively higher temporal investment.

Furthermore, for *Lissotriton* species, behavioral expression was strictly dependent on the female's immediate visual and tactile receptivity. Multivariate analysis (PCA) revealed an almost complete overlap between *L. montandoni* and *L. vulgaris*, indicating strong phylogenetic conservatism within the genus. Conversely, the isolated ethological profile of *I. alpestris* confirms its unique high-frequency courtship strategy acts as a potential pre-zygotic reproductive barrier.

Effects of substrate-borne vibrations on advertisement calls in the European fire-bellied toad (*Bombina bombina*)

Ana-Maria DRĂGAN[1,7], Rafael MÁRQUEZ[2], Valentina ZAFFARONI-CAORSI[10], Diego LLUSIA[5], Peter NARINS[8], Jakob CHRISTENSEN-DALSGAARD[9], Dan COGĂLNICEANU[1,3,4], Geanina FĂNARU[1], Florina STĂNESCU[3,6]

[1]Ovidius University of Constanța, Institute of Doctoral Studies, Ion Vodă Street, nr. 58, Constanța, 900573, e-mail: dan_cogalniceanu@yahoo.com
[2]Fonoteca Zoológica, Departamento de Biodiversidad y Biología Evolutiva, Museo Nacional de Ciencias Naturales (CSIC), 28006, Madrid, Spain, e-mail: rmarquez@mncn.csic.es
[3]Research Center of the Department of Natural Sciences, Faculty of Natural and Agricultural Sciences, Ovidius University Constanța, Constanța, Romania, e-mail: dan_cogalniceanu@yahoo.com
[4]Asociatia Chelonia Romania, Pașcani street nr. 5, Bucharest, 062082, Romania, e-mail: dan_cogalniceanu@yahoo.com
[5]Terrestrial Ecology Group, Department of Ecology, Universidad Autónoma de Madrid (TEG-UAM), Madrid, Spain, e-mail: diego.llusia@uam.es
[6]Center for Morphological and Genetic Studies of Malignant Pathology (CEDMOG), Ovidius University of Constanța, Constanța, Romania, e-mail: florina_stanescu@ymail.com
[7]Danube Delta National Institute for Research and Development, Babadag Street, No.165, Tulcea 820112, Romania, e-mail: anamaria.dragan@ddni.ro
[8]Departments of Integrative Biology & Physiology, and Ecology & Evolutionary Biology, University of California Los Angeles, Los Angeles, CA, USA, e-mail: pnarins@ucla.edu
[9]Department of Biology, University of Southern Denmark, Campusvej 55, DK-5230 Odense M, Denmark, e-mail: jcd@biology.sdu.dk
[10]Department of Earth and Environmental Sciences, University of Milano-Bicocca, Piazza dell'Ateneo Nuovo 1, 20126 Milan, Italy, e-mail: valentina.zaffaronicaorsi@unimib.it

Key words: bioacoustics, substrate-borne vibration, behavior, dominant frequency.

Acoustic communication is essential for reproductive success in anurans and may be influenced by increasing levels of anthropogenic disturbance. While the effects of airborne noise on acoustic communication have been widely investigated, comparatively little is known about how substrate-borne vibrations influence advertisement calling. This study investigated the effects of natural and anthropogenic vibrational stimuli on advertisement calling behaviour in the European fire-bellied toad (*Bombina bombina*).

Field playback experiments were conducted during the 2023 and 2024 breeding seasons at Grindul Chituc, within the Danube Delta Biosphere Reserve (Romania). Seven calling males were sequentially exposed to ten playback stimuli grouped into four treatments: silent control, road traffic, rainfall and windmill playbacks. Advertisement call rate and dominant frequency were quantified from acoustic recordings obtained before, during and after each playback.

The final dataset comprised 210 call rate measurements and 3,628 advertisement calls analysed for dominant frequency. Overall, substrate-borne vibrational stimuli produced limited effects on advertisement call rate, whereas dominant frequency changed in response to road traffic and windmill playbacks. Individual males also exhibited substantial variation in their vocal responses.

These findings suggest that short-term exposure to substrate-borne vibrations influences specific components of advertisement calls, while having relatively

limited effects on the overall calling activity. The results highlight the importance of considering multiple acoustic parameters, together with individual behavioural variation, when evaluating the effects of anthropogenic vibrational disturbance on amphibian communication.

Artificial refugia: an efficient method for monitoring amphibians and reptiles in Romania? -preliminary results-

Ionuț-Cătălin PETREANU[1], Gabriel MANOLE[1], Benoni CHINDRIȘ[1], Nicoleta-Petronela CIOBANU[1], Paul-Cristian DINCĂ[2], Oana ZAMFIRESCU[1], Ștefan Remus ZAMFIRESCU[1]

[1]Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Bd. Carol I, 20A,700505 Iași, Romania; e-mail: icpetreanu@yahoo.com
[2]"Prof. Dr. Ioan Borcea" Marine Biological Station Agigea, "Alexandru Ioan Cuza" University of Iași, Nicolae Titulescu str. no. 163, Agigea, Constanţa, Romania

Key words: wildlife monitoring, reptile survey, artificial cover objects, herpetofauna.

Ectotherms are animals whose body temperature depends on external heat sources from their environment, rather than internal metabolic heat, in order to stay within the range needed for normal metabolic functions to take place. In doing so, they can expose themselves to a multitude of predators, both avian and terrestrial. For this reason, these species use a variety of environmental elements to engage in cryptic basking and to shield themselves from danger, including artificial cover objects. Artificial refugia in the form of corrugated tins are often used for surveying snakes and other herpetofauna species. These objects provide cover from predators, as well as basking surfaces for amphibians and reptiles, while also creating a favourable micro-climate underneath. In order to test if this survey method works with local species and habitats in eastern Romania, we placed 20 artificial refugia made out of corrugated tin sheets in a forest habitat occupied by the understudied *Vipera berus nikolskii* and a multitude of other small vertebrate species. For the period the tins were placed in the habitat, they were checked once every two weeks in order to record the individuals using the refugia as a hiding or basking place. At the same time, data on the temperature of the refugia were recorded and compared with that of the environment. We observed that the artificial cover objects were used by a variety of terrestrial animals, such as reptiles, small rodents, shrews and insects. This study contributes to the improvement of monitoring methodologies for local herpetofauna, and supplies valuable data on the ecology of various reptiles and amphibians.

One habitat, two species, multiple receivers: perception of dorsal colouration in sympatric wall lizards

Ionuț-Cătălin PETREANU[1], Gabriel MANOLE[1],
Lekshmi B. SREELATHA[2,3,4], Miguel Angel CARRETERO[2,3,4]

[1]Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Bd. Carol I, 20A,700505 Iași, Romania, e-mail: icpetreanu@yahoo.com
[2]CIBIO-InBIO Associate Laboratory, Research Centre in Biodiversity and Genetic Resources, University of Porto, Vairão, 4485-661, Portugal
[3]Departamento de Biologia, Faculdade de Ciências da Universidade do Porto, R. Campo Alegre, s/n, 4169 - 007, Porto, Portugal
[4]BIOPOLIS Program in Genomics, Biodiversity and Land Planning, CIBIO, Campus de Vairão, 4485-661 Vairão, Portugal

Key words: camouflage, conspicuousness, predator avoidance, colouration, microhabitat, wall lizards.

Animal colouration evolves under the conflicting demands of remaining concealed from predators while maintaining visibility to conspecifics. Because visual signals are perceived differently by different receivers, evaluating colouration requires quantitative approaches that account for the visual systems of both predators and conspecifics. Here, we investigate how two wall lizard species, *Podarcis bocagei* and *Podarcis lusitanicus*, sympatric but with partial microhabitat divergence, balance these competing selective pressures in a shared coastal habitat in northern Portugal. Using calibrated multispectral photography, we quantified the conspicuousness of different regions of the dorsum relative to each other and to the basking substrate from the perspective of conspecific lizards and their potential predators. By comparing colour-pattern perceptibility across body regions and receiver types, we explore whether the two species employ similar or distinct strategies to balance intraspecific communication with predator avoidance despite widely overlapping ecological conditions.

Preliminary data on behavioral responses and microhabitat selection of lizards (Lacertidae) under anthropization pressure

Gabriel MANOLE[1], Ştefan Remus ZAMFIRESCU[1], Alexandru STRUGARIU[2]

[1]Faculty of Biology, "Alexandru Ioan Cuza" University of Iaşi, Bd. Carol I, 20A, 700505 Iaşi, Romania, e-mail: wmgabi@gmail.com.
[2]Department of Exact and Natural Sciences, Institute of Interdisciplinary Research, "Alexandru Ioan Cuza" University of Iaşi, Str. Alexandru Lăpuşneanu nr. 26, 700057 Iaşi, Romania

Key words: Lacertidae, flight initiation distance, microhabitat selection, anthropization, thermoregulation, habituation.

Anthropogenic environmental disturbances, particularly the expansion of urban landscapes and infrastructures such as railways, force members of the Lacertidae family to adapt their behavioural and ecological strategies. This study provides preliminary data on the behavioural responses and microhabitat selection of lacertas across an urban-rural gradient.

Analysis of flight initiation distance (FID) across different contexts reveals a clear shift in risk assessment. Individuals inhabiting undisturbed rural habitats exhibit the highest degree of wariness, maintaining significantly longer flight distances. Conversely, lacertas observed in anthropised contexts even within areas classified as rural, such as railway tracks display a marked reduction in FID, suggesting a high degree of habituation to human activity. This trend of tolerability is also mirrored in urban settings, where lizards allow for much closer approaches before fleeing.

Microhabitat selection in these modified environments is primarily driven by surface temperature and solar exposure, with lizards utilizing artificial structures such as stone walls and track ballast. Individuals typically select core areas that are structurally complex and located in close proximity to available refuges. Combined, these findings suggest that behavioural plasticity and the availability of thermally suitable habitats are some of the factors supporting the persistence of Lacertidae under anthropisation pressure.

The influence of captive habitat diversification on the behavior of juvenile *Pantherophis guttatus*

Georgiana ȚARANU[1], Ștefan Remus ZAMFIRESCU[1], Alexandru STRUGARIU[2]

[1]Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Bd. Carol I, 20A,700505 Iași, Romania, e-mail: yukkileanu@gmail.com
[2]Department of Exact and Natural Sciences, Institute of Interdisciplinary Research, "Alexandru Ioan Cuza" University of Iași, Str. Alexandru Lăpușneanu nr. 26, 700057 Iași, Romania

Key words: captive reptiles, environmental enrichment, *Pantherophis guttatus*, semi-bioactive habitat, behavioral response, reptile welfare.

Captive reptiles have often been considered animals with limited behavioral requirements, although recent studies suggest that snakes can respond actively to habitat structure and environmental complexity. This study aimed to evaluate the influence of captive habitat diversification on the behavior of juvenile corn snakes, *Pantherophis guttatus*, by comparing individuals kept in a standard enclosure with individuals maintained in a semi-bioactive enclosure.

The study was conducted on 12 captive-bred juveniles divided into two equal groups. The first group was housed in a standard faunarium with cellulose towel substrate, plastic hides, water bowls and a heatpad. The second group was housed in a semi-bioactive faunarium containing peat substrate, dry leaves, branches, bark, stones, water bowls and a heatpad. The observation period lasted 88 days, during which behavioral monitoring focused on space use, exploratory activity, feeding response, reactions to olfactory stimuli and responses during handling.

Juveniles from the semi-bioactive habitat showed more frequent exploration, greater use of environmental elements and a more active feeding response. Olfactory testing showed minimal reactions to the control stimulus, moderate responses to the familiar keeper scent and stronger reactions to the unfamiliar scent. Handling tests indicated stronger defensive responses toward an unfamiliar person, while reactions toward the keeper were generally reduced.

These findings suggest that habitat diversification can positively influence behavioral expression in captive juvenile *Pantherophis guttatus*, supporting the importance of environmental enrichment in reptile husbandry and welfare-oriented captive management.

Shifting Waters: Long-term responses of waterbird communities to climate change and habitat modification in a Moldavian Emerald Network wetland

Viorica PALADI[1], Ala DONICA[2], Petronel SPASENI[3], Emanuel-Ștefan BALTAG[3]

[1]Institute of Zoology, Moldova State University, Republic of Moldova, e-mail: vioricapaladi.c@gmail.com
[2]Institute of Ecology and Geography, Moldova State University, Republic of Moldova
[3]"Prof. dr. Ioan Borcea" Marine Biological Station Agigea, "Alexandru Ioan Cuza" University of Iași, Romania

Key words: long-term monitoring, migration phenology, ecological resilience, Republic of Moldova.

Waterbird and semi-aquatic bird communities are among the most sensitive bioindicators of ecosystem change, yet long-term assessments integrating climatic and land-use drivers remain scarce in Eastern European wetlands. Here, we examine the temporal dynamics, species composition, and ecological resilience of waterbird communities in the "Lower Prut" Nature Reserve (Emerald Network Site, Republic of Moldova) over a 15-year monitoring period (2010–2025).

Climatic data recorded at the nearby Cahul meteorological station reveal a clear aridification trend over the study period, characterized by declining precipitation and rising air temperatures. During the breeding season (May–August), reduced water levels correlated with low precipitation emerged as primary drivers of community dynamics, constraining nest site availability and trophic resource accessibility. During the wintering period (December–February), progressively milder temperatures — with monthly means consistently above zero from 2020 onwards — have facilitated increased overwintering of Mallard (*Anas platyrhynchos*), Greylag Goose (*Anser anser*), and Mute Swan (*Cygnus olor*) at Lake Beleu, indicating a measurable regional shift in migration phenology.

Beyond climatic pressures, expanding anthropogenic activities and land-use modifications in areas adjacent to Lake Beleu have generated cumulative negative effects on habitat quality, with measurable consequences for the reproductive success of ducks and geese (Anatidae), herons and egrets (Ardeidae), and cormorants (Phalacrocoracidae). Hydrological fluctuations driven by the combined effects of climate change and land-use change have further reduced the availability of breeding and foraging habitats. Despite these pressures, a relatively balanced interspecific diversity was maintained, with certain species — notably Great Egret (*Ardea alba*), Grey Heron (*Ardea cinerea*) — showing population increases, suggesting partial resilience of the protected ecosystem.

These findings underscore the urgent need for continuous ecological monitoring and adaptive management strategies to safeguard biodiversity in this internationally significant wetland under accelerating environmental change.

The research carried out within the project PN-IV-PCB-RO-MD-2024-0274 "Transboundary assessment of population trends for bird species as bioindicators in relation to climate change and land use" (2025-2027).

Spatio-temporal dynamics of the breeding population of the Whiskered Tern (*Chlidonias hybrida* Pallas, 1811) in Văcărești Natural Park (2022–2025)

Andrei COTOARĂ[1,2], Relu GIUCĂ[1], Emil TODOROV[2], Alexandru-Cătălin BIRĂU[3], Gergely OSVÁTH[4,5]

[1]University of Bucharest, Faculty of Biology, Splaiul Independenței 91–95, Bucharest, 050095, Romania, e-mail: andreicotoara15@gmail.com
[2]Romanian Ornithological Society, Intrarea Căluşei, nr. 12, Sector 2, Bucharest, Romania
[3]Văcărești Natural Park Administration, Strada Ulioara nr. 3, Bloc M2, Bucharest, Romania
[4]Museum of Zoology, Babeş–Bolyai University, Strada Clinicilor nr. 5, Cluj-Napoca, Romania
[5]Evolutionary Ecology Group, Babeș-Bolyai University, Strada Clinicilor nr. 5, Cluj-Napoca, Romania

Key words: Whiskered Tern, breeding ecology, urban wetlands, colony dynamics, habitat selection.

Văcărești Natural Park is Romania's first natural park located within an urban area and one of the country's most important urban wetlands for waterbirds. Its network of interconnected lakes provides suitable breeding habitat for the Whiskered Tern (*Chlidonias hybrida* Pallas, 1811). This study analyses the spatio-temporal dynamics of the breeding population during 2022–2025, based on the systematic monitoring of the maximum annual number of active nests recorded on each lake.

The monitoring revealed marked interannual variation in both breeding colony size and colony distribution among lakes. The annual maximum number of active nests ranged from 64 to 239 (131 in 2022, 76 in 2023, 64 in 2024 and 239 in 2025). During each breeding season, most breeding pairs were concentrated on a small number of lakes, whereas other lakes supported only a few nests or were not used for breeding. Furthermore, the lake hosting the largest breeding colony changed from year to year, indicating an annual redistribution of the breeding population within the wetland complex.

Although the monitored lakes are located in close proximity and are largely hydrologically connected, nest distribution was not uniform, suggesting fine-scale habitat selection. One of the hypotheses tested was whether lake surface area influenced colony size. Preliminary results indicate that lake surface area does not explain the spatial distribution of nests, suggesting that other factors, such as the structure and density of floating vegetation or water level, play a more important role in breeding site selection.

The results highlight the dynamic nature of breeding habitat selection in *Chlidonias hybrida* and emphasize the importance of long-term monitoring for understanding the factors influencing colony distribution in urban wetlands. These findings provide a scientific basis for evaluating the role of habitat characteristics in breeding site selection and for supporting habitat management measures in Văcărești Natural Park.

On the edge of the breeding range: conservation efforts for the expanding Ural owl (*Strix uralensis* Pallas, 1771) in the Republic of Moldova

Mihail GHILAN[1,2], Yuriy KODRUL[3], Alexandru ȚURCAN[2], Vitalie AJDER[2,4,5]

[1]Faculty of Biology, "Alexandru Ioan Cuza" University of Iași, Bd. Carol I, nr. 20A, Iași 700505, Romania, e-mail: mihaighilan30@gmail.com
[2]Society for Bird and Nature Protection, Chișinău, Republic of Moldova
[3]Independent researcher
[4]Institute of Ecology and Geography of Moldova State University, Academiei 1, MD-2028 Chișinău, Republic of Moldova
[5]"Prof. Dr. Ioan Borcea" Marine Biological Station Agigea, "Alexandru Ioan Cuza" University of Iași, Nicolae Titulescu 163, Agigea 907015, Romania

Key words: breeding confirmation, beech forest, distribution range, nest boxes, "Plaiul Fagului" reserve.

Mature forests act as crucial breeding habitat for many owl species, and their availability across the landscape can greatly influence the distribution of nocturnal raptors. The Ural owl, in particular, is highly dependent on old stands of forest, especially with beech trees and with high structural heterogeneity. As a result of unsustainable forestry management, Ural owl populations, especially peripheral ones, can experience a great reduction of optimal breeding habitat, causing possible range contraction. This vulnerability is especially obvious in the Republic of Moldova, as the Ural owls are so far thought to have a strong relationship with the continually exploited and marginal beech forests.

Historically, knowledge of this species relied on invasive methods, such as specimen collection. Over time, identification methods have evolved toward modern, non-invasive acoustic surveys. Recent observations of the species within the limits of three reserves (Codrii, Leordoaia, and Plaiul Fagului), more than 50 years after the first records of erratic individuals, suggest similar range expansion patterns as in neighboring countries.

In an effort to resolve any remaining doubts regarding the species' breeding status and to mitigate the negative impact of forestry activities within these beech stands, we installed five nest boxes in the "Plaiul Fagului" scientific reserve in February 2024. This specific location was chosen because, over the past 15 years, the species has been detected in at least five different zones within the reserve. So far, during the 2025 and 2026 breeding seasons, the nest boxes have not been occupied, which suggests sufficient availability of natural nesting sites. Future monitoring will provide more data regarding the species' national distribution or possible range expansion, local breeding success, and the long-term human-induced impact on this persistent population.

Woodpeckers as bioindicators of forest quality in the Republic of Moldova: a literature-based assessment of historical and contemporary distribution

Anastasiia PORTARESCU[1], Viorica PALADI[2,3], Ala DONICA[1], Emanuel-Ștefan BALTAG[4], Petronel SPASENI[4]

[1]Institute of Ecology and Geography, Moldova State University, Republic of Moldova, e-mail: portarescu.anastasiia@gmail.com
[2]Institute of Zoology, Moldova State University, Republic of Moldova
[3]Lower Prut Natural Reserve, Republic of Moldova
[4]"Prof. dr. Ioan Borcea" Marine Biological Station Agigea, "Alexandru Ioan Cuza" University of Iasi, 907015, Agigea, Romania

Key words: Picidae, historical distribution, conservation planning, avian monitoring, Eastern Europe.

Woodpeckers (family Picidae) are widely recognised as reliable bioindicators of forest structural quality, given their strict dependence on mature, structurally diverse woodland habitats with abundant deadwood and old trees. Despite their ecological significance, systematic assessments of woodpecker distribution and population status in the Republic of Moldova remain dispersed across a diverse and partially inaccessible body of scientific literature. Here, we present a comprehensive literature-based synthesis of the occurrence, distribution, and habitat associations of all nine woodpecker species recorded in Moldova, based on 873 bibliographic records spanning six decades of ornithological research (1960–2025), including books, peer-reviewed journals, conference proceedings, and theses, supplemented by citizen science contributions.

The compiled dataset documents the presence of nine species, ranging from widespread and common taxa such as Great Spotted Woodpecker (*Dendrocopos major*; common breeder) and Syrian Woodpecker (*Dendrocopos syriacus*) to locally rare and vulnerable species including White-backed Woodpecker (*Dendrocopos leucotos*), reflecting a broad spectrum of habitat specialisation and conservation concern. The majority of species are resident, predominantly associated with floodplain forests along the Prut and Dniester rivers, the Central Codri forests, and urban parks, with ecological affinities ranging from mature deciduous woodland to orchards and riparian gallery forests.

Our analysis demonstrates that literature-derived data, despite inherent limitations in spatial precision and methodological consistency, retain considerable value for reconstructing historical distribution patterns, identifying long-term population trends, and evaluating temporal changes in habitat quality at a landscape scale. The marked concentration of recent publications (2016–2025) relative to earlier decades further underscores the growing scientific interest in this group and highlights priority areas for future field-based monitoring. These findings provide a baseline for integrating woodpecker communities into forest quality assessment frameworks and conservation planning in Moldova, with direct relevance for the management of Natura 2000 and Emerald Network sites.

Seasonal shifts in small mammal communities across a low-intensity agricultural landscape

Alexandra ALECSA[1], Ioana Daniela SLIMNICEAN[2], Ana Maria BENEDEK[2]

[1]Doctoral School in Ecology, Faculty of Biology, University of Bucharest, Bucharest, Romania, e-mail: marcela-alexandra.sandu@s.unibuc.ro
[2]Faculty of Sciences, "Lucian Blaga" University of Sibiu, Sibiu, Romania, e-mail: ana.benedek@ulbsibiu.ro

Key words: small mammals, seasonal dynamics, agricultural landscape, habitat use, *Apodemus*, Transylvania.

Agricultural intensification is one of the main drivers of biodiversity loss, while traditional low-intensity farming can maintain heterogeneous landscapes that provide suitable habitats for wildlife. Small mammals are closely associated with vegetation structure and land use, but their habitat use can also change considerably between seasons. This study aimed to assess seasonal changes in small mammal communities across different habitat types in a traditional agricultural landscape in southern Transylvania, Romania.

Small mammals were surveyed during two trapping campaigns, in autumn 2022 and spring 2023, in the surroundings of Topârcea village. Five main habitat types were investigated: grassland, shrubland, forest and agricultural crops. Each habitat was represented by three independent transects consisting of 24 live traps, checked for three consecutive days. Captured individuals were identified to species, measured, marked and released, allowing recaptures to be excluded from abundance estimates.

A total of 113 individuals were recorded, with considerably more captures in autumn (90 individuals) than in spring (23 individuals). Community composition also differed between seasons. In autumn, *Apodemus agrarius* and *A. flavicollis* were the most abundant species, while in spring *A. agrarius* remained dominant and *Microtus arvalis* increased in relative importance. Habitat use showed clear seasonal differences. Shrubland was strongly dominated by *A. flavicollis* in autumn, whereas the species was not recorded there in spring. In corn crops, *A. agrarius* remained dominant during both sampling periods. Despite the lower number of individuals captured in spring, the community included several species that were not recorded during the autumn survey.

Our results indicate that small mammal communities in traditional agricultural landscapes vary substantially between seasons and that these changes differ among habitat types. The results highlight the importance of considering both spatial and temporal variation when evaluating the role of agricultural landscape heterogeneity in maintaining small mammal communities.

Application of survey techniques for the northern white-breasted hedgehog (*Erinaceus roumanicus*) in Bulgaria

Mirela GEORGIEVA, Venislava SPASOVA,
Daniela SIMEONOVSKA-NIKOLOVA, Krastio DIMITROV,
Simeon HADJIKOSSEV, Bozhidar SAMARDZHIEV

Department of Ecology and Environmental Protection, Faculty of Biology, Sofia University "St. Kliment Ohridski", 8 Dragan Tsankov Blvd., 1164 Sofia, Bulgaria, e-mail: mirelasg@uni-sofia.bg

Key words: behaviour, footprint tunnels, camera traps.

In Bulgaria, the Northern white-breasted hedgehog (*Erinaceus roumanicus* Barrett-Hamilton, 1900) is a strictly protected species. Its populations are exposed to numerous threats, including predators, competitors and parasites, road mortality, barriers to movement, and other dangers. However, its abundance, ecology, and behaviour remain poorly studied, despite their great importance for the development of effective management and conservation measures. Furthermore, available data indicate that climate change significantly disrupts the hibernation patterns of European hedgehogs. In this context, we discuss various techniques for hedgehog detection and assess their effectiveness. We used footprint tunnels, camera traps, and live traps. Our observations showed that, when deployed in a suitable habitat, each of these methods could lead to hedgehog detection within a few days after installation, in some cases even after the first night. Nevertheless, when the methods were deployed simultaneously, differences in detection were observed. In some cases, hedgehogs were detected by footprint tunnels but were not recorded by camera traps. In contrast, camera trap footage captured a hedgehog displaying exploratory behaviour towards a footprint tunnel without entering it, resulting in no recorded footprints. Regarding the use of live traps, hedgehogs were successfully captured when traps were deployed along with baited footprint tunnels, likely because individuals became familiar with the bait. These results will contribute to ongoing efforts to study and conserve the species in Bulgaria.

Miniopterus schreibersii (Kuhl, 1817) a cave dwelling bat exploring new shelters and new habitats in different directions (in N.E. Italy)

Edoardo VERNIER

Museo della Natura e dell'Uomo, sezione Zoologia, Università di Padova, Padova, Italy (ext.coll.)
Private Office: via delle Palme 20/1, 35137 Padova, Italy, e-mail: e.vernier@libero.it

Key words: bats, bat ecology, N.E. Italy, *Miniopterus schreibersii*, global warming.

Miniopterus schreibersii (Kuhl, 1817) is a bat species closely related to karst areas where its roosts are placed especially in natural and artificial caves. In Italy it may be usually found in hills and mountain areas, with colonies of hundreds or thousands of individuals. For a long time it was considered to be a declining species, due to human disturbance, closure of roosts and chemicals in agriculture. But in N.E.Italy it seems that this bat apparently is increasing in number in last decades.

Records of presence in plain and urban areas were absent for a long time. Recently (in the years 2021-2022), *Miniopterus schreibersii* was recorded in two localities in the northern part of the Colli Euganei area, a protected site (a little and isolated mountain area 15 km far from the city of Padova). Furthermore (in the years 2022-2023) the species was recorded with passive bat-detector also in the city of Padova.

A positive variation in the total number of specimens was observed in the main colonies surveyed; in the years 1985-2020 the number of specimens changed from some hundreds to some thousand specimens. In the regions of N.E. Italy we recorded several new colonies of *Miniopterus schreibersii* mostly of little size; the most important colonies reach 4000 specimens (in Veneto, winter colony) and 5000 specimens (in Friuli-Venezia Giulia, reproductive colony), while in the years 1984-1998 the maximum number of specimens was estimated at 200-300 specimens (in Veneto).

In the year 2010 a new important reproductive colony of *Miniopterus schreibersii* (size: circa 1.600 individuals) was discovered by spelunkers in the underground chambers, of the famous castle of Mantova (region Lombardia, N. Italy), inside an urban landscape, in a totally plain habitat, full of water, with a very low human disturbance. The whole colony occupies a vaulted brick ceiling, a situation already seen previously in historic buildings occupied by bat colonies in Italy. This important colony uses a type of shelter that is new to this bat species, linked to centuries-old brick structures, which, combined with minimal disturbance and the presence of water, seems particularly attractive to some bat species.

High adaptability in the use of new shelters may constitute a winning strategy for this small colonial bat; furthermore, global warming may favour the expansion of this thermophilic species beyond the northern limits of its distribution, improving its distributional status in Europe.

Seasonal activity patterns of the Eurasian lynx (*Lynx lynx*) and temporal overlap with wild ungulates, large carnivores, and humans in the eastern Carpathian Mountains, Romania

Alex BELLAN[1], Teodora SIN[1], Alexis PINZIO[2], Marco FILZ[3], Giacomo SERAFINI[3], Leonas DINU[4], Andrea GAZZOLA[1]

[1]Association for the Conservation of Biological Diversity (ACDB), Focşani, Romania, e-mail: alexbellan99@gmail.com
[2]Slovenian Forest Service, Ljubljana, Slovenia
[3]Independent Scholar
[4]National Forest Administration – Romsilva, Bucharest, Romania

Key words: activity pattern, Eurasian lynx, camera trapping, temporal niche, eastern Romanian Carpathians.

Mammalian carnivores display diverse temporal activity patterns that have evolved in response to physiological constraints, prey dynamics, and environmental pressures. Although the Eurasian lynx (*Lynx lynx*) is generally characterized by a bimodal crepuscular activity pattern throughout Europe, its temporal activity pattern has not yet been documented in Romania's mountain ecosystems.

We assessed the circadian activity pattern of the Eurasian lynx in the Tarcău State Forest (442 km², Eastern Carpathians, Romania), based on 272 independent camera-trap events collected over a six-month systematic survey (October 2024–March 2025). To evaluate potential seasonal differences in lynx activity pattern, we divided the study period into two biologically relevant seasons: the non-mating season (NMS; Oct–Dec) and the mating season (MS; Jan–Mar). Moreover, we compared the activity pattern of the lynx with three categories of interest: (1) potential prey, namely red deer (*Cervus elaphus*), roe deer (*Capreolus capreolus*), and wild boar (*Sus scrofa*); (2) large carnivores, namely brown bear (*Ursus arctos*) and grey wolf (*Canis lupus*); and (3) humans, by calculating the coefficient of overlap (Δ_4).

The lynx showed a bimodal crepuscular activity pattern, consistent with other European studies, with no major differences between NMS and MS. Among prey species, red deer had the highest temporal overlap with lynx ($\Delta_4 = 0.82$), unlike previous studies, which typically identified roe deer as the primary prey and the greatest temporal overlap with lynx. Both brown bears and wolves showed high overlap with lynx ($\Delta_4 = 0.90$), suggesting limited temporal niche partitioning among large carnivores. Overlap with humans was lowest ($\Delta_4 = 0.33$), likely a reflection of low human presence in the study area.

This study advances our understanding of the temporal activity relationships among wildlife species and humans in one of Europe's last remaining landscapes dominated by extensive and contiguous forest ecosystems and persistent native large carnivore populations.

Hidden in plain sight: revisiting the function of white occipital ear spots in the genus *Lynx*

Alex BELLAN

Association for the Conservation of Biological Diversity (ACDB), Focşani, Romania, e-mail: alexbellan99@gmail.com

Key words: ear spots, false face, visual display, *Lynx*, Felidae.

Visual signals have evolved throughout the animal kingdom to attract mates, avoid predation, deceive receivers, and deter potential rivals. Eyespots represent one of the best-known examples of these adaptations, having evolved independently across several animal groups. In Lepidoptera, conspicuous eyespots on the wings are thought to trigger antipredator responses by altering the receiver's perception of the prey. A similar mechanism has occasionally been proposed for mammals.

In 1895, Wallace suggested, in a correspondence published in *Nature,* that the pale spots behind the ears of some domestic dogs could make sleeping animals appear awake. Similar interpretations were later proposed by Beddard (1901), Waterer (1901) and Hingston (1933) for comparable markings in tigers, domestic cats, and lions, suggesting either a vigilance signal or visual display capable of discouraging potential opponents.

More recently, Galván et al. (2019) demonstrated that white occipital ear spots occur in 68% of extant felid species, are highly conserved phylogenetically and significantly associated with species inhabiting closed habitats.

Current hypotheses, however, interpret these markings primarily as intraspecific signals, enhancing ear movements and facilitating contact between mothers and offspring.

Drawing on photographic observations of the genus *Lynx*, we revisit an overlooked historical hypothesis and propose that white ear spots form part of an integrated facial display. When the ears rotate backwards, exposing the white spots, their interaction with ear tufts and facial ruff appears to enlarge the apparent outline of the head, creating a transient secondary facial pattern that may enhance the animal's perceived vigilance and discourage potential opponents.

Based on the available photographic evidence, this display may occur while the animal is resting, drinking, or during intra- and interspecific agonistic interactions.

This work aims to stimulate renewed interest in this overlooked hypothesis and encourage quantitative photographic analyses and ethological observations across *Lynx* and other felid genera to evaluate the adaptive significance of this peculiar yet still poorly understood trait.

Ecological niche partitioning of carnivorans in Palawan Island, Philippines

Desamarie Antonette P. FERNANDEZ[1,3], Géraldine VERON[2], Pierre-Michel FORGET[3]

[1]Institute of Biological Sciences, College of Arts and Sciences, University of the Philippines Los Baños, Los Baños, Laguna, 4031 Philippines, e-mail: dpfernandez1@up.edu.ph
[2]Institut de Systématique, Evolution, Biodiversité (ISYEB), Muséum National d'Histoire Naturelle, CNRS, Sorbonne Université, EPHE-PSL, Université des Antilles, CP 51, 57 rue Cuvier, 75231 Paris Cedex 05, France, e-mail: geraldine.veron@mnhn.fr
[3]Mécanismes Adaptatifs et Evolution (MECADEV), Muséum National d'Histoire Naturelle, CNRS, CP 50, 57 rue Cuvier, 75231 Paris Cedex 05, France, e-mail: pierre-michel.forget@mnhn.fr

Key words: carnivores, camera trapping, ecological modelling.

Palawan Island in the Philippines hosts seven native carnivoran species: the binturong (*Arctictis binturong*), Malay civet (*Viverra tangalunga*), Philippine palm civet (*Paradoxurus philippinensis*), collared mongoose (*Urva semitorquata*), Sunda leopard cat (*Prionailurus javanensis*), Asian small-clawed otter (*Lutra cinerea*), and Palawan stink badger (*Mydaus marchei*). Many of these species are threatened, and there are major research gaps in basic ecological information about this taxon in Palawan. This study investigated ecological niche partitioning among carnivorans by examining spatial, temporal, and dietary resource use. Camera trapping was conducted from March 2022 to March 2023 at 46 stations across two sites: Puerto Princesa Subterranean River National Park and an ultramafic forest in Narra, Palawan. Across 6,021 trap-nights, the Palawan stink badger was the most frequently detected species, followed by the Philippine palm civet, collared mongoose, Sunda leopard cat, Asian small-clawed otter, and binturong. Malay civets were not recorded during the survey. Activity pattern analysis showed that collared mongooses were primarily diurnal, whereas stink-badgers, palm civets, and leopard cats were nocturnal. Low temporal overlap between diurnal and nocturnal species suggests temporal segregation. Spatial analysis indicated positive co-occurrence between palm civets and leopard cats, likely reflecting dietary differences between frugivory and carnivory. Occupancy models suggested that stink-badgers are more likely to occupy habitats at lower elevations, palm civets farther from villages, leopard cats at forest-edge conditions near roads and settlements, and collared mongooses farther from villages but closer to inland water sources. Microscopic analysis of 25 fecal samples revealed arthropods and small vertebrates in mongoose scats, rodents in leopard cat scats, seeds in palm civet scats, crabs in otter scats, and arthropods in stink-badger scats. These results provide insight into their community dynamics and functional diversity, and represent the first assessment of carnivoran niche partitioning in the Philippines.

Road mortality of wildlife in southeastern Romania: species composition, traffic influence, and temporal distribution

Răzvan ZAHARIA[1,2,4], Ramona-Andreea BIVOLEANU[1,2,4], Ioana COBZARU[2], Cătălin Răzvan STANCIU[3], Viorel Dumitru GAVRIL[2], Răzvan Valentin POPESCU-MIRCENI[4], Dumitru MURARIU[5], Gabriel Bogdan CHIȘAMERA[2]

[1]Faculty of Biology, University of Bucharest, Splaiul Independenței 91–95, Bucharest R-050095, Romania, e-mail: razvanz@gmail.com
[2]Institute of Biology – Bucharest, Romanian Academy, 296 Splaiul Independenței, 060031 Bucharest, Romania
[3]Research Center of the Department of Natural Sciences, Faculty of Natural and Agricultural Sciences, Ovidius University, Aleea Universității nr. 1, Campus, Corp B, 900470, Constanța, Romania
[4]Oceanographic Research and Marine Environment Protection Society Oceanic-Club, Decebal 41, 900674 Constanța, Romania
[5]Romanian Academy, 125 Calea Victoriei, Bucharest 010071, Romania

Key words: road mortality, wildlife, road ecology, *Erinaceus roumanicus*, *Vulpes vulpes*.

Road mortality represents one of the most significant yet underestimated threats to wildlife populations. This study documents 876 vertebrate road mortality events recorded between 2016 and 2021 on the road network of southeastern Romania, encompassing Constanța and Tulcea counties, an area predominantly defined by the steppic biogeographic region, unique within the European Union to Romania, and notable for its exceptional species diversity. Data were collected through occasional field surveys using a mobile data collection platform and analysed with respect to species composition, road category, posted speed limit, and temporal distribution.

Mortality was recorded across four taxonomic groups: mammals, with 604 records from 21 species; birds, with 197 records from 45 species; reptiles, with 51 records from 5 species; and amphibians, with 24 records, 1 species. The five most frequently recorded mammals were *Erinaceus roumanicus* (n = 279, 46.19%), *Vulpes vulpes* (n = 149, 24.67%), *Canis aureus* (n = 57, 9.44%), *Spermophilus citellus* (n = 31, 5.13%), and *Meles meles* (n = 22, 3.64%).

Analysis by road category yielded a peak mortality index of 1.57 records/km on motorways. Hedgehog mortality risk scaled continuously with posted speed limit, reaching 0.46 records/km at 130 km/h, while fox mortality onset was apparent above 90 km/h. Temporal analysis revealed distinct mortality peaks associated with seasonal behavioral patterns, including breeding seasons and hibernation cycles. These findings advance the understanding of road ecology in an under-studied biogeographic region and provide an empirical basis for targeted, evidence-based mitigation measures to reduce the ecological impact of road infrastructure on wildlife.

Microplastics in mammals: a synthesis of the scientific literature

Bogdan DOLGHIER[1], Laura-Elena TOPALĂ[2,3], Emanuel-Ștefan BALTAG[3]

[1]"Alexandru Ioan Cuza" University of Iaşi, Faculty of Biology, Carol I Bd. no. 11, 700506, Iaşi, Romania
[2]University of Bucharest, Faculty of Biology, Splaiul Independenței 91-95, Bucharest, R-050095, Romania
[3]"Prof. Dr. Ioan Borcea" Marine Biological Research Station Agigea, "Alexandru Ioan Cuza" University of Iași, 907015 Agigea, Romania

Key words: microplastics, mammals, pollution, environmental contamination, aquatic mammals, semi-aquatic mammals, terrestrial mammals.

The occurrence of microplastics in terrestrial and aquatic ecosystems has increased substantially over recent decades, raising concerns about their impacts on biodiversity and ecosystem health. Due to their persistence and small size, microplastics can be ingested by a wide range of organisms and transferred across trophic levels, posing a growing risk to wildlife. Although research on microplastic pollution has expanded rapidly, studies investigating microplastic contamination in wild mammals remain limited, highlighting the need for a comprehensive synthesis of the available evidence.

This study presents the current state of knowledge on the occurrence of microplastics in terrestrial, aquatic, and semi-aquatic mammals. The analysis was based on 29 articles indexed in the Web of Science database. A total of 39 mammalian species (0.57% of the total number of mammal species) were investigated, of which 36 tested positive for microplastic contamination. The study examined the prevalence of microplastic contamination in aquatic mammals – 75,1% (cetaceans, including dolphins, orcas, porpoises and whales and the pinnipeds, including seals and walruses), semi-aquatic mammals – 70,9% (coypus and otters) and terrestrial mammals – 19,1% (cats, cattle, dogs, macaques, porcupines, rabbits, sheep, water buffalo and wild boars) based on studies conducted in Asia, Europe, North and South America.

The analyzed samples included feces and various anatomical structures, such as the gastrointestinal tract, adipose tissue and internal organs (kidney, liver and lungs). The reviewed studies identified a wide range of polymer types, including nylon (PA), polyethylene (PE), polyethylene terephthalate (PET), polypropylene (PP), polystyrene (PS), polyvinyl chloride (PVC), polyurethane (PU), polycarbonate (PC), polyester (PES), among others. The main microplastic morphologies were fibers, films, foams, beads, and fragments.

By synthesizing the available evidence, this study contributes to the current understanding of microplastic pollution in mammals, addresses existing knowledge gaps regarding microplastic contamination, and evaluates differences in contamination levels among mammals occupying different habitat types.

Spatiotemporal responses of a mammal community to human disturbance in the Romanian Carpathians

Andrei DINU[1], Mahdieh TOURANI[1], Viorel D. POPESCU[2], Teodora SIN[3,4], Andrea GAZZOLA[4], Mihai I. POP[3,4], Mark HEBBLEWHITE[1]

[1]Wildlife Biology Program, Department of Ecosystem and Conservation Sciences, College of Forestry and Conservation, University of Montana, Missoula, MT, USA, e-mail: andrei.dinu.eco@yahoo.com
[2]School of Professional Studies & Department of Ecology, Evolution and Environmental Biology, Columbia University, New York, NY
[3]Centre for Environmental Research and Impact Studies (CCMESI), University of Bucharest
[4]Association for the Conservation of Biological Diversity (ACDB), Focşani, Vrancea County, Romania

Key words: camera trapping, community occupancy, activity patterns, Carpathian Mountains.

As human activities expand worldwide, understanding our influence on wildlife communities remains an ongoing research need. We investigated the spatiotemporal responses of a mammalian community to human activities in the Eastern Romanian Carpathians. We used camera-trap data and hierarchical community occupancy modeling with temporal overlap analyses to evaluate how human disturbance influences space use, detectability, and activity patterns of mammals across seasons, between December 2020 and June 2022.

At the community level, occupancy probability remained high across seasons, indicating broad mammal space use across the landscape. However, logging intensity consistently reduced community occupancy in both seasons, suggesting that mammals shifted their space use away from actively logged areas rather than abandoning the landscape. Detection probability increased farther from roads in summer and with increasing time since human activity in winter, highlighting fine-scale behavioral responses. Temporal overlap analyses showed that species-level overlap varied within the community but remained relatively stable across seasons, despite higher human activity in summer.

These findings demonstrate that human disturbance shapes mammal communities through complementary spatial and temporal responses. Integrating spatial and temporal dimensions of human-wildlife interactions provides a comprehensive framework for understanding community-level responses to anthropogenic disturbance. Our results offer valuable guidance for wildlife conservation and forest management in the Romanian Carpathians.

Zoological Collections, Museums and Research Infrastructures

Helicidae paleontologic site: descriptive statistics

Valentin Ioan Remus NICULESCU[1], Ștefan STEBLEA[2]

[1]Electron Accelerators Laboratory, Institute for Lasers, Plasma and Radiation, INFLPR, 1 Atomistilor, Bucharest – Magurele, Romania, e-mail: filo_niculescu@yahoo.com
[2]University of Architecture and Urbanism, "Ion Mincu", e-mail: stefansteblea@gmail.com

Key words: Helicidae, paleontology, descriptive statistics, arithmetic mean, population variance.

We present a fossil (fosila, fossilis, das Fossil) Helicidae collection for a possible new paleontologic site, placed in West Transilvania Mountains (region Cluj, Romania). In the present paper are also given tables and pictures of this collection. Also we give new descriptive statistical parameters (arithmetic mean μ, standard deviation of the mean σ and σ^2) for 60 *Helix* samples from one site located near the village Dumbrava, Cluj, Romania.

We obtain the Helicidae parameters (μ , σ^2):

- Diameter: μ = 15.6678 mm / 6.1664 inch; σ^2 =35.1674 mm / 13.8454 inch
- Height: μ = 8.8763 mm / 3.4946 inch; σ^2 = 106.5791 mm / 41.9602 inch
- Weight: μ = 8.4996 grams / 0.2998 ounce (oz); σ^2 = 59.7253 grams / 2.1067 ounce (oz)

Half a century of Romanian research in African waters through the lens of the crustacean collection of the "Grigore Antipa" National Museum of Natural History

Ana-Maria PETRESCU

"Grigore Antipa" National Museum of Natural History, Şos. Kiseleff no. 1, 011341 Bucharest, Romania, e-mail: anapetrescu@antipa.ro

Key words: Africa, Crustacea, Antipa, Băcescu, Thalassa, Mauritanita, Tanzania, Morocco.

Founded more than 190 years ago, the collections of "Grigore Antipa" National Museum of Natural History (GANMNH) from Bucharest represent one of the largest scientific repositories in Romania. The invertebrate collection of GANMNH had been enriched during time through acquisitions or most generous donations made by world known specialists who collaborated with the carcinologists of the museum, but most important through several important scientific expeditions. The crustacean collection knew a flourishing time during the directorship of Mihai Băcescu, esteemed carcinologist and oceanologist (between 1964-1988 and much further).

Between 1970 and 2016 eight expeditions took place in Africa: Transafrican expedition (between 1970-1971 where the continent was crossed from west to east, from Senegal to Kenya, up to 12 countries), Western Africa expedition with the ship "Thalassa" (in 1971 on the coasts of Western Sahara to Mauritania and up to Senegal), expeditions to Indian Ocean (Tanzania, 1973-1974 and "Thalassa", 1977 including coasts of Africa such as Djibouti and Somaliland) and after 2000 the expeditions to Morocco: Atlas (2007), Dakhla (2012), Merzouga (2013) and Zagora (2016), formed by multi institutional teams.

More than 20 countries had been explored and the crustacean collection enriched with more than 16500 crustacean specimens, 200 new species from several orders were described (between 1971-2002): Amphipoda - Manuel Ortiz, Iorgu Petrescu, Gammaridea - José Manuel Guerra-Garcia, Caprellidea, Cumacea by Zarui Muradian, I. Petrescu, Isopoda - Ileana Negoescu, Mysidacea - M. Băcescu, Aurelian Udrescu, Tanaidacea - Modest Guțu, Ostracoda - Francisca Caraion, Copepoda - Amelia Marcus and numerous scientific results had been published since then. The scientific results were part of temporary exhibitions between 1972 and 2007 and numerous public conferences. Other specimens were donated by M. Băcescu to found the Museum of Water in Fălticeni.

The African mysida type collection was enriched by the Transafrican expedition, the Tanzanian expedition and more recently by the generous donation made by Karl Wittmann (from the Medical University of Vienna) who donated taxons from western Africa, Senegal and South Africa.

The Decapod from Moroccan and Mauritanian coasts represented an interest to the past year studies. Almost 2000 specimens are to be catalogued in publications.

Other important donations of crustaceans were made from north and west Africa: Libya (by Geza Müller, 1975-1976) and commander Petre Mureşanu.

This paper is an homage to the lifelong efforts of the dedicated carcinologists of the museums, to the museums' donors and friends, and to all zoologists who helped enrich the crustacean collection.

The ringlets and arguses of Marin Goia - The species of the genus *Erebia* Dalman, 1816 in the eng. Marin Goia collection

Mihai STĂNESCU[1], László RÁKOSY[2,3]

[1]"Grigore Antipa" National Museum of Natural History, Kiseleff 1, RO-011341, Bucharest, Romania, e-mail: mihaist@antipa.ro
[2]Department of Taxonomy and Ecology, Babeș-Bolyai University, Cluj-Napoca, Romania, Romania, e-mail: laszlo.rakosy@ubbcluj.ro
[3]Department of Forestry and Environmental Protection, "Ștefan cel Mare" University, Suceava, Romania

Key words: Nymphalidae, collection catalogue, distribution data, conservation status.

Engineer Marin Goia (1939–2024) was a keen and passionate lepidopterist from Cluj who, through his intensive and tenacious work stretched over a half of century, amassed a collection of over 30,000 specimens (Dincă, 2024; Rákosy, 2024). Shortly after his death, this impressive collection became part of the patrimony of the "Grigore Antipa" National Museum of Natural History in Bucharest.

Marin Goia's collection is particularly important for documenting Romania's lepidopteran fauna, with over 98% of the specimens in this collection having been collected from various areas within the country. Certain systematic groups were of particular interest to this keen collector, amongst which the genus *Erebia* Dalman, 1816 (Papilionoidea; Nymphalidae; Satyrinae) holds a special place.

Of the 15 species of *Erebia* recorded to date within Romania (Rákosy & Goia, 2021), 13 are present in Marin Goia's collection, which thus proves to be an essential reference for documenting the distribution of species in this genus over the last half-century. Of particular interest are the 28 specimens of *Erebia sudetica radnaensis* Rebel, 1915, a Natura 2000 species, collected in the Rodna Mountains and the Retezat Massif. In addition to the specimens collected within Romania, Marin Goia's collection also includes 29 specimens collected in various mountainous regions of Europe, obtained from different collectors. This valuable material helps to provide an insight into the functional genomic diversity of the genus *Erebia* in the context of adaptation to environmental changes, a diversity considered of paramount importance for the effective management of biodiversity in mountainous areas.

Anthropogenic materials in avian nest architecture: insights from an ecuadorian museum collection

Ianula DUȚĂ[1], Emanuel-Ștefan BALTAG[2], Paul SZÉKELY[3,4], Leonardo ORDÓÑEZ DELGADO[3,4], Florina STĂNESCU[1,5]

[1]"Ovidius" University of Constanța, Institute of Doctoral Studies, 58 Ion Voda Street, 900573, Constanta, Romania, e-mails: ianuladuta@gmail.com; florina.stanescu@365.univ-ovidius.ro
[2]"Prof. Dr. Ioan Borcea" Marine Biological Research Station Agigea, "Alexandru Ioan Cuza" University of Iași, 907015 Agigea, Romania, e-mail: baltag.emanuel@gmail.com
[3]Museo de Zoología, Universidad Técnica Particular de Loja, Loja 110107, Ecuador, e-mail: jpszekely@utpl.edu.ec
[4]Laboratorio de Ecología Tropical y Servicios Ecosistémicos (EcoSs-Lab), Facultad de Ciencias Exactas y Naturales, Departamento de Ciencias Biológicas y Agropecuarias, Universidad Técnica Particular de Loja, Loja 110107, Ecuador, e-mail: lyordonez2@utpl.edu.ec
[5]"Ovidius" University of Constanța, Centre for Research and Development of the Morphological and Genetic Studies of Malignant Pathology (CEDMOG), 900591 Constanța, Romania

Key words: synthetic fibres, human impact, breeding ecology, Neotropics, South America.

Artificial materials are increasingly reported in bird nests worldwide, reflecting the expansion of anthropogenic pollution into both natural and human-modified environments.

Museum nest collections provide valuable historical records for documenting the occurrence and composition of these materials across species and habitats. We examined the avian nest collection housed at the Museo de Zoología, Universidad Técnica Particular de Loja (MUTPL), Ecuador, to assess the occurrence of artificial materials incorporated into avian nests. The collection comprises 66 nests, but the nesting species could be identified in only 56 cases. The nests came from 48 species across 12 families, Thraupidae (27.3%), Trochilidae (12.1%**)** and Tyrannidae (10.6%**)** being the best represented. The nests were collected between 2017 and 2025 from several localities across southern Ecuador, with most records originating from two contrasting regions: Buenaventura Reserve (36.4%), representing well-preserved cloud forest habitats in El Oro Province, and Tundayme (including Mirador; 34.8%), a mining corridor crossing the Amazonian foothills of Zamora Chinchipe Province. The remaining nests came from additional localities, including Copalinga, Loja, Catamayo, Zapotillo and nearby areas.

Artificial materials were recorded in 12 nests (18.2%). Only one of these nests originated from the natural habitats of Buenaventura Reserve, whereas the remaining nests came from anthropized environments, reflecting the greater availability of artificial materials in human-modified landscapes. Metal wire was the most frequent material category, occurring in 50.0% of affected nests, followed by textile materials (threads and fibres; 41.7%), plastic derived materials (plastic threads and plastic label; 33.3%), and synthetic wadding (8.3%).

These findings demonstrate that artificial materials are incorporated into the nests of a wide range of bird species from southern Ecuador. The MUTPL nest collection provides a valuable historical archive for documenting the occurrence, composition and colour characteristics of anthropogenic nesting materials and

establishes a baseline for future investigations of anthropogenic pollution across Neotropical landscapes.

The importance of anatomical study in bird taxidermy

Liviu-Mircea CIOBANU

"Grigore Antipa" National Museum of Natural History, Kiseleff 1, 011341, Bucharest, Romania, e-mail: mircea.ciobanu@antipa.ro

Key words: taxidermy, bird anatomy, rest/motion posture.

Taxidermy is associated with both art and science. Given its aspects of creativity and aesthetics, taxidermy as a human activity is classified among the arts and it is considered the art of simulating life through preserved (mounted) animals.

Unlike other art forms that occasionally draw inspiration from science, taxidermy requires detailed knowledge and understanding of the biological sciences. For this reason, the study of anatomy, ethology, and ecology of animals is essential for creating the art of taxidermy. The fundamental scientific element of the mounting process is anatomical study.

Mounting animals without applying anatomical knowledge is possible, and thanks to the taxidermist's skill and aesthetic sense may even produce specimens that are visually pleasing, but with numerous structural errors.

In this context, the present paper aims to demonstrate, through an applied case study, the concrete way in which anatomical knowledge can be applied in taxidermic practice, by creating two demonstrative models for the Mallard species (*Anas platyrhynchos*), based on the rest/motion principle.

Depending on posture, a living bird's body changes shape.

In a resting posture, the bird's body shows a more pronounced curvature of the spine, with the body being more compact. The chest area is well defined due to the pectoral muscles being in a maintenance/recovery phase.

In a dynamic posture, the curvature of the spine is less pronounced, the body is more elongated, and the chest area is flattened due to the pectoral muscles being in a dynamic (active) phase.

To create the demonstrative scientific models, two Mallard (*Anas platyrhynchos*) manikins were used as the main elements — one in a resting posture and one in a flight posture — bodies that display specific anatomical features highlighted according to posture.

Mounting birds based on anatomical study and the rest/motion principle is very important because only in this way can superior-quality specimens with rich detail be obtained — specimens that faithfully reproduce the appearance of living birds.

Restoration interventions on the Mallard (*Anas platyrhynchos*) ♂ specimen

Raluca-Silvia STANCU

"Grigore Antipa" National Museum of Natural History, Kiseleff 1, RO-011341, Bucharest, Romania, e-mail: raluca.stancu@antipa.ro

Key words: restoration, taxidermy specimen, Mallard (*Anas platyrhynchos*).

The scientific Ornithology Collection of the "Grigore Antipa" National Museum of Natural History consists of 13,677 specimens, prepared and preserved in various forms: taxidermied birds, skins/pelts, skeletons, eggs, nests, as well as wet (fluid-preserved) specimens, making it the most complex bird collection representing Romania's fauna.

Within the collection there are also specimens originating from donations that are not in the best state of preservation.

Checking the condition and restoration are very important activities for maintaining the health of heritage items.

While preventive conservation ensures control of the microclimate, light, biological pests, and proper handling, restoration is carried out once degradation has already occurred, through direct intervention on the specimen, thereby stopping the physical/chemical degradation and restoring its structural stability and original appearance.

The main objective of the study is the analysis of the state of degradation and the application of specific restoration treatments to the taxidermied mounted specimen of the mallard duck (*Anas platyrhynchos*), inventory number 15920, ♂ from the scientific Ornithology Collection of the "Grigore Antipa" National Museum of Natural History.

The working methodology included assessing the specimen's state of preservation in terms of physico-mechanical, physico-chemical, and biological degradation.

The practical interventions were guided by the fundamental principles of restoration. The process included stages of mechanical and chemical cleaning, restoring the correct anatomical position, gluing and fixing the skin, removing and replacing the artificial eyes, chromatic integration, arranging the plumage, and changing the base/mount.

In conclusion, the restoration project demonstrated that the work carried out succeeded in restoring the specimen's functionality without altering its authenticity, being successfully reintegrated into the active cultural heritage (exhibition, cultural, and educational).

Methodology for preparing and reconstructing the skull of the Long-eared Owl (*Asio otus*) in taxidermy

Paul PLOȘTINARU

"Grigore Antipa" National Museum of Natural History, Kiseleff 1, RO-011341, Bucharest, Romania, e-mail: paul.plostinaru@antipa.ro
Doctoral School of Veterinary Medicine, USAMV Bucharest, Splaiul Independenței 105, Bucharest, Romania

Key words: taxidermy, *Asio otus*, skull reconstruction, cranial morphology.

Taxidermy is a method of preservation that renders the most natural possible appearance of an animal's exterior, the resulting specimen having scientific, educational, and museum value. In the case of birds, mounting a specimen requires a thorough knowledge of the species' anatomy and careful preparation of the structures that contribute to the natural shape of the body.

This research aims to describe the stages involved in preparing the skull for use in taxidermy, following the steps of skinning, measuring, mechanical cleaning, treatment, and reconstruction.

The Long-eared Owl (*Asio otus*) has a specific cranial morphology, which requires that the preparation and preservation of the skull follow techniques that contribute to the accurate rendering of the head's shape and proportions.

A correctly performed reconstruction allows the skull to be integrated into the structure of the mounted specimen and provides support for modelling the tissues and integument. Thus, the reconstruction process contributes both to the aesthetic appearance of the specimen and to its scientific and educational value.

The lost vultures of Romania: two centuries of decline reconstructed from historical records and citizen-science data

Gergely OSVÁTH[1,2], Avar-Lehel DÉNES[3], Zsolt KOVÁCS[4], Alexandru-Cătălin BIRĂU[5], Edgár PAPP[6], Gabriella-Veronka JÁKÓ[4], Róbert ZEITZ[7]

[1]Museum of Zoology, Babeș-Bolyai University, Cluj-Napoca, Romania, e-mail: osvathgergely@gmail.com
[2]Evolutionary Ecology Group, Babeș-Bolyai University, Cluj-Napoca, Romania
[3]STAR-UBB Institute for Advanced Studies in Science and Technology, Babeș-Bolyai University, Cluj-Napoca, Romania
[4]Faculty of Biology and Geology, Babeș-Bolyai University, Cluj-Napoca, Romania
[5]Văcărești Natural Park Administration, Bucharest, Romania
[6]Milvus Group – Bird and Nature Protection Association, Târgu Mureș, Romania
[7]Foundation Conservation Carpathia, Brașov, Romania

Key words: Old World vultures, historical ornithology, museum collections, citizen science, Carpathians, Dobrogea, reintroduction.

Romania is one of the few European Union member states where all four Old World vulture species – Griffon Vulture (*Gyps fulvus*), Cinereous Vulture (*Aegypius monachus*), Egyptian Vulture (*Neophron percnopterus*) and Bearded Vulture (*Gypaetus barbatus*) – once bred, yet no comprehensive synthesis of their historical and recent occurrence has been available. To establish a baseline for ongoing and planned reintroductions, we compiled all accessible occurrence data from historical ornithological literature, Romanian natural history museum collections, modern field surveys and citizen-science platforms. After georeferencing, precision flagging and removal of duplicates, the database comprises 1,136 records (1,036 georeferenced) spanning 1818–2025; historical literature supplies 69% of the records, museum specimens 10% and citizen science 15%. Substantial breeding populations existed across the Carpathian arc and Dobrogea until the early twentieth century. Of the 148 confirmed or probable breeding records, 91% date from 1840–1930, and the number of counties with confirmed breeding fell from at least 12 in the 1880s–1900s to zero after 1966. Breeding ceased successively in the Griffon and Bearded Vultures (1929), the Cinereous Vulture (1942), and the Egyptian Vulture (1966), driven mainly by persecution, poisoning, egg collecting and agrarian transformation. Non-breeding records increase sharply after 2010 (168 records in 2010–2025), consistent with dispersal from expanding Balkan populations rather than local recolonisation. The Făgăraș and Retezat Mountains emerge as the principal historical breeding strongholds for three of the four species, supporting the Făgăraș as a reintroduction site. The dataset shows how historical baselines can be reconstructed where extinction preceded modern monitoring, and provides an empirical basis for restoring the scavenger guild in the Carpathian–Danube region.

An overview of the rodents (Mammalia: Rodentia) preserved in the "Alexandrina Popescu" Mammalian Collection from the Faculty of Biology, University of Bucharest (Romania)

Bogdan Andrei MIU, Ioana-Francesca BADEA,
Maria-Alexandra CALIMENT, Andrea-Cristina STAICU

Zoology Section, Department of Biochemistry and Molecular Biology, Faculty of Biology, University of Bucharest, 91-95 Splaiul Independenței, 050095 Bucharest, Romania, e-mail: bogdan-andrei.miu@bio.unibuc.ro

Key words: Rodentia, mammalian collection, georeferencing, digitization, university collection.

The Faculty of Biology of the University of Bucharest houses an important zoological collection that has never been comprehensively inventoried or updated according to current taxonomic standards. The "Alexandrina Popescu" Mammalian Collection is estimated to comprise more than 1500 specimens, of which rodents are the most numerous. The collection is kept in repositories and partly used for educational purposes. Named after Professor Alexandrina Popescu, who substantially expanded it between 1963 and 1972, the collection also includes specimens collected by collaborators, other faculty members or students. This study aimed to make the inventory of the Rodentia collection, standardize and digitize specimen data, update the scientific nomenclature, and georeference the collecting locations.

A total of 1264 specimens (study skins, flat skins, mounted specimens, skulls and one fluid-preserved specimen) were examined individually. Original label data were transcribed into a digital database, taxonomic names were updated following current references, and coordinates were assigned to all identifiable collecting places. The spatial coverage of the collection was illustrated using QGIS software.

The collection comprises 24 species from six families, including common species, invasive species (*Myocastor coypus*, *Ondatra zibethicus*), and species currently classified by the IUCN as Critically Endangered (*Spermophilus suslicus*, *Cricetus cricetus*), Endangered (*Spermophilus citellus*), and Vulnerable (*Mesocricetus newtoni*). The examined specimens originate from most historical regions of Romania, while two records are from outside the country – the United Kingdom and probably the Russian Federation. Collection dates range from 1921 to 1997. The collection faced difficult preservation conditions over time, resulting in the loss of original label information for 135 specimens, while a further 788 specimens have partially preserved label data, most lacking the collector.

This work improves the scientific value, accessibility and curation of this university collection, representing the first step towards publishing its complete catalogue and its integration into international biodiversity data infrastructures.

Zoology, Society and Citizen Science

From Curiosity to Research: The Eresus Project – A Student-Led Initiative for the Study of Velvet Spiders (Eresidae) in Southeastern Romania

George-Ioan MERLUȘCĂ[1], Andrei MĂDULARU[1], Teodora COZMA[1], Ștefan AILINCUȚEI[1], Ștefan HUȚANU[1], Bogdan DOLGHIER[1], Dragoș DASCĂLU[1], Andrada JUGARIU-VICOLEANU[1], Maria-Isabella GRĂDINARU[1], Anubis-Claudia STONESCU[1], Ovidiu-Andrei GEORGESCU[1,2], Antonio-Marian DONCEA[1]

[1]"Alexandru Ioan Cuza" University of Iași, Faculty of Biology, str. Carol I, no. 11, 700506, Iaşi, Romania, e-mail: merluscageorge4@gmail.com
[2]The Natural History Museum – Iași, "Alexandru Ioan Cuza" University of Iași, B-dul Independenței, no. 16, 700098, Iași, Romania

Key words: Biodiversity Research Group Iași, citizen science, *Eresidae*, students, taxonomy.

The Eresus Project is the inaugural research initiative of the Biodiversity Research Group Iași, a newly established collective of students and academic staff from the Faculty of Biology, "Alexandru Ioan Cuza" University of Iași. Conceived and driven primarily by undergraduate students, the project originated from a simple question *Which species of* Eresus *occur in Romania?* that rapidly evolved into a broader scientific initiative.

The project aims to generate both qualitative and quantitative data on the diversity, distribution, and ecology of Romanian *Eresus* species, providing a robust baseline for future taxonomic, biogeographical, and conservation studies. Despite recent advances in integrative taxonomy, the genus *Eresus* Walckenaer, 1805 (Eresidae) remains insufficiently understood in Romania. While *Eresus kollari* Rossi, 1846 was long considered the country's only representative, the occurrence of *Eresus moravicus* Řezáč, 2008 was confirmed in 2022, and observations from Babadag Forest suggested the possible presence of *Eresus hermani* Kovács, Prazsák, Eichardt, Vári & Gyurkovics, 2015 (now confirmed for Romania by the last author).

These findings emphasize the need for a comprehensive reassessment of Romanian *Eresus* populations. Field surveys were conducted in Babadag Forest and Măcin Mountains National Park, two biodiversity hotspots in southeastern Romania. Specimens were located through direct observations of wandering males and by searching for the characteristic burrows of females beneath stones, frequently associated with remains of *Dorcadion* beetles. All records were documented using standardized protocols and uploaded to the EresusProject on iNaturalist, ensuring transparent data management while promoting collaboration between professional researchers and citizen scientists.

Lepidoptera fauna of the Capidava area (Constanța County, Romania)

Alina Maria STOLNICU

"Spiru Haret" National Pedagogical College, Str. Spiru Haret no. 6, Buzău, Romania, e-mail: alina_stolnicu@yahoo.com

Key words: Lepidoptera, Capidava, Romania, citizen science, biodiversity.

Field surveys of Lepidoptera were conducted in the Capidava area (Constanța County, southeastern Romania) during July and August of 2024 and 2025 within the framework of the Atlantykron Summer Academy.

The study area is characterized by a unique combination of the Dobrogea steppe, Danube floodplain habitats, limestone outcrops and the ecological influence of the Danube River, creating favourable conditions for a diverse assemblage of xerophilous species. This ecological heterogeneity makes the Capidava region an area of high Lepidoptera diversity in Romania. A total of 123 Lepidoptera species belonging to 25 families were recorded. The most diverse families included Noctuidae, Geometridae, Erebidae, Crambidae, Sphingidae, Tortricidae, Papilionidae, Pieridae, Lycaenidae, Nymphalidae, and Hesperiidae. Leaf-mining species belonging to Gelechiidae, Gracillariidae, Lyonetiidae, and Nepticulidae were also identified.

The results demonstrate the value of integrating citizen science approaches into biodiversity research and environmental education. The project contributed both to the documentation of the local fauna and to the development of scientific skills and conservation awareness among young participants.

Hybridization in wild-ranging Romanian waterfowl: an analysis based on citizen science and field observations

Maria-Alice ION[1], Ionuț-Cătălin PETREANU[2]

[1]Faculty of Biology, University of Bucharest; Splaiul Independenței 91-95, 050095, Bucharest, Romania, e-mail: ionmariaalice@gmail.com
[2]Faculty of Biology, "Alexandru Ioan Cuza" University of Iași; Bulevardul Carol I, nr. 20A, 700505, Iași, Romania, e-mail: icpetreanu@yahoo.com

Key words: hybrids, Anseriformes, citizen science.

Interspecific hybridization is a common phenomenon among waterfowl (order Anseriformes), a wide-ranging group of birds that includes swans, geese, dabbling ducks, diving ducks etc. There are multiple potential causes, with habitat overlap being one of the most plausible explanations. Scientific literature also identifies hybridization as a consequence of imprinting in males or a shortage of females within a specific species. The incidence of hybrid waterfowl individuals remains understudied in some parts of the world, as is the case in Romania, where data is lacking. Due to limited knowledge of how to correctly identify these individuals, many are misreported or fail to be recorded as hybrids.

This study is among the first to address this phenomenon in Romania and it aims to highlight the most common hybrids recorded in the country, while also indicating their spatial and temporal occurrence so we can better understand where and when they occur. Our methodology incorporates gathering citizen science data from ornithological databases, social media, and personal field observations. Results indicate a general lack of reported data, with females being the most underreported group, possibly due to the absence of obvious diagnostic traits.

Our work aims to reduce identification errors and highlight the local frequency of this phenomenon. We also aim to raise awareness for biologists and birdwatchers to increase their observational efforts in noticing aberrant waterfowl individuals.

Urban ground-nesting in the Yellow-legged Gull (*Larus michahellis*): an emerging breeding strategy on the Bulgarian Black Sea coast?

Desislava GENEVA, Svetla DALAKCHIEVA, Nikola TODOROV

"Prof. Dr. Assen Zlatarov" Burgas State University, Burgas, Bulgaria, e-mail: desislava-geneva@uniburgas.bg

Key words: *Larus michahellis*, ground-nesting, urban ecology, breeding strategy, behavioural plasticity.

The Yellow-legged Gull (*Larus michahellis*) is a highly adaptable species that has successfully colonized urban environments, where breeding pairs typically use rooftops and other elevated man-made structures. In contrast, ground-nesting within urban areas remains poorly documented and may represent a distinct expression of behavioural plasticity.

This study summarizes observations of ground-nesting Yellow-legged Gulls in urbanized areas along the southern Bulgarian Black Sea coast, with a primary focus on the city of Burgas. Cases have been documented since 2017, with subsequent observations revealing ground nests in diverse urban habitats, including parks and grass-covered areas, residential complexes, grounds of educational institutions, and intensively used public spaces. In 2026, 12 ground-nesting cases were recorded, 11 in Burgas and one in the Old Town of Nessebar. Clutch size in nests with available data ranged from one to three eggs, and a total of eight chicks hatched in four nests. Breeding outcomes varied considerably, and several nesting attempts were directly affected by human activities, including deliberate nest removal, maintenance of green areas, and repair works. At some locations, ground-nesting was recorded repeatedly in different breeding seasons, suggesting a degree of nest-site fidelity.

The recurrence of ground-nesting in urban environments suggests that this behaviour may represent a recurring breeding strategy rather than isolated or accidental nesting attempts. These observations highlight the behavioural plasticity of *L. michahellis*, while the high exposure of ground nests to anthropogenic disturbance raises questions about the reproductive success and long-term persistence of this strategy in urban populations.

The importance of engaging high school students in urban avifauna monitoring activities for developing ecological behaviour

Anna-Maria-Iulia DUMITRU[1], Andrea-Cristina STAICU[2]

[1]Methodology Committee of Biology and Chemistry, "Ion Maiorescu" National College, str. N. Droc Barcian, nr. 8, Giurgiu, Romania, e-mail: p.dumitru.anna@maiorescu.ro
[2]Department of Molecular Biology and Biochemistry, Faculty of Biology, University of Bucharest, Spl. Independenței nr. 91-95, Bucharest, Romania, e-mail: cristina.staicu@unibuc.ro

Key words: ecological behaviour, environmental education, urban bird monitoring.

The study analyses the role of urban bird monitoring in developing ecological behaviour among a group of high school students in Giurgiu, starting from the premise that young people's direct involvement in observing local biodiversity can transform their attitudes and practices toward the environment.

The research combines the study of ornithofauna with an educational experiment conducted during the 2024-2025 school year. In the first part, 27 bird species were identified through seven monitoring sessions in the city's central area.

The educational experiment involved 121 tenth-grade students, divided into an experimental group that participated in monitoring activities and a control group. Assessment through validated questionnaires measured ecological behaviours and environmental attitudes before and after the intervention.

Results showed that although no statistically significant differences were recorded between groups after the program's completion, there is a strong correlation between pro-ecological attitudes and manifested behaviours. Students more readily adopt simple practices like recycling but show reluctance toward forms of involvement requiring sustained commitment.

The research's main limitations include the intervention's short duration and constraints of the current educational system, characterized by the rarity of nature-based activities. The research offers valuable perspectives on the complexity of forming ecological consciousness, suggesting that authentic transformation requires comprehensive, long-term educational programs integrated into the curriculum and adapted to context.

The work's main contribution lies in highlighting that effective ecological education goes beyond simple information transmission, requiring direct and sustained experiences in nature, guided reflection, and active involvement in conservation projects to form environmentally responsible citizens.

Stakeholder perceptions of brown bear management in Mureș County, Romania

Analisa Liana ACHIM[1], Andra Claudia NEAGU[2,3], Laurențiu ROZYLOWICZ[3]

[1]Faculty of Geography, Department of Environmental Sciences, University of Bucharest, 1 N. Bălcescu Blvd., Bucharest, Romania, e-mail: analisa.achim@s.unibuc.ro
[2]Doctoral School of Geography, University of Bucharest, 1 N. Bălcescu Blvd., Bucharest, Romania
[3]Centre for Environmental Research (CCMESI), University of Bucharest, 1 N. Bălcescu Blvd., Bucharest, Romania

Key words: Q-methodology, large carnivores, conservation conflict, environmental policy, hunting.

Human-bear conflicts shape how the relationship between the two species is perceived and hinder its conservation. Romania hosts the largest brown bear (*Ursus arctos*) population in Europe, making its management challenging because of the divergences between the current legal framework and how stakeholders perceive it. Mureș County (central Romania) is characterized by a high rate of human-bear interactions, which highlights the need for effective conflict-prevention measures. We identified stakeholders' perceptions of brown bear management in Mureș County by (1) conducting an interview with a key institutional actor to identify the main conservation actions enforced at the local level and the actors involved, (2) assessing stakeholders' perceptions of nationally enforced conservation actions and how they are implemented at the local level, and (3) suggesting evidence-based recommendations for improving brown bear management at local and national level.

Data were collected using Q-methodology. Firstly, we conducted a semi-structured interview with the President of the Committee for Environment and Ecological Balance of the Romanian Chamber of Deputies, based on which we constructed the Q-set statements. We identified stakeholders through snowball sampling, starting from the interviewee's recommendations, and distributed the survey to those identified. Each participant completed a Q-sort of the statements, followed by an open-ended question on alternative management solutions not included in the Q-set. Data were processed through factor analysis in R to identify groups of actors whose opinions converge around a shared core of beliefs, including their positioning toward hunting as a management solution, a topic central to recent policy debates on bear management. Results reveal both consensus and distinguishing viewpoints among the identified factors, providing an empirical basis for locally adapted policy in Mureș County. This study applies the underexplored Q-methodology to brown bear management in Romania, offering a replicable model for other counties facing similar conflicts.

Patterns of wildlife poaching in Romania: Insights from mass media reports

Andra Claudia NEAGU[1,2], Steluța MANOLACHE[1], Laurențiu ROZYLOWICZ[1]

[1]Centre for Environmental Research (CCMESI), University of Bucharest, 1 N. Bălcescu Blvd., Bucharest, Romania
[2]University of Bucharest, Faculty of Geography, "Simion Mehedinți" Doctoral School in Geography, Bucharest, Romania, e-mail: andra.neagu@s.unibuc.ro

Key words: poaching, illegal hunting, illegal fishing, mass media, biodiversity, Romania.

The conservation of endangered species is under growing threat from poaching, which has become more complex and widespread globally. In Romania, escalating human-wildlife conflicts and diminishing public support for wildlife are driving an increase in poaching. Moreover, the country lacks a centralized and official database to monitor and document poaching events. In this study, we aim to contribute to the understanding of poaching in Romania by (1) identifying the wildlife species most affected by poaching, exploring the incentives behind illegal hunting and fishing, and assessing the methods involved; (2) analyzing the spatial distribution of poaching to identify hotspots of illegal hunting and fishing; and (3) proposing practical and ethical strategies to mitigate and prevent poaching. We examined poaching incidents reported in Romania by national media between 2007 (following the country's accession to the European Union) and 2024. A series of statistical analyses, including Correspondence Analysis (CA), were conducted to explore patterns within the collected data. The findings indicate that ungulates and aquatic species are primary targets of poaching, largely driven by economic motivations associated with the trade in meat and other animal-derived products. In addition, protected species such as large carnivores are frequently targeted by poachers due to human-wildlife conflicts, especially those involving livestock predation and low levels of tolerance among local communities. The spatial analysis identifies key poaching hotspots requiring urgent intervention. This study provides a comprehensive overview of poaching in Romania, contributing to the development of a national anti-poaching strategy with policy-relevant recommendations for decision-makers.

The area-wide integrated pest management (AW-IPM) for Bucharest and surroundings: A proposed approach for vector insects control

Alexandru Filip VLADIMIRESCU[1,2], Florian-Liviu PRIOTEASA[1], Aurelian PINTILIESCU[3] Ștefan COȘA[2], Valeria CIULACU[1]

[1]Cantacuzino National Military Medical Institute for Research and Development, Splaiul Independenței no. 103, 050096, Bucharest, Romania, e-mail: vladimirescu.alex@cantacuzino.ro
[2]Association for Intercommunity Development for Rat Eradication, Disinsection and Disinfection (ADIDDD), Tati Business Center, Tudor Vladimirescu Blvd. no. 45, Bucharest, Romania, e-mail: office@adiddd.ro
[3]Municipal Eco-Hygienisation Company Bucharest (CMEIB), Bacău Str. no. 2, Bucharest, Romania, e-mail: office@cmeib.ro

Key words: integrated pest management, mosquitoes, smart city, Bucharest.

Integrated Vector Management (IVM) is defined by WHO as "a rational decision-making process to optimize the use of resources for vector control" (WHO 2012, EMCA 2024). IVM aims to use the best cost-benefit combination of all available control methods, in a sustainable and environmentally sound manner, to reduce vector density and/or vector-human contacts to levels that do not represent a public health problem. AW-IPM represents a preventive approach, intervening simultaneously on the entire pest population in the ecosystem, reducing the risk of migration and reinfestation.

The same concept can be applied in vector arthropod and rodent control programs. A synchronized approach to the control techniques currently used can be beneficial not only to a highly urbanized territory like Bucharest but also to neighboring areas with a lower, but not negligible, degree of urbanization.

Another concept that has emerged recently (2007, 2021) refers to Area Wide Integrated Pest Management (AW-IPM), this concept initially emerged to protect agricultural crops but now tends to be used in coordinating mosquito, tick, cockroach and rodent control programs in urban and surrounding areas.

The advantages of using AW-IPM programs for vectors are the following:

- Reinfestation / re-invasion of the capital with new vector populations from neighboring areas is prevented.
- The establishment of insecticide resistance phenomena is prevented by using similar insecticide products.
- More or less effective control treatments are prevented due to the use of disinfestation equipment that differs in terms of technical performance.
- The standardization of techniques and the type of insecticide used is reflected in the cost/benefit area, efficiency of unitary vector control programs.

This paper describes a draft of the DDD control program based on this principle and supported by an intelligent infrastructure (automatic traps for mosquitoes type Biogents BG-Counter 2 and a Real-Time System for Monitoring adulticide treatments; www.adidddb.ro).

In conclusion, in the context of the Smart City that we have begun to implement for mosquitoes, we propose that the form of application of DDD control treatments be

coordinated and carried out in a unified manner throughout the entire Municipality of Bucharest together with the neighboring communes in Ilfov County.

Assessing content-specific knowledge before and after children's workshops in a natural history museum: A pilot study

Diana-Măriuca SCÎNTEIANU, Camelia NIȚĂ, Alina MOLDOVEANU, Cornelia ȚOLEA, Maria BLIDERIȘANU, Luis Ovidiu POPA

"Grigore Antipa" National Museum of Natural History, Şoseaua Pavel D. Kiseleff 1, 011341 Bucharest, Romania, e-mail: diana.scanteianu@antipa.ro

Key words: education, evaluation, informal learning, capybara, McNemar's test.

This pilot study investigates whether children participating in educational workshops at a natural history museum acquire measurable, content-specific knowledge related to the workshop theme. Conducted at the National Museum of Natural History "Grigore Antipa" in Bucharest, the project focused on capybara-themed workshops and employed a PRE–POST evaluation design to assess learning outcomes. Each participant completed a worksheet containing two three-alternative items, each scored dichotomously (0 = incorrect, 1 = correct), both before and after the activity. This structure allowed direct comparison of individual responses across the two moments.

A total of 253 children aged 6–12 took part in the study, all completing both worksheets. To evaluate changes in performance, the analysis used McNemar's test, which determines whether the number of responses shifting from incorrect to correct differs significantly from those shifting in the opposite direction. Results revealed clear and statistically significant improvements for both items ($p < .001$). For the first question, correct responses increased from 20.2% at PRE to 85.4% at POST, representing a gain of +65.2 percentage points (95% CI [59–72]). For the second question, correct responses rose from 55.3% to 96.0%, a gain of +40.7 percentage points (95% CI [34–47]).

Interpretation of item functioning suggests that Q1 may have been influenced at PRE by misconceptions or positional biases, while Q2 behaved effectively as a binary-choice item, with the distractor likely ignored. Despite these differences, both items demonstrated content-specific knowledge.

This study confirms that significant improvements in content-specific performance were observed immediately after the workshops, supporting their educational value in a natural history museum setting. Differences between the two items also highlight the importance of evaluating question difficulty and response patterns when developing assessment instruments.

AUTHOR INDEX

ABED, Abir: 137

ACHIM, Analisa Liana: 246

ÁCS, Andrei Robert: 179

ACZÉL-FRIDRICH, Zsuzsanna: 152

ADAM, Costică: 154, 166, 181, 192

AILINCUȚEI, Ștefan: 122, 241

AJDER, Vitalie: 214

ALAVI-YEGANEH, Mohammad Sadegh: 140

ALECSA, Alexandra: 216

ALTUNTAŞ, Hülya: 190

ANASTASIU, Paulina: 154

ANĐELKOVIĆ, Milica: 78, 168

ANDREI, Ioana-Georgia: 205

ANTONINI, Paola: 94

ANTONOVA, Vera: 134

ARGHIR, Răzvan: 173

ARSOVSKI PRZO, Kiril: 89

ASATRYAN, Vardan: 103

ASTRIN, Jonas J.: 103

ATTILA, Sándor D.: 146

ÁVILA, Sérgio P.: 41

AYTAR ÇELİK, Pınar: 190

BABA, Ștefan Cătălin: 71, 110, 112

BACAL, Svetlana: 125

BACHE, Anders: 42

BACIU, Dorin Sorin: 176

BADEA, Ioana-Francesca: 237

BAKHTADZE, Nana: 57, 61, 161

BÂLCU, Maxim-Jean: 58, 72

BALTAG, Emanuel-Ștefan: 113, 115, 135, 166, 201, 212, 215, 223, 231

BĂNCILĂ, Raluca Ioana: 169, 181

BĂNESCU, Alexandru: 200

BEGUN, Tatiana: 85

BEJENARU, Luminița: 175

BELLAN, Alex: 94, 219, 220

BENEDEK, Ana Maria: 216

BENKENANA, Naima: 137

BENKŐ, Zoltán: 146

BERCHI, Gavril Marius: 165

BEREȘ, Antonia-Elena: 77, 119

BESMELI, Mohamad Reza: 150

BIRĂU, Alexandru-Cătălin: 194, 213, 236

BIRKAIA, Khatia: 57

BIVOL, Alexei: 109, 156

BIVOLEANU, Ramona-Andreea: 151, 222

BLIDERIȘANU, Maria: 250

BORISSOV, Simeon: 74, 136

BOZ, Irina: 191

BRAȘOVEANU, Valeriu: 201

BRUSCHINI, Claudia: 79

BUCKHAM, Elizabeth: 132

BUȘMACHIU, Galina: 67, 125

BUTLER, Fidelma: 150

BUZEA, Ana-Maria: 146

CABA, Florina-Georgiana: 77, 113, 135

ÇABUK, Ahmet: 190

CALDARI, Vladislav: 149

CALESTRU, Livia: 114

CALIMENT, Maria-Alexandra: 237

CÂRCIOIU, Teona-Alexa: 111

CARRETERO, Miguel Angel: 209
CHELARIU, Ciprian: 176
CHELARU, Ionuț-Alexandru: 203, 204
CHINDRIȘ, Benoni: 208
CHIOSA, Ana-Maria: 75, 182, 188
CHIRIAC, Silviu: 123
CHIRILĂ, Ana Mariana: 182, 188
CHIRILĂ, Simona Dumitrița: 116, 157, 182, 184, 188, 200
CHIȘAMERA, Gabriel Bogdan: 151, 154, 222
CHOBANOV, Dragan: 74
CHRISTENSEN-DALSGAARD, Jakob: 206
CIAUȘU, Ramona-Alexandra: 203, 204
CIMPOEȘU, Maria Cristina: 176
CIOBANU, Liviu-Mircea: 233
CIOBANU, Nicoleta-Petronela: 208
CIOBÎCĂ, Alin Stelian: 203, 204
CIORPAC-PETRARU, Ozana-Maria: 175
CIULACU, Valeria: 248
COBZARU, Ioana: 151, 222
COGĂLNICEANU, Dan: 90, 154, 195, 206
COJANU, Louana-Paraschiva: 139
COJOCARIU, Roxana: 191
CONSTANTINESCU, Enoh: 173
CONSTANTINESCU, Ioana Cristina: 154, 181, 192
CONSTANTIN, Silviu: 173
COPILAȘ-CIOCIANU, Denis: 165
COSAC, Marian: 173
COȘA, Ștefan: 248
COSTACHE, Ionuț Dănuț: 142
COTOARĂ, Andrei: 213
COZMA, Teodora: 73, 188, 241
CRAIU, Cristina: 88
CSIKI-SAVA, Zoltán: 43
CSONT-KELEMEN, Mátyás: 146
CUVELIER, Sylvain: 79
DALAKCHIEVA, Svetla: 244
DALLAKYAN, Marine: 103
DALPIAZ, Naima: 94
DAMGAARD, Jakob: 165
DAPPORTO, Leonardo: 79
DASCĂLU, Dragoș: 241
DASCĂLU, Maria-Magdalena: 77, 113, 120, 135
DAS, Tamal: 196
DAVID, Livia Oana: 157
DÉNES, Avar-Lehel: 236
DEROUICHE, Chahinez: 137
DIACONU, Alecu: 199
DÍAZ-MARÍN, César A.: 91, 145
DIBOLSCAIA, Natalia: 149
DIMITROV, Krastio: 217
DIMITROV, Nikolay: 198
DINCĂ, Paul-Cristian: 115, 208
DINCĂ, Vlad: 79
DINU, Andrei: 94, 224
DINU, Leonas: 94, 219
DOĞRU, Huriye: 81
DOLGHIER, Bogdan: 223, 241
DONCEA, Antonio-Marian: 73, 122, 241
DONCIU, Paul-Iulian: 175
DONICA, Ala: 201, 212, 215
DRĂGAN, Ana-Maria: 206
DRĂGAN, Florinel-Dănuț: 147

DRĂGAN, Ovidiu: 59
DRĂGHICI, Andreea-Cătălina: 181, 192
DUMITRU, Anna-Maria-Iulia: 245
DUȚĂ, Ianula: 231
ENEA, Diana Monica: 63, 116
FĂNARU, Geanina: 206
FÂNTÂNĂ, Ciprian: 146
FAUR, Luchiana-Maria: 173
FERNANDEZ, Desamarie Antonette P.: 221
FİDAN, Ebru Ceren: 81, 190
FILZ, Marco: 94, 219
FLOREA, Matei: 148
FOMICI, Iulian: 59
FORGET, Pierre-Michel: 221
FRANC, Mădălina-Iuliana: 143
FRISCHE, Matthias: 140
FUSU, Lucian: 76, 77, 113, 118, 120, 135, 166
GACHE, Carmen: 148
GAVRILĂ, Cătălina: 85
GAVRILESCU, Carla F.: 66, 154
GAVRIL, Viorel Dumitru: 222
GAZZOLA, Andrea: 94, 219, 224
GENEVA, Desislava: 244
GEORGESCU, Ovidiu-Andrei: 118, 182, 241
GEORGIEVA, Mirela: 217
GEORGIEVA, Simona: 136
GEORGIEV, Ivaylo: 134
GHERGHEL, Iulian: 143, 205
GHEYSOURI, Morteza: 150
GHILAN, Mihail: 147, 214
GÎLEA, Nicu Alexandru: 182
GIUCĂ, Relu: 213
GIURGINCA, Andrei: 110
GORGAN, Dragoș-Lucian: 144
GOSTIN, Irina Neta: 162
GRĂDIANU, Ionuț: 176
GRĂDINARU, Maria-Isabella: 241
GROOM, Quentin: 154
GROZAVU, Adrian: 176
GUERFI, Imen: 137
GURIȚĂ, Mihail: 132, 156
HADJIKOSSEV, Simeon: 217
HALDHAR, Prema: 197
HALOTEL, Yon: 94
HĂNCEANU, Lucian: 77, 120, 135
HANEL, Reinhold: 140
HANNA, Kimberley: 92
HAUPRICH, Anna: 75
HEBBLEWHITE, Mark: 224
HEGYELI, Zsolt: 152
HERMIDAS, Shirin: 150
HNILIČKA, Michal: 141
HUȚANU, Ștefan: 241
IBRAM, Orhan: 158
ICHIM, Mihael Cristin: 199
IFTIME, Alexandru: 104
IFTIMESCU, Narcis: 191
INDZHOV, Simeon: 134
IOJA, Cristian: 97
ION, Constanța-Mihaela: 101, 179
ION, Maria-Alice: 243
IORDOSOPOL, Valentina: 156
IORGU, Elena Iulia: 72, 151, 191
IORGU, Ionuț Ștefan: 191
ISTRATI, Sorina: 127
IȚCUȘ, Corina: 71
IURCU-STRĂISTARU, Elena: 109

IVANOV, Vladislav: 79
JÁKÓ, Gabriella-Veronka: 236
JILCOVICI, Aura Ștefania: 165
JIVULESCU, Laura Elena: 165
JUGARIU-VICOLEANU, Andrada: 76, 77, 241
JURAJDA, Pavel: 141
JURJESCU, Ana: 115
KAMILARIS, Andreas: 132
KAYA, Sarp: 81
KAZAKOV, Stefan: 141
KEETAPITHCHAYAKUL, Tosaphol Saetung: 163, 164
KENDEROV, Lyubomir: 141
KENESZ, Marius: 173
KIAT, Yosef: 92
KI, Tiffany: 102
KLEČKOVÁ, Irena: 79
KMENT, Petr: 165
KODRUL, Yuriy: 214
KOLLROSS, Jan: 79
KOVÁCS, Gábor: 73
KOVÁCS, István: 146
KOVÁCS, Zsolt: 146, 236
KRAFT, Bogdan: 94
KRAPAL, Ana-Maria: 72, 125
KRASNOV, Boris R.: 60
KROGMANN, Lars: 75
KUMAR, Bhupendra: 193, 196, 197
LAM, Nok Ting: 79
LARION, Alina: 96, 149
LAZA, Antonio V.: 87
LAZAREVIĆ, Maja: 78, 168
LIVADARIU, David: 87, 153
LLUSIA, Diego: 206
LOBIUC, Andrei: 191
LUCEK, Kay: 79
LUPAȘCU-VASILIȚA, Cristina: 75
MADHAVAPEDDY, Anil: 102
MĂDULARU, Andrei: 130, 241
MANOLACHE, Steluța: 93, 97, 121, 123, 247
MANOLE, Gabriel: 208, 209, 210
MANTA, Nicolae: 154
MANU, Minodora: 181, 192
MARIUS TEOFILOVA, Teodora: 134
MARKÓ, Bálint: 63
MAROCCO, Ilenia: 94
MAROHN, Lasse: 140
MÁRQUEZ, Rafael: 44, 206
MARTIN, Jeremy E.: 174
MARTINOU, Angeliki F.: 132
MARTIN, Ryan Andrew: 82
MATOS-MARAVÍ, Pável: 79
MELEN, Adriana: 135
MEMEDEMIN, Daniyar: 66, 154, 195
MENABIT, Selma: 85
MERLUȘCĂ, George-Ioan: 175, 241
MÉSZÁROS, Dávid: 146
MICHELOTTO, Carolina: 94
MIHAI, Cosmin Teodor: 135
MIHĂȘAN, Marius: 77, 135
MILENKOVIĆ, Darija: 168
MIOK, Kristian: 87
MIREA, Ionuț-Cornel: 173, 174
MIREA, Marian D.: 121, 123
MITROIU, Mircea-Dan: 77, 135, 139, 167
MIU, Bogdan Andrei: 237
MIU, Iulia V.: 121, 123

MOCREAC, Nadejda: 132, 156
MOLDOVAN, Anna: 127
MOLDOVAN, Cosmina: 131
MOLDOVEANU, Alina: 250
MOTOC, Rozalia Magda: 58, 72, 181
MUMLADZE, Levan: 61, 161
MUNJIU, Oxana: 133
MURARIU, Dumitru: 45, 58, 116, 151, 184, 222
MUTANEN, Marko: 79
NAE, Augustin: 110
NARINS, Peter: 206
NĂSTASE, Aurel: 59, 200
NĂSTASE, Maria: 112
NAUMOVA, Maria: 134
NEAGU, Andra Claudia: 97, 246, 247
NECULA, Nicușor: 176
NEUNER, Carmen: 75
NICOARĂ, Mircea Nicușor: 142, 203, 204
NICULAE, Iulian M.: 97
NICULESCU, Valentin Ioan Remus: 227
NIKOVA, Polina: 141
NISTREANU, Victoria: 96, 149
NIȚĂ, Andreea: 97
NIȚĂ, Camelia: 250
NIȚĂ, Mihai R.: 97
NIȚESCU, Ruxandra: 169
NITZU, Eugen: 62
NUCĂ, Irina: 135
NURAL YAMAN, Belma: 190
OLARIU, Liviu: 148
OLIVE, Sébastien: 174
OPĂRIUC, Andreea: 77, 124
ORDÓÑEZ DELGADO, Leonardo: 231
OSVÁTH, Gergely: 146, 213, 236
PACIOGLU, Octavian: 71
PADUBIDRI, Chirag Prabhakar: 132
PALADI, Viorica: 212, 215
PANTAGAKI, Charikleia-Foteini: 65
PAPP, Edgár: 236
PÂRVULESCU, Lucian: 87, 101, 153, 179
PĂTRAȘCU, Lucian M.: 66, 154
PAVEL, Ana-Bianca: 85
PAVEL, Ionuț: 135
PEHLIVANOV, Luchezar: 141
PENEV, Lyubomir: 47
PETCULESCU, Alexandru: 173
PETREANU, Ionuț-Cătălin: 144, 208, 209, 243
PETRESCU, Ana-Maria: 228
PETRESCU, Eugenia: 194
PHLAINGAM, Sirikamon: 163, 164
PÎNDARU, Lavinia C.: 93, 121, 123
PINTILIESCU, Aurelian: 248
PINTILIOAIE, Alexandru-Mihai: 73, 113, 115, 122, 166, 188, 201
PINZIO, Alexis: 94, 219
PLOȘTINARU, Paul: 235
POGHOSYAN, Liana: 103
POPA, Adrian: 85
POPA, Alexandra-Florina: 72, 125
POPA, Ionuț: 71
POPA, Luis Ovidiu: 250
POPA, Mădălina Oana: 199
POPA, Oana Paula: 58, 72, 151, 154
POPA, Robert: 186
POPESCU, Andrei Vasile: 116

POPESCU, Irinel Eugen: 138, 162
POPESCU-MIRCENI, Răzvan Valentin: 222
POPESCU, Viorel D.: 93, 97, 123, 224
POP, Mihai I.: 93, 224
POPOVA, Teodora: 136
POPOVICI, Adina Camelia: 182, 188
POPOVICI, Ovidiu-Alin: 75, 77, 119, 124, 126, 130, 135
PORTARESCU, Anastasiia: 215
PREDA, Cristina: 66, 154
PRIOTEASA, Florian-Liviu: 248
RACLARIU-MANOLICĂ, Ancuța Cristina: 199
RĂDAC, Ioan Alexandru: 151, 165
RĂILEANU, Ștefan: 157
RÁKOSY, László: 230
RAMÍREZ-BAUTISTA, Aurelio: 91, 145
REYSERHOVE, Lien: 154
ROBU, Marius: 173, 174
ROȘCA, Eusebiu: 144
ROȘU, Mădălina-Elena: 167
ROTUNJANU, Arissa-Elena: 102
ROZYLOWICZ, Laurențiu: 66, 97, 121, 123, 154, 246, 247
RUSU, Ştefan: 109
RUSU, Viorelia: 109
SABĂU, Alexandra Ioana: 165
SAHLEAN, Tiberiu Constantin: 82
SAMARDZHIEV, Bozhidar: 217
SANEI, Arezoo: 150
SAVIN, Anatolie: 96
ŞCERBLIUC, Mihail: 96
SCÎNTEIANU, Diana-Măriuca: 250
SERAFINI, Giacomo: 219
SEVIANU, Eliana: 151
SIMEONOVSKA-NIKOLOVA, Daniela: 217
SINGH, Parinita: 193
SIN, Teodora: 93, 94, 219, 224
SÎRBU, Culiță: 154
SÎRBU, Ioana M.: 154
ŞİRİN, Davut Ümit: 81, 190
SÎTNIC, Victor: 149
SKOLKA, Marius: 66, 88, 128, 154, 195
SLIMNICEAN, Ioana Daniela: 216
ȘPAC, Miruna-Ioana: 126
SPASENI, Denis-Gabriel: 115
SPASENI, Petronel: 115, 212, 215
SPASOVA, Venislava: 217
SPENCE, Beatrice: 102
SREELATHA, Lekshmi B.: 209
STAICU, Andrea-Cristina: 237, 245
STANCIU, Cătălin Răzvan: 222
STANCU, Raluca-Silvia: 234
STĂNESCU, Florina: 90, 154, 206, 231
STĂNESCU, Mihai: 230
STĂNICĂ, Aurel-Daniel: 175
STAN, Melanya: 192
STEBLEA, Ștefan: 227
STEBLER, Lola: 79
ȘTEFAN, Alina Gabriela: 191
ȘTEFAN, Andrei: 58, 72
ȘTEFAN, Laura Mihaela: 181
STEFANOV, Tihomir: 141
ȘTEFÎRCĂ, Ovidiu-Sebastian: 152
STOLNICU, Alina Maria: 242
STONESCU, Anubis-Claudia: 241
STRATAKIS, Emmanouil: 65

STROESCU, Bianca Elena: 63, 116, 185
STRUGARIU, Alexandru: 210, 211
ŞUBERNEŢKII, Igor: 133
SULIMAN, Iasemin: 158
SURUGIU, Victor: 49, 180
SZABÓ, Ágota: 63
SZABÓ, József: 146
SZABÓ, Luca-Mátyás: 146
SZÉKELY, Diana: 90
SZÉKELY, Paul: 231
TĂNASE, Teodora L.: 90
ŢARANU, Georgiana: 211
TĂUŞAN, Ioan: 63, 116, 131, 182, 184, 185, 186
TEACĂ, Adrian: 85
TELOUK, Phillipe: 174
TENNANT, Aileen: 150
THORMANN, Jana: 103
ŢICU, Silviu Giorgian: 63, 116, 184, 188
TICU, Tony Alexandra: 113, 166
TÎRLĂ, Maria-Laura: 173
TODOROV, Emil: 213
TODOROV, Milcho: 141
TODOROV, Nikola: 198, 244
TOKAIQALI, Helen: 132
ŢOLEA, Cornelia: 250
TOPALĂ, Laura-Elena: 166, 223
TOPĂLESCU, Andreia: 191
TÖRÖK, Sergiu: 131
TOURANI, Mahdieh: 224
TRICHKOVA, Teodora: 141
TRIFONOV, Teodor: 134
TSIKLAURI, Rusudani: 61
TSVETKOV, Tsvetan: 74
TUDOR, Iuliana-Mihaela: 158
TUDOR, Marian: 154
ŢUGULEA, Cristina: 129
ŢURCAN, Alexandru: 214
TURNER, Edgar: 102
TUŞA, Iris M.: 71
URÁK, István: 73
URECHE, Camelia: 203, 204
URECHE, Dorel: 142, 203, 204
URZICEANU, Mihaela M.: 154
VAGALINSKI, Boyan: 134
VARGA, Zoltán: 51
VASSILEV, Vassil: 134
VELEV, Nikolay: 182, 188
VEREŞ, Daniel: 173, 174
VERGILOV, Vladislav: 74
VERNIER, Edoardo: 218
VERON, Géraldine: 221
VICIRIUC, Mădălina-Ionela: 73, 122
VILA, Roger: 79
VLADIMIRESCU, Alexandru Filip: 248
VLAD, Robert Andrei: 63, 116, 185
VLAD, Sabina Elena: 90
VLAICU, Marius: 174
VON DER MARK, Laura: 103
YIU, Nga Ting Anna: 102
ZAFFARONI-CAORSI, Valentina: 206
ZAHARIA, Răzvan: 151, 222
ZAMFIRESCU, Oana: 208
ZAMFIRESCU, Ştefan Remus: 143, 205, 208, 210, 211
ZEITZ, Róbert: 236
ŽIKIĆ, Vladimir: 78, 168
ZLATKOV, Boyan: 74

NOTES

NOTES

NOTES

NOTES

ISSN (print edition): 1223-2254

ISSN (on-line edition): 2247-0735

Indexed in:
Clarivate Analytics – BIOSIS Previews, Biological Abstracts, Zoological Record
Scopus