International Zoological Congress of "Grigore Antipa" Museum

21 - 24 November 2018
Bucharest - Romania

Book of Abstracts

Edited by:
Luis Ovidiu Popa, Costică Adam, Gabriel Chişamera, Elena Iorgu, Dumitru Murariu, Oana Paula Popa

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Summary

CZGA 2018 PROGRAMME **17**

Invited speakers

Nina BOGUTSKAYA, Oleg A. DIRIPASKO, Dusan JELIĆ, Tihomir STEFANOV - New insights into morphology, phylogeny, taxonomy, and systematics of the European *Phoxinus* species complex 33

Octavian BUDA - Romanians and Cell biology: Dimitrie Voinov (1867-1951), founder of cytology in Romania 35

Philippe GRANDCOLAS - The role of natural history and systematics in the age of biodiversity crisis 36

Zoltán LÁSZLÓ - Holarctic rose galls: what has been overlooked until now? 37

Andrei Daniel MIHALCA, Angela Monica IONICĂ, Georgiana DEAK, Călin Mircea GHERMAN - Vector-borne and snail-borne nematodes of carnivores: new insights into their ecology and taxonomy 38

Sergey V. MIRONOV, Pavel B. KLIMOV, Barry M. OCONNOR - Phylogeography, codispersals and host shifts in proctophyllodid feather mites (Astigmata: Proctophyllodidae) associated with passerines (Aves: Passeriformes) 39

Dick MOL - The Yukagir Mammoth 41

Jörundur SVAVARSSON - Species distributions of marine benthic invertebrates at the northernmost North Atlantic Ocean – are these shaped by the extensive Greenland, Iceland, Faeroe Ridge? 42

Serge UTEVSKY - Species concepts and species histories in leeches (Annelida: Hirudinida) 43

Oral presentations

Phylogenetics, Evolution and Systematics

Ioana Cristina CONSTANTINESCU, Oana Paula POPA, Luis Ovidiu POPA, Ioana COBZARU, D. Khlur B. MUKHIM, Rozalia Magda MOTOC, Costică ADAM - Two new feather mite species of the genus *Montesauria* Oudemans (Analgoidea: Proctophyllodidae) from thrushes (Passeriformes: Turdidae) in the Indian Subcontinent 47

Lucian PÂRVULESCU, Jorge L. PÉREZ-MORENO, Cristian PANAIOTU, Lucian DRĂGUȚ, Anne SCHRIMPF, Ioana-Diana POPOVICI, Claudia ZAHARIA, András WEIPERTH, Blanka GÁL, Christoph D. SCHUBART, Heather BRACKEN-GRISSOM - A journey on plate tectonics sheds light on European crayfish phylogeography 48

Simeon BORISSOV, Dragan CHOBANOV - Phylogenetic reconstructions of closely related species groups of the genus *Poecilimon* (Insecta: Orthoptera) from the Balkans, Anatolia and Crete 49

Mohamed NAIMI, Mohammed ZNARI, Soumia LOULIDA, Guillermo VELO-ANTON, Uwe FRITZ - Morphometric and phylogeographic differentiation of the Mediterranean Pond Turtle, *Mauremys leprosa* (Schweigger, 1812) (Testudines: Geoemydidae): putative subspecies vs. evolutionary lineages / sub-lineages in Morocco 50

Taxonomy. Faunistics. Zoogeography

Ionuț Ștefan IORGU, Elena Iulia IORGU, Dragan CHOBANOV - The Orthoptera of Dobrogea. The Atlas 51

Cosmin-Ovidiu MANCI, Ioan-Alexandru RĂDAC - Contributions to the knowledge of planthoppers and spittlebugs of Romania, with two new records for Romanian fauna 52

Alexandra Florina POPA, Irinel Eugen POPESCU - First record in Romania of the genus *Isodontia* with *Isodontia mexicana* (Hymenoptera: Sphecidae) 53

Irinel Eugen POPESCU, Irina Neta GOSTIN - First record of Torymidae family (Insecta: Hymenoptera: Chalcidoidea) from the Maldives Archipelago 54

Ioan TĂUȘAN, Balint MARKÓ - Ants (Hymenoptera: Formicidae) of Dobrogea (Romania) – an updated checklist 56

Natalia MUNTEANU-MOLOTIEVSKIY, Ion TODERAȘ, Anna MOLDOVAN, Nicola SASANELLI, Elena IURCU-STRĂISTARU - A review on insect pests of tomato crop in the Republic of Moldova 57

Iulian GHERGHEL, Ryan Andrew MARTIN - Postglacial recolonization of North America: integrating niche models and corridor modeling to study species' range dynamics over geologic time 58

Larisa PLOP - Reproductive behaviour of *Triturus vulgaris* L. (Amphibia, Caudata) in Central Forest (Republic of Moldova) 59

Bronisław W. WOŁOSZYN, Dumitru MURARIU - Biogeography and biodiversity of bat fauna in the Carpathian Mountains 60

Derya ÇETINTÜRK, Nuri YIĞIT, Ercüment COLAK, Georgi MARKOV, Duško ĆIROVIĆ, Mihály MÁRTON - On the sequence variations of mitochondrial COI gene in *Microtus arvalis* (Pallas, 1778) 62

Ecology

Raluca Ioana BĂNCILĂ, Rodica PLĂIAŞU, Andrei GIURGINCA, Ioana NAE, Ştefan Cătălin BABA, Augustin NAE - Best sampling techniques for examining the terrestrial cave-dwelling invertebrate communities 63

Voichiţa GHEOCA, Ana Maria BENEDEK, Erika SCHNEIDER - Can land snail assemblages act as bioindicators of riparian forest quality? 64

Mohammad AHMAD-HOSSEINI, Mohammad KHANJANI - Resistance of commercial walnut cultivars and genotypes to *Aceria tristriatus* (Nalepa) ... 65

Minodora MANU, Raluca Ioana BĂNCILĂ, Marilena ONETE - Soil predator mites (Acari: Mesostigmata) from different types of moss habitats, in Romania 66

Mircea VARVARA, Zaharia NECULIŞEANU - Distribution, numerical abundance (A) and dominance (D) of *Calathus* (*Dolichus*) *halensis* (Schall.) in the investigated agricultural ecosystems, in Romania (1981-2001) and the Republic of Moldova (1985-1998) 67

Orhan IBRAM, Gabriel LUPU, Dan COGĂLNICEANU - Long term changes of Chironomidae fauna from the Danube Delta 68

Angela CURTEAN-BĂNĂDUC, Michael JOY, Horea OLOSUTEAN, Sergey AFANASYEV, Doru BĂNĂDUC - Lower Danube inland bodies of water fragmentation for fish in a potential future climate variation sequence of events 69

Mohamed NAIMI, Soufiane TAKI, Hassan BENAISSA, Elisabeth BERGER, Soumia LOULIDA, Mohamed GHAMIZI, Mohammed ZNARI - Food habitats of the Lepiney's Barbel (*Luciobarbus lepineyi*) (Teleosts: Cyprinidae) in the Draa valley, Southeast Morocco: impact of water salinisation 70

Alexandru STRUGARIU, Ryan Andrew MARTIN - Does the type of competition matter in disruptive selection? 71

Iulian GHERGHEL, Francois BRISCHOUX, Monica PAPES - Disentangling the effects of dispersal, niche and biotic interactions in shaping species distributions of amphibious marine snakes (Reptilia: Laticauda) 72

Lidia E. YALKOVSKAYA, Evgenia MARKOVA, Sergey ZYKOV, Petr SIBIRYAKOV - Chromosomal instability in the common vole *Microtus arvalis,* obscurus karyotypic form (Rodentia, Arvicolinae) in the north-east of European Russia: exploring the causes of a rare mutant karyotype appearance 73

Zbigniew BOROWSKI, Adam WÓJCICKI, Andżelika HAJDT, Lidia E. YALKOVSKAYA - The importance of apex predators for forest ecosystem – an example of the wolf 74

Invasive species

Elena BUHACIUC-IONIȚĂ, Marin IONIȚĂ - New data on the distribution of the oak lace bug *Corythucha arcuata* (Say, 1832) (Hemiptera: Tingidae) in Romania 75

Octavian PACIOGLU, Kathrin THEISSINGER, Andreea ALEXA, Corina SAMOILĂ, Ovidiu-Ioan SÎRBU, Anne SCHRIMPF, Jochen P. ZUBROD, Ralf SCHULZ, Mălina PÎRVU, Sandra-Florina LELE, John Iwan JONES, Lucian PÂRVULESCU - Multifaceted implications of the competition between the native crayfish *Astacus leptodactylus* and the invasive *Orconectes limosus* in the Lower Danube: a glimmer of hope for the native's long-term survival 76

Parasitism in the animal kingdom

Lela ARABULI - Parasitological research of terrestrial mollusks in Samegrelo region of west Georgia 77

Palaeontology

Lea RAUSCH, Hülya ALÇIÇEK, Amelie VIALET, Nicolas BOULBES, Serdar MAYDA, Vadim V. TITOV, Marius STOICA, Sylvain CHARBONIER, Yeşim BÜYÜKMERIÇ, Hemmo ABELS, Alexey S. TESAKOV, Anne-Marie MOIGNE, Frank P. WESSELINGH, M. Cihat ALÇIÇEK - *Homo erectus* paleoenvironments in the early Pleistocene Denizli Basin: an integrated paleontological, sedimentological and geochemical approach 78

Biodiversity Conservation

Marius SKOLKA, Adrian TEACA, Tatiana BEGUN, Mihaela MUREȘAN, Victor SURUGIU - Marine species in the Romanian Red Data Book of Invertebrates 80

Marius SKOLKA - Rare species - how endangered are they? Butterflies from Dobrogea case study 81

Tibor-Csaba VIZAUER, Ágnes KASTAL, Jacqueline LOOS, Matthias DOLEK, László RÁKOSY - About the critically endangered butterfly *Colias myrmidone* and one of its last refuges in the European Union in Transylvania (Romania) 82

Simona MIHĂILESCU, Iuliana Florentina GHEORGHE, Cristina Alina DUMITRACHE, Cristina SANDU - Managing and restoring aquatic EcologicAl corridors for migratory fiSh species in the danUbe RivEr baSin – MEASURES Project in Romania 83

Marian TUDOR, Alexandra TELEA, Costin TIMOFTE - New data regarding the trophic spectrum of the Large Whip Snake (*Dolichophis caspius)* in Dobrudja, Romania 84

Andreea CIOBOTĂ, Cristina-Andrea STAICU, Mihaela CIOBOTĂ, Dumitru MURARIU - Territoriality song in Blackbirds (*Turdus merula*) – a potential bioindicator of noise disturbance levels in urban parks 85

Victoria NISTREANU - Actual status of *Neomys* species in the Republic of Moldova 86

Poster presentations

Studies and recovery of the natural history museum patrimony

Angela PETRESCU, Gabriela ANDREI - Ion Licherdopol - scientific personality and founder of museological collections 89

Ana-Maria PETRESCU, Iorgu PETRESCU - Preliminary results on the decapoda fauna collected from Mauritania 90

Melanya STAN - A few interesting Romanian *Carabus* species and subspecies (Coleoptera: Carabidae) from the *Dr. Pompiliu Lie* collection 91

Sanda MAICAN, Rodica SERAFIM - The genus *Chrysolina* (Coleoptera: Chrysomelidae: Chrysomelinae) in the collections of "Grigore Antipa" National Museum of Natural History (Bucharest) 92

Mirela Sabina RIDICHE - New specimens and species of birds introduced in the patrimony of the Museum of Oltenia Craiova in recent years 93

Phylogenetics, Evolution and Systematics

Nino CHAKVETADZE, Nana BAKHTADZE, George BAKHTADZE, Edisher TSKHADAIA - Karyological data of stylommatophoran mollusks (Gastropoda:Heterobranchia:Eupulmonata) of Georgia 94

Mădălina-Elena RISTEA Cecilia BUCUR, Mioara COSTACHE, Otilia ZĂRNESCU - A comparative study of granular leukocyte morphology and cytochemistry of five species of Teleost 95

Ioana Patricia RÎUREAN, Otilia ZĂRNESCU - Comparative aspects of embryonic development of *Gallus domesticus in ovo* and *ex ovo* *96*

Taxonomy. Faunistics. Zoogeography

Victor SÎTNIC - Using R language and Bioclim algorithm for Species Distribution Modelling 97

Victor SURUGIU, Oana Paula POPA, Andrei ŞTEFAN, Luis Ovidiu POPA - Morphological and molecular characterization of *Scolelepis* (*Scolelepis*) *neglecta* (Polychaeta: Spionidae) 98

Amir Hossein EGHBALIAN, Reza ATTARI - Faunistic study of bdelloid mites (Acari: Trombidiformes) from Tuyserkan region, Western Iran 99

Farshad MASOUDIAN, Mohammad KHANJANI, Bahman ASALI FAYAZ - Faunistic study of the genus *Tyrophagus* (Acari: Acaridae) from Hamedan region, Western Iran 100

Ştefan Cătălin BABA, Andrei GIURGINCA, Dumitru MURARIU - The Oniscidea, Diplopoda, Chilopoda and Symphyla of the Putna-Vrancea Natural Park (Vrancea Mountains, Romania) 101

Constanța Mihaela ION, Ioana COBZARU, Dumitru MURARIU - Records on the centipede fauna (Myriapoda: Chilopoda) from "Scrovistea" Natura 2000 site (ROSCI0224, Romania) 102

George POPOVICI, Ana Alexandra STRATAN - *Clinopodes intermedius* (Dărăbanţu & Matic, 1969): the first description of a male and a new locality in Romania (Geophilomorpha: Geophilidae) 103

Ionuț Ștefan IORGU, Elena Iulia IORGU, Tiberiu C. SAHLEAN - Using environmental niche modeling to uncover new search sites for the grasshopper *Epacromius coerulipes* in a poorly understood area within its distribution range (Romania) 104

Livia CALESTRU, Svetlana BACAL, Elena BABAN - Contributions to the knowledge of beetles (Insecta: Coleoptera) from the northern area of the Republic of Moldova 105

Ioan-Alexandru RĂDAC, Alexandru-Mihai PINTILIOAIE - Three new beetle species (Coleoptera: Bruchinae, Dytiscinae, Lixinae) for Romanian fauna 106

Andreea-Cătălina DRĂGHICI, Cosmin-Ovidiu MANCI, Gabriela CUZEPAN-BEBEȘELEA, Cornelia CHIMIȘLIU, Adrian RUICĂNESCU - Data on the distribution of *Onthophagus (Paleonthophagus) vacca* (Linnaeus, 1767) and *O. (P.) medius* (Kugelann, 1792) (Coleoptera: Scarabaeidae, Scarabaeinae) in Romania 107

Nino GABROSHVILI, Nana BAKHTADZE - Leaf beetles (Coleoptera: Chrysomelidae) of Algeti National Park (Georgia, the Caucasus) 108

Sergiu-Cornel TÖRÖK, Andreea BOCIOACĂ, Mădălin POPESCU, Ioan TĂUȘAN - The day-flying Lepidoptera from SCI0004 Băgău protected site (Alba County, Romania) 109

Tatiana ȘULEȘCO, Alexei KHALIN, Ion TODERAȘ - First record of *Culex martinii* in the Republic of Moldova 110

Ionela SLEJIUC, Ștefan POPA, Milca PETROVICI - Distribution of amphibians in Timiș County (West Romania) 111

Tudor COZARI, Elena GHERASIM - The reproduction of the green frogs *Rana ridibunda* Pallas, 1771 and *Rana lessonae* Camerano, 1882 in the Codrii Centrali ecosystems of the Republic of Moldova 112

Raluca MELENCIUC, Alexandru STRUGARIU, Ștefan R. ZAMFIRESCU, Iulian GHERGHEL - Geographic patterns and environmental determinants of color polymorphism in the Grass snake (*Natrix natrix*) populations from Eastern and Southern Romania 113

Denisa-Paula KALISCH, Alexandru LAPOȘI, Alexandru Nicolae STERMIN - Long term study on monitoring the Grey Heron (*Ardea cinerea*) colony from Bavna Forest (N-W, Romania) 114

Andrei GIURGINCA - The Eastern Imperial Eagle (*Aquila heliaca* Savigny, 1809) and the Saker Falcon (*Falco cherrug* Gray, 1834) in Bucharest 115

Ecology

Manuela Diana SAMARGIU, Andreea RĂDULESCU, Daciana SAVA - Invertebrate fauna associated with macrophytes algae on the rocky faces of the Romanian littoral 116

Alexandra TELEA, Theodor-Sebastian TOPLICEANU, Dragoș BĂLĂȘOIU, Robert ȘERBAN, Dan COGĂLNICEANU - Species diversity in quarries - a study case from Iglicioara Quarry, Romania 117

Joanne M. BENNETT, Amibeth THOMPSON, Irina GOIA, Reinart FELDMANN, Valentin ȘTEFAN, Ana BOGDAN, Demetra RAKOSY, Mirela BELOIU, Inge-Beatrice BIRO, Simon BLUEMEL, Milena FILIP, Anna-Maria MADAJ, Alina MARTIN, Sarah PASSONNEAU, Denisa-Paula KALISCH, Gwydion SCHERER, Tiffany M. KNIGHT - Knowledge gaps in plant pollinator interactions and pollen supplementation experiments: a Romanian case study 118

Cristian SITAR, Dragomir-Cosmin DAVID, Geanina Magdalena IACOB, Angela Monica IONICĂ, László RÁKOSY - Oviposition strategies of the threatened moth *Eriogaster catax* and its sister species *Eriogaster lanestris* (Lepidoptera, Lasiocampidae) – a comparative approach 120

Marius SKOLKA - *Leptotes pirithous* is back again: Mediterranean species versus harsh winters 121

Kamal Khan ABRO, Nasreen MEMON, Attaullah ANSARI - Ecology and population dynamics of aphidophagous hoverflies (Diptera: Syrphidae: Syrphini) in Sindh, Pakistan 122

Lavinia IANCU, Emily JUNKINS, Cristina PURCĂREA - New record of *Conicera similis* Haliday (Diptera: Phoridae) in Romania and microbiome characterization 123

Manuela Diana SAMARGIU, Alexandra Gabriela DIMA, Dorel URECHE - New data regarding the trophic structure of ichthyofauna in the lower course of Bistrița River, upstream and downstream Bacău city 125

Dorel URECHE, Camelia URECHE - Study on fish communities in Siret River (Romania), and some of its tributaries (Roman - Bacău section, 2012-2016) 126

Abdelaziz MOUNIR, Hayat ELMGHAZLI, Mohammed ZNARI, Mohamed NAIMI - Inter-population variation in the spring diet, body condition and sexual status in the European Pilchard, *Sardina pilchardus* (Teleosts: Clupeidae) from the Atlantic Moroccan coast 127

Simeon LUKANOV - Effect of traffic noise on chorus performance in the Marsh frog, *Pelophylax ridibundus* (Pallas, 1771) 128

Sabina OCHIANĂ, Ruben IOSIF, Dan COGĂLNICEANU - Demography of a Spur-thighed tortoise population (*Testudo graeca*) inhabiting a human modified habitat in south-eastern Romania 129

Tiberiu C. SAHLEAN, Alexandru STRUGARIU - Observations on the reproductive biology of the Caspian whip snake (*Dolichophis caspius* Gmelin, 1789) in Romania 130

Alexandru STRUGARIU, Paul C. DINCĂ, Ștefan R. ZAMFIRESCU - Deliberate tail loss (pseudoautotomy) in a viperid snake 131

Safaa BENDAMI, Mohammed ZNARI, Soumia LOULIDA, Mohamed NAIMI - Estimating total and specific food consumption in the Moroccan Spiny-tailed lizard (Sauria: Agamidae) using feces calibration and microhistogical analysis methods 132

Valentin Adrian KISS, Liviu Răzvan PRIPON - A bully or a pretender? The impact of Eurasian coot (*Fulica atra* Linnaeus, 1758) on the avifauna structure at Câmpenești wetlands 133

Liviu Răzvan PRIPON, Valentin Adrian KISS - Where do herons prefer to feed when an easy meal is available? Preferences in site selection of the Grey Heron (*Ardea cinerea* Linnaeus 1758) at Câmpenești Fishing Complex (Transylvania, Romania) 134

Gabriel BĂNICĂ - Collared dove (*Streptopelia decaocto*) – survival strategies 135

Vasile ALEXE, Alexandru Cătălin DOROȘENCU, Mihai MARINOV, Janos Botond KISS, Lucian-Eugen BOLBOACĂ, Attila David SÁNDOR, Dumitru MURARIU - Preliminary data regarding spatial distribution and nesting of the White-tailed Eagle (Aves: *Haliaeetus albicilla* Linnaeus 1758) in the Danube Delta Biosphere Reserve and its surroundings in 2018 (Romania) 137

Edoardo VERNIER, Bronisław W. WOŁOSZYN - Observations on the first known colony of *Myotis bechsteinii* (Mammalia: Chiroptera) of the Region Veneto (N.E. Italy) ..... 137 bis

Kseniia KRAVCHENKO, Viktor KOVALOV, Olha TIMOFIEIEVA, Olena RODENKO, Anton VLASCHENKO - Places of pre-hibernation foraging activity of *Nyctalus noctula* (Vespertilionidae, Chiroptera) in Eastern Ukraine 138

Natalia CARAMAN, Victoria NISTREANU - Behavior of *Apodemus flavicollis* and *Apodemus sylvaticus* from urban ecosystems of Chișinău city, Republic of Moldova 139

Nelli CEMÎRTAN, Andrei MUNTEANU, Victoria NISTREANU - Some aspects of *Apodemus sylvaticus* (Linnaeus, 1758) behavior in the ecotonic community of mouse-like rodents of Moldova 140

Viorel Dumitru GAVRIL, Roxana Georgiana NICOARĂ, Gabriel Bogdan CHIȘAMERA, Ioana COBZARU, Tiberiu C. SAHLEAN, Dumitru MURARIU - Preliminary data on the diet of Romanian hamster *Mesocricetus newtoni* (Rodentia: Cricetidae) 141

Ionela SLEJIUC, Ioan-Alexandru RĂDAC, Eliana SEVIANU - Road mortality on *Muscardinus avellanarius* *143*

Romulus-Marian PAIU, Mihaela MIREA CÂNDEA, Angelica PAIU, Anca-Maria GHEORGHE - New data on the abundance and distribution of the Black Sea dolphins and porpoises (Cetaceea: Delphinidae; Phocoenidae) from the Romanian territorial waters 144

Invasive species

Teodora TRICHKOVA, Ivan BOTEV, Dimitar KOZUHAROV, Zdravko HUBENOV - Classification of the inland water bodies in Bulgaria based on the risk of invasion by *Dreissena polymorpha*, using GIS 145

Ion TODERAȘ, Elena IURCU-STRĂISTARU, Ștefan RUSU, Alexei BIVOL, Maria MELNIC, Olesea GLICA, Ion GOLOGAN - Helmintological investigations on phytonematode complexes formatory of cysts (*Heterodera schachtii*, Schmidt 1871) in sugar beet culture in the conditions of the Republic of Moldova 146

Marius SKOLKA, Daniyar MEMEDEMIN - New data on *Corythucha* species in Romania 147

Marius SKOLKA - *Sceliphron caementarium* in Dobrogea 148

Camelia URECHE, Dorel URECHE - *Holocacista rivillei* (Stainton, 1855) (Lepidoptera: Heliozelidae) is expanding its distribution area 149

Nina FULGA, Ion TODERAȘ - Biological characteristics of sexually mature females of Bighead goby *Neogobius kessleri* (Gunter, 1861) from the Lower Dniester 150

Parasitism in the animal kingdom

Angel-Gabriel IRIMIA - Helminths found in the gastrointestinal tract of waterfowls from Latvia 151

Palaeontology

Sabrina Mihaela VOICU, Ștefan VASILE, Zoltán CSIKI-SAVA - The Cretaceous Swamp just gets bigger: new data on the faunal composition of the Pui Swamp microvertebrate bonebed, Maastrichtian of the Haţeg Basin 152

Ștefan VASILE, Marton VENCZEL, Alexandru PETCULESCU - Early Pleistocene amphibians from Copăceni (Dacian Basin, southern Romania) 154

Maria-Raluca VĂCĂRESCU, Zoltán CSIKI-SAVA, Mădălina BUCUR, Alexandra ROMAN, Ștefan VASILE - Theropod dental diversity in the Maastrichtian of the Haţeg Basin, Romania 156

Maria Iulia SASU, Radu Ștefan PANĂ - The restoration of a fossil woolly rhino skull 157

Biodiversity Conservation

Galina BUȘMACHIU, Victoria NISTREANU, Vladimir ȚURCAN - Rare and threatened animal species from Landscape Reserve Dobruşa, Republic of Moldova 158

Mădălin POPESCU, Sergiu-Cornel TÖRÖK, Ioan TĂUȘAN - Natura 2000 insect species of the Băgău Protected Area (ROSCI0004) in Alba County (Transylvania, Romania) 159

Elena Iulia IORGU, Oana Paula POPA, Luis Ovidiu POPA, Ionuț Ștefan IORGU - Premiminary data on the genetic variability in populations of *Pholidoptera transsylvanica* in a protected area from Romania 160

Alexandra Florina POPA, Elena Iulia IORGU, Ana-Maria KRAPAL, Andreea-Maria BREZEANU, Andrei ȘTEFAN, Ana Alexandra STRATAN, Mara DINU, Tudor COTEȚ, Marieta COSTACHE, Luis Ovidiu POPA - New data about genetic diversity of *Lucanus cervus* in Europe 161

Piotr ARICOV, Galina CURCUBET, Tamara GREC - Experience of cultivation of three-year-old Grass Carps in a polyculture for combating plant overgrowth in water bodies 163

Galina CURCUBET, Vasili DOMANCIUC - The development and implementation of the genetic methods for the carp's infectious diseases prevention in Moldova 164

Vasili DOMANCIUC, Galina CURCUBET - Creating of a new line of Moldovan mirror carp 165

Elena BUHACIUC-IONIȚĂ, Marin IONIȚĂ, Mihaela CAPLAN, Alexandru CORNEL - The ornitofauna of "Magurile Baitei" Natural Reserve, Deva, Romania. Threats and trends. 166

Răzvan ZAHARIA, Cătălin Răzvan STANCIU, Tiberiu C. SAHLEAN - Influence of wind turbines on the bird fauna from two wind farms in south-eastern Romania 167

Lucian FASOLĂ-MĂTĂSARU, Constantin ION - Colonial nesting of Ardeidae and Threskiornithidae (Pelecaniformes) species in Eastern Romania 168

Flaviu BODEA, Szilárd-Lehel BÜCS - The chiropterofauna of the Natura 2000 site ROSCI0074 Făgetul Clujului - Valea Morii (Romania) 169

Abidi SOUROUR, Arfaoui HAYFA, Mezni MEJID, Ben Salem HICHEM - Replacement of soybean meal with lupine in the Barbarins lamb diet: effect on intake, digestion, blood metabolites and growth 170

Author's index 171

CZGA 2018 PROGRAMME

WEDNESDAY, THE 21st OF NOVEMBER 2018

09:00-12:00
Registration

09:00-09:10
Luis Ovidiu POPA - Welcome and Greetings on behalf of the "Grigore Antipa" National Museum of Natural History

09:10-09:20
Dumitru MURARIU - Welcome and Greetings on behalf of the Romanian Academy

Invited speakers

09:20-10:05
Philippe GRANDCOLAS - The role of natural history and systematics in the age of biodiversity crisis

10:05-10:50
Zoltán LÁSZLÓ - Holarctic rose galls: what has been overlooked until now?

10:50-11:20
Coffee break

Taxonomy. Faunistics. Zoogeography I

Chair: Victor SURUGIU (Iași, Romania)

11:20-11:35
Ionuț Ștefan IORGU, Elena Iulia IORGU, Dragan CHOBANOV - The Orthoptera of Dobrogea. The Atlas

11:35-11:50
Cosmin-Ovidiu MANCI, Ioan-Alexandru RĂDAC - Contributions to the knowledge of planthoppers and spittlebugs of Romania, with two new records for Romanian fauna

11:50-12:05
Alexandra Florina POPA, Irinel Eugen POPESCU - First record in Romania of the genus *Isodontia* with *Isodontia mexicana* (Hymenoptera: Sphecidae)

12:05-12:20
Irinel Eugen POPESCU, Irina Neta GOSTIN - First record of Torymidae family (Insecta: Hymenoptera: Chalcidoidea) from the Maldives Archipelago

12:20-12:35
Ioan TĂUȘAN, Balint MARKÓ - Ants (Hymenoptera: Formicidae) of Dobrogea (Romania) – an updated checklist

12:35-12:50
Natalia MUNTEANU-MOLOTIEVSKIY, Ion TODERAȘ, Anna MOLDOVAN, Nicola SASANELLI, Elena IURCU-STRĂISTARU - A review on insect pests of tomato crop in the Republic of Moldova

12:50-13:05
Iulian GHERGHEL, Ryan Andrew MARTIN - Postglacial recolonization of North America: integrating niche models and corridor modeling to study species' range dynamics over geologic time

13:05-14:05
Lunch Break

Workshop on Current challenges in Natural History Museums against natural disasters

14:05-14:35
Daisuke KUDO - How to protect the museum collections. Innovative solutions against earthquakes

14:35-15:05
Nina BOGUTSKAYA - Massive loss of types, availability vs. publication in the electronic era: new challenges to zoological nomenclature

Invited speaker

15:05-15:50
Octavian BUDA - Romanians and Cell biology: Dimitrie Voinov (1867-1951), founder of cytology in Romania

Taxonomy. Faunistics. Zoogeography II

Chair: Marius SKOLKA (Constanța, Romania)

15:50-16:05
Larisa PLOP - Reproductive behaviour of *Triturus vulgaris* L. (Amphibia, Caudata) in Central Forest (Republic of Moldova)

16:05-16:20
Bronisław W. WOŁOSZYN, Dumitru MURARIU - Biogeography and biodiversity of bat fauna in the Carpathian Mountains

16:20-16:35
Derya ÇETINTÜRK, Nuri YIĞIT, Ercüment COLAK, Georgi MARKOV, Duško ĆIROVIĆ, Mihály MÁRTON - On the sequence variations of mitochondrial COI gene in *Microtus arvalis* (Pallas, 1778)

Invasive species

Chair: Marius SKOLKA (Constanța, Romania)

16:35-16:50
Elena BUHACIUC-IONIȚĂ, Marin IONIȚĂ - New data on the distribution of the oak lace bug *Corythucha arcuata* (Say, 1832) (Hemiptera: Tingidae) in Romania

16:50-17:05
Octavian PACIOGLU, Kathrin THEISSINGER, Andreea ALEXA, Corina SAMOILĂ, Ovidiu-Ioan ȘÎRBU, Anne SCHRIMPF, Jochen P. ZUBROD, Ralf SCHULZ, Mălina PÎRVU, Sandra-Florina LELE, John Iwan JONES, Lucian PÂRVULESCU - Multifaceted implications of the competition between the native crayfish *Astacus leptodactylus* and the invasive *Orconectes limosus* in the Lower Danube: a glimmer of hope for the native's long-term survival

17:05-18:05
Coffee, Tea and Posters

18:30-20:00
Official Opening of the Exhibition "100 Years of Zoology in Romania - memories of the future" - at the "Grigore Antipa" National Museum of Natural History

THURSDAY, THE 22nd OF NOVEMBER 2018

09:00-10:00
Registration

Invited speaker

10:00-10:45
Jörundur SVAVARSSON - Species distributions of marine benthic invertebrates at the northernmost North Atlantic Ocean – are these shaped by the extensive Greenland, Iceland, Faeroe Ridge?

10:45-11:15
Coffee break

Invited speaker

11:15-12:00
Nina BOGUTSKAYA, Oleg A. DIRIPASKO, Dusan JELIĆ, Tihomir STEFANOV - New insights into morphology, phylogeny, taxonomy, and systematics of the European *Phoxinus* species complex

Ecology I

Chair: Dumitru MURARIU (Bucharest, Romania)

12:00-12:15
Raluca Ioana BĂNCILĂ, Rodica PLĂIAȘU, Andrei GIURGINCA, Ioana NAE, Ștefan Cătălin BABA, Augustin NAE - Best sampling techniques for examining the terrestrial cave-dwelling invertebrate communities

12:15-12:30
Voichița GHEOCA, Ana Maria BENEDEK, Erika SCHNEIDER - Can land snail assemblages act as bioindicators of riparian forest quality?

12:30-12:45
Mohammad AHMAD-HOSSEINI, Mohammad KHANJANI - Resistance of commercial walnut cultivars and genotypes to *Aceria tristriatus* (Nalepa)

12:45-13:00
Minodora MANU, Raluca Ioana BĂNCILĂ, Marilena ONETE - Soil predator mites (Acari: Mesostigmata) from different types of moss habitats, in Romania

13:00-13:15
Mircea VARVARA, Zaharia NECULIŞEANU - Distribution, numerical abundance (A) and dominance (D) of *Calathus* (*Dolichus*) *halensis* (Schall.) in the investigated agricultural ecosystems, in Romania (1981-2001) and the Republic of Moldova (1985-1998)

13:15-13:30
Orhan IBRAM, Gabriel LUPU, Dan COGĂLNICEANU - Long term changes of Chironomidae fauna from the Danube Delta

13:30-14:30
Lunch Break

Invited speakers

14:30-15:15
Mol DICK - The Yukagir Mammoth

Palaeontology

Chair: Dumitru MURARIU (Bucharest, Romania)

15:15-15:30
Lea RAUSCH, Hülya ALÇIÇEK, Amelie VIALET, Nicolas BOULBES, Serdar MAYDA, Vadim V. TITOV, Marius STOICA, Sylvain CHARBONIER, Yeşim BÜYÜKMERIÇ, Hemmo ABELS, Alexey S. TESAKOV, Anne-Marie MOIGNE, Frank P. WESSELINGH, M. Cihat ALÇIÇEK - *Homo erectus* paleoenvironments in the early Pleistocene Denizli Basin: an integrated paleontological, sedimentological and geochemical approach

Ecology II

Chair: Marius SKOLKA (Constanța, Romania)

15:30-16:45
Angela CURTEAN-BĂNĂDUC, Michael JOY, Horea OLOSUTEAN, Sergey AFANASYEV, Doru BĂNĂDUC - Lower Danube inland bodies of water fragmentation for fish in a potential future climate variation sequence of events

15:45-16:00
Mohamed NAIMI, Soufiane TAKI, Hassan BENAISSA, Elisabeth BERGER, Soumia LOULIDA, Mohamed GHAMIZI, Mohammed ZNARI - Food habitats of the Lepiney's Barbel (*Luciobarbus lepineyi*) (Teleosts: Cyprinidae) in the Draa valley, Southeast Morocco: impact of water salinisation

16:00-16:15
Alexandru STRUGARIU, Ryan Andrew MARTIN - Does the type of competition matter in disruptive selection?

16:15-16:30
Iulian GHERGHEL, Francois BRISCHOUX, Monica PAPES - Disentangling the effects of dispersal, niche and biotic interactions in shaping species distributions of amphibious marine snakes (Reptilia: Laticauda)

16:30-16:45
Lidia E. YALKOVSKAYA, Evgenia MARKOVA, Sergey ZYKOV, Petr SIBIRYAKOV - Chromosomal instability in the common vole *Microtus arvalis,* obscurus karyotypic form (Rodentia, Arvicolinae) in the north-east of European Russia: exploring the causes of a rare mutant karyotype appearance

16:45-17:00
Zbigniew BOROWSKI, Adam WÓJCICKI, Andżelika HAJDT, Lidia E. YALKOVSKAYA - The importance of apex predators for forest ecosystem – an example of the wolf

17:00-18:00
Coffee, Tea and Posters

FRIDAY, THE 23rd OF NOVEMBER 2018

09:00-10:00
Registration

Invited speaker

10:00-10:45
Sergey V. MIRONOV, Pavel B. KLIMOV, Barry M. OCONNOR - Phylogeography, codispersals and host shifts in proctophyllodid feather mites (Astigmata: Proctophyllodidae) associated with passerines (Aves: Passeriformes)

10:45-11:15
Coffee break

Invited speaker

11:15-12:00
Andrei Daniel MIHALCA, Angela Monica IONICĂ, Georgiana DEAK, Călin Mircea GHERMAN - Vector-borne and snail-borne nematodes of carnivores: new insights into their ecology and taxonomy

Parasitism in the animal kingdom

Chair: Andrei Daniel MIHALCA (Cluj-Napoca, Romania)

12:15-12:30
Lela ARABULI - Parasitological research of terrestrial mollusks in Samegrelo region of west Georgia

Systematics and Evolutionism

Chair: Andrei Daniel MIHALCA (Cluj-Napoca, Romania)

12:30-12:45
Ioana Cristina CONSTANTINESCU, Oana Paula POPA, Luis Ovidiu POPA, Ioana COBZARU, D. Khlur B. MUKHIM, Rozalia MOTOC, Costică ADAM - Two new feather mite species of the genus *Montesauria* Oudemans (Analgoidea: Proctophyllodidae) from thrushes (Passeriformes: Turdidae) in the Indian Subcontinent

12:45-13:00
Lucian PÂRVULESCU, Jorge L. PÉREZ-MORENO, Cristian PANAIOTU, Lucian DRĂGUȚ, Anne SCHRIMPF, Ioana-Diana POPOVICI, Claudia ZAHARIA, András WEIPERTH, Blanka GÁL, Christoph D. SCHUBART, Heather BRACKEN-GRISSOM - A journey on plate tectonics sheds light on European crayfish phylogeography

13:00-13:15
Simeon BORISSOV, Dragan CHOBANOV - Phylogenetic reconstructions of closely related species groups of the genus *Poecilimon* (Insecta: Orthoptera) from the Balkans, Anatolia and Crete

13:15-13:30
Mohamed NAIMI, Mohammed ZNARI, Soumia LOULIDA, Guillermo VELO-ANTON, Uwe FRITZ - Morphometric and phylogeographic differentiation of the Mediterranean Pond Turtle, *Mauremys leprosa* (Schweigger, 1812) (Testudines: Geoemydidae): putative subspecies vs. evolutionary lineages / sub-lineages in Morocco

13:30-14:30
Lunch Break

Invited speaker

14:30-15:15
Serge UTEVSKY - Species concepts and species histories in leeches (Annelida: Hirudinida)

Biodiversity Conservation

Chair: Luis Ovidiu POPA (Bucharest, Romania)

15:15-15:30
Marius SKOLKA, Adrian TEACĂ, Tatiana BEGUN, Mihaela MUREȘAN, Victor SURUGIU - Marine species in the Romanian Red Data Book of Invertebrates

15:30-15:45
Marius SKOLKA - Rare species - how endangered are they? Butterflies from Dobrogea case study

15:45-16:00
Tibor-Csaba VIZAUER, Ágnes KASTAL, Jacqueline LOOS, Matthias DOLEK, László RÁKOSY - About the critically endangered butterfly *Colias*

myrmidone and one of its last refuges in the European Union in Transylvania (Romania)

16:00-16:15
Simona MIHĂILESCU, Iuliana Florentina GHEORGHE, Cristina Alina DUMITRACHE, Cristina SANDU - Managing and restoring aquatic EcologicAl corridors for migratory fiSh species in the danUbe RivEr baSin – MEASURES Project in Romania

16:15-16:30
Marian TUDOR, Alexandra TELEA, Costin TIMOFTE - New data regarding the trophic spectrum of the Large Whip Snake (*Dolichophis caspius*) in Dobrudja, Romania

16:30-16:45
Andreea CIOBOTĂ, Cristina-Andrea STAICU, Mihaela CIOBOTĂ, Dumitru MURARIU - Territoriality song in Blackbirds (*Turdus merula*) – a potential bioindicator of noise disturbance levels in urban parks

16:45-17:00
Victoria NISTREANU - Actual status of *Neomys* species in the Republic of Moldova

17:00-17:45
Coffee, Tea and Posters

18:00-19:30
Visit of the permanent exhibition of "Grigore Antipa" National Museum of Natural History

19:30-20:00
Poster Awards

20:00-22:00
Gala Dinner

SATURDAY, THE 24th OF NOVEMBER 2018

Whole day excursion to Ghimpați Pheasantry and Albele Forest

Poster Presentations

Taxonomy. Faunistics. Zoogeography

P 01.
Victor SÎTNIC - Using R language and Bioclim algorithm for Species Distribution Modelling

P 02.
Victor SURUGIU, Oana Paula POPA, Andrei ŞTEFAN, Luis Ovidiu POPA - Morphological and molecular characterization of *Scolelepis* (*Scolelepis*) *neglecta* (Polychaeta: Spionidae)

P 03.
Amir Hossein EGHBALIAN, Reza ATTARI - Faunistic study of bdelloid mites (Acari: Trombidiformes) from Tuyserkan region, Western Iran

P 04.
Farshad MASOUDIAN, Mohammad KHANJANI, Bahman ASALI FAYAZ - Faunistic study of the genus *Tyrophagus* (Acari: Acaridae) from Hamedan region, Western Iran

P 05.
Ştefan Cătălin BABA, Andrei GIURGINCA, Dumitru MURARIU - The Oniscidea, Diplopoda, Chilopoda and Symphyla of the Putna-Vrancea Natural Park (Vrancea Mountains, Romania)

P 06.
Constanţa Mihaela ION, Ioana COBZARU, Dumitru MURARIU - Records on the centipede fauna (Myriapoda: Chilopoda) from "Scrovistea" Natura 2000 site (ROSCI0224, Romania)

P 07.
George POPOVICI, Ana Alexandra STRATAN - *Clinopodes intermedius* (Dărăbanţu & Matic, 1969): the first description of a male and a new locality in Romania (Geophilomorpha: Geophilidae)

P 08.
Ionuț Ștefan IORGU, Elena Iulia IORGU, Tiberiu C. SAHLEAN - Using environmental niche modeling to uncover new search sites for the grasshopper *Epacromius coerulipes* in a poorly understood area within its distribution range (Romania)

P 09.
Livia CALESTRU, Svetlana BACAL, Elena BABAN - Contributions to the knowledge of beetles (Insecta: Coleoptera) from the northern area of the Republic of Moldova

P 10.
Ioan-Alexandru RĂDAC, Alexandru-Mihai PINTILIOAIE - Three new beetle species (Coleoptera: Bruchinae, Dytiscinae, Lixinae) for Romanian fauna

P 11.
Andreea-Cătălina DRĂGHICI, Cosmin-Ovidiu MANCI, Gabriela CUZEPAN-BEBEŞELEA, Cornelia CHIMIŞLIU, Adrian RUICĂNESCU - Data on the distribution of *Onthophagus* (*Paleonthophagus*) *vacca* (Linnaeus, 1767) and *O.* (*P.*) *medius* (Kugelann, 1792) (Coleoptera: Scarabaeidae, Scarabaeinae) in Romania

P 12
Nino GABROSHVILI, Nana BAKHTADZE - Leaf beetles (Coleoptera: Chrysomelidae) of Algeti National Park (Georgia, the Caucasus)

P 13.
Sergiu-Cornel TÖRÖK, Andreea BOCIOACĂ, Mădălin POPESCU, Ioan TĂUȘAN - The day-flying Lepidoptera from SCI0004 Băgău protected site (Alba County, Romania)

P 14.
Tatiana ȘULEȘCO, Alexei KHALIN, Ion TODERAȘ - First record of *Culex martinii* in the Republic of Moldova

P 15.
Ionela SLEJIUC, Ștefan POPA, Milca PETROVICI - Distribution of amphibians in Timiș County (West Romania)

P 16.
Tudor COZARI, Elena GHERASIM - The reproduction of the green frogs *Rana ridibunda* Pallas, 1771 and *Rana lessonae* Camerano, 1882 in the Codrii Centrali ecosystems of the Republic of Moldova

P 17.
Raluca MELENCIUC, Alexandru STRUGARIU, Ștefan R. ZAMFIRESCU, Iulian GHERGHEL - Geographic patterns and environmental determinants of color polymorphism in the Grass snake (*Natrix natrix*) populations from Eastern and Southern Romania

P 18.
Denisa-Paula KALISCH, Alexandru LAPOȘI, Alexandru Nicolae STERMIN - Long therm study on monitoring the Grey Heron (*Ardea cinerea*) colony from Bavna Forest (N-W, Romania)

P 19.
Andrei GIURGINCA - The Eastern Imperial Eagle (*Aquila heliaca* Savigny, 1809) and the Saker Falcon (*Falco cherrug* Gray, 1834) in Bucharest

Invasive species

P 20.
Teodora TRICHKOVA, Ivan BOTEV, Dimitar KOZUHAROV, Zdravko HUBENOV - Classification of the inland water bodies in Bulgaria based on the risk of invasion by *Dreissena polymorpha*, using GIS

P 21.
Ion TODERAȘ, Elena IURCU-STRĂISTARU, Ștefan RUSU, Alexei BIVOL, Maria MELNIC, Olesea GLIGA, Ion GOLOGAN - Helmintological investigations on phytonematode complexes formatory of cysts (*Heterodera schachtii*, Schmidt 1871) in sugar beet culture in the conditions of the Republic of Moldova

P 22.
Marius SKOLKA, Daniyar MEMEDEMIN - New data on *Corythucha* species in Romania

P 23.
Marius SKOLKA - *Sceliphron caementarium* in Dobrogea

P 24.
Camelia URECHE, Dorel URECHE - *Holocacista rivillei* (Stainton, 1855) (Lepidoptera: Heliozelidae) is expanding its distribution area

P 25.
Nina FULGA, Ion TODERAȘ - Biological characteristics of sexually mature females of Bighead goby *Neogobius kessleri* (Gunter, 1861) from the Lower Dniester

Ecology

P 26.
Manuela Diana SAMARGIU, Andreea RĂDULESCU, Daciana SAVA - Invertebrate fauna associated with macrophytes algae on the rocky faces of the Romanian littoral

P 27.
Alexandra TELEA, Theodor-Sebastian TOPLICEANU, Dragoș BĂLĂȘOIU, Robert ȘERBAN, Dan COGĂLNICEANU - Species diversity in quarries - a study case from Iglicioara Quarry, Romania

P 28.
Joanne M. BENNETT, Amibeth THOMPSON, Irina GOIA, Reinart FELDMANN, Valentin ȘTEFAN, Ana BOGDAN, Demetra RAKOSY, Mirela BELOIU, Inge-Beatrice BIRO, Simon BLUEMEL, Milena FILIP, Anna-Maria MADAJ, Alina MARTIN, Sarah PASSONNEAU, Denisa-Paula KALISCH, Gwydion SCHERER, Tiffany M. KNIGHT - Knowledge gaps in plant pollinator interactions and pollen supplementation experiments: a Romanian case study

P 29.
Cristian SITAR, Dragomir-Cosmin DAVID, Geanina Magdalena IACOB, Angela Monica IONICĂ, László RÁKOSY - Oviposition strategies of the threatened moth *Eriogaster catax* and its sister species *Eriogaster lanestris* (Lepidoptera, Lasiocampidae) – a comparative approach

P 30.
Marius SKOLKA - *Leptotes pirithous* is back again: Mediteraneean species versus harsh winters

P 31.
Kamal Khan ABRO, Nasreen MEMON, Attaullah ANSARI - Ecology and population dynamics of aphidophagous hoverflies (Diptera: Syrphidae: Syrphini) in Sindh, Pakistan

P 32.
Lavinia IANCU, Emily JUNKINS, Cristina PURCĂREA - New record of *Conicera similis* Haliday (Diptera: Phoridae) in Romania and microbiome characterization

P 33.
Manuela Diana SAMARGIU, Alexandra Gabriela DIMA, Dorel URECHE - New data regarding the trophic structure of ichthyofauna in the lower course of Bistriţa River, upstream and downstream Bacău city

P 34.
Dorel URECHE, Camelia URECHE - Study on fish communities in Siret River (Romania), and some of its tributaries (Roman - Bacău section, 2012-2016)

P 35.
Abdelaziz MOUNIR, Hayat ELMGHAZLI, Mohammed ZNARI, Mohamed NAIMI - Inter-population variation in the spring diet, body condition and sexual status in the European Pilchard, *Sardina pilchardus* (Teleosts: Clupeidae) from the Atlantic Moroccan coast

P 36.
Simeon LUKANOV - Effect of traffic noise on chorus performance in the Marsh frog, *Pelophylax ridibundus* (Pallas, 1771)

P 37.
Sabina OCHIANĂ, Ruben IOSIF, Dan COGĂLNICEANU - Demography of a Spur-thighed tortoise population (*Testudo graeca*) inhabiting a human modified habitat in south-eastern Romania

P 38.
Tiberiu C. SAHLEAN, Alexandru STRUGARIU - Observations on the reproductive biology of the Caspian whip snake (*Dolichophis caspius* Gmelin, 1789) in Romania

P 39.
Alexandru STRUGARIU, Paul C. DINCĂ, Ştefan R. ZAMFIRESCU - Deliberate tail loss (pseudoautotomy) in a viperid snake

P 40.
Safaa BENDAMI, Mohammed ZNARI, Soumia LOULIDA, Mohamed NAIMI - Estimating total and specific food consumption in the Moroccan Spiny-tailed lizard (Sauria: Agamidae) using feces calibration and microhistogical analysis methods

P 41.
Valentin Adrian KISS, Liviu Răzvan PRIPON - A bully or a pretender? The impact of Eurasian coot (*Fulica atra* Linnaeus 1758) on the avifauna structure at Câmpeneşti wetlands

P 42.
Liviu Răzvan PRIPON, Valentin Adrian KISS - Where do herons prefer to feed when an easy meal is available? Preferences in site selection of the Grey Heron (*Ardea cinerea* Linnaeus 1758) at Câmpeneşti Fishing Complex (Transylvania, Romania)

P 43.
Gabriel BĂNICĂ - Collared dove (*Streptopelia decaocto*) – Survival strategies

P 44.
Vasile ALEXE, Alexandru Cătălin DOROŞENCU, Mihai MARINOV, Janos Botond KISS, Lucian-Eugen BOLBOACĂ, Attila David SÁNDOR, Dumitru MURARIU - Preliminary data regarding spatial distribution and nesting of the White-tailed Eagle (Aves: *Haliaeetus albicilla* Linnaeus 1758) in the Danube Delta Biosphere Reserve and its surroundings in 2018 (Romania)

P 44 bis.
Edoardo VERNIER, Bronisław W. WOŁOSZYN - Observations on the first known colony of *Myotis bechsteinii* (Mammalia: Chiroptera) of the Region Veneto (N.E. Italy)

P 45.
Kseniia KRAVCHENKO, Viktor KOVALOV, Olha TIMOFIEIEVA, Olena RODENKO, Anton VLASCHENKO - Places of pre-hibernation foraging activity of *Nyctalus noctula* (Vespertilionidae, Chiroptera) in Eastern Ukraine

P 46.
Natalia CARAMAN, Victoria NISTREANU - Behavior of *Apodemus flavicollis* and *Apodemus sylvaticus* from urban ecosystems of Chișinău city, Republic of Moldova

P 47.
Nelli CEMÎRTAN, Andrei MUNTEANU, Victoria NISTREANU - Some aspects of *Apodemus sylvaticus* (Linnaeus, 1758) behavior in the ecotonic community of mouse-like rodents of Moldova

P 48.
Viorel Dumitru GAVRIL, Roxana Georgiana NICOARĂ, Gabriel Bogdan CHIȘAMERA, Ioana COBZARU, Tiberiu C. SAHLEAN, Dumitru MURARIU - Preliminary data on the diet of Romanian hamster *Mesocricetus newtoni* (Rodentia: Cricetidae)

P 49.
Ionela SLEJIUC, Ioan-Alexandru RĂDAC, Eliana SEVIANU - Road mortality on *Muscardinus avellanarius*

P 50.
Romulus-Marian PAIU, Mihaela MIREA CÂNDEA, Angelica PAIU, Anca-Maria GHEORGHE - New data on the abundance and distribution of the Black Sea dolphins and porpoises (Cetaceea: Delphinidae; Phocoenidae) from the Romanian territorial waters

Palaeontology

P 51.
Sabrina Mihaela VOICU, Ștefan VASILE, Zoltán CSIKI-SAVA - The Cretaceous Swamp just gets bigger: new data on the faunal composition of the Pui Swamp microvertebrate bonebed, Maastrichtian of the Hațeg Basin

P 52.
Ștefan VASILE, Marton VENCZEL, Alexandru PETCULESCU - Early Pleistocene amphibians from Copăceni (Dacian Basin, southern Romania)

P 53.
Maria-Raluca VĂCĂRESCU, Zoltán CSIKI-SAVA, Mădălina BUCUR, Alexandra ROMAN, Ștefan VASILE - Theropod dental diversity in the Maastrichtian of the Hațeg Basin, Romania

P 54.
Maria Iulia SASU, Radu Ștefan PANĂ - The restoration of a fossil woolly rhino skull

Parasitism in the animal kingdom

P 55.
Angel-Gabriel IRIMIA - Helminths found in the gastrointestinal tract of waterfowls from Latvia

Phylogenetics, Evolution and Systematics

P 56.
Nino CHAKVETADZE, Nana BAKHTADZE, George BAKHTADZE, Edisher TSKHADAIA - Karyological data of stylommatophoran mollusks (Gastropoda: Heterobranchia: Eupulmonata) of Georgia

P 57.
Mădălina-Elena RISTEA, Cecilia BUCUR, Mioara COSTACHE, Otilia ZĂRNESCU - A comparative study of granular leukocyte morphology and cytochemistry of five species of Teleost

P 58.
Ioana Patricia RÎUREAN, Otilia ZĂRNESCU - Comparative aspects of embryonic development of *Gallus domesticus in ovo* and *ex ovo*

Biodiversity Conservation

P 59.
Galina BUȘMACHIU, Victoria NISTREANU, Vladimir ȚURCAN - Rare and threatened animal species from Landscape Reserve Dobruşa, Republic of Moldova

P 60.
Mădălin POPESCU, Sergiu-Cornel TÖRÖK, Ioan TĂUȘAN - Natura 2000 insect species of the Băgău Protected Area (ROSCI0004) in Alba County (Transylvania, Romania)

P 61.
Elena Iulia IORGU, Oana Paula POPA, Luis Ovidiu POPA, Ionuț Ștefan IORGU - Premiminary data on the genetic variability in populations of *Pholidoptera transsylvanica* in a protected area from Romania

P 62.
Alexandra-Florina POPA, Elena Iulia IORGU, Ana-Maria KRAPAL, Andreea-Maria BREZEANU, Andrei ȘTEFAN, Ana Alexandra STRATAN, Mara DINU, Tudor COTEȚ, Marieta COSTACHE, Luis Ovidiu POPA - New data about genetic diversity of *Lucanus cervus* in Europe

P 63.
Piotr ARICOV, Galina CURCUBET, Tamara GREC - Experience of cultivation of three-year-old Grass Carps in a polyculture for combating plant overgrowth in water bodies

P 64.
Galina CURCUBET, Vasili DOMANCIUC - The development and implementation of the genetic methods for the carp's infectious diseases prevention in Moldova

P 65.
Vasili DOMANCIUC, Galina CURCUBET - Creating of a new line of Moldovan mirror carp

P 66.
Elena BUHACIUC-IONIȚĂ, Marin IONIȚĂ, Mihaela CAPLAN, Alexandru CORNEL - The ornitofauna of "Magurile Baitei" Natural Reserve, Deva, Romania. Threats and trends.

P 67.
Răzvan ZAHARIA, Cătălin Răzvan STANCIU, Tiberiu C. SAHLEAN - Influence of wind turbines on the bird fauna from two wind farms in south-eastern Romania

P 68.
Lucian FASOLĂ-MĂTĂSARU, Constantin ION - Colonial nesting of ardeidae and threskiornithidae (Pelecaniformes) species in Eastern Romania

P 69.
Flaviu BODEA, Szilárd-Lehel BÜCS - The chiropterofauna of the Natura 2000 site ROSCI0074 Făgetul Clujului - Valea Morii

P 70.
Abidi SOUROUR, Arfaoui HAYFA, Mezni MEJID, Ben Salem HICHEM - Replacement of soybean meal with lupine in the Barbarins lamb diet: effect on intake, digestion, blood metabolites and growth

Studies and recovery of the natural history museum patrimony

P 71.
Angela PETRESCU, Gabriela ANDREI - Ion Licherdopol - scientific personality and founder of museological collections

P 72.
Ana-Maria PETRESCU, Iorgu PETRESCU - Preliminary results on the decapoda fauna collected from Mauritania

P 73.
Melanya STAN - A few interesting Romanian *Carabus* species and subspecies (Coleoptera: Carabidae) from the *Dr. Pompiliu Lie* collection

P 74.
Sanda MAICAN, Rodica SERAFIM - The genus *Chrysolina* (Coleoptera: Chrysomelidae: Chrysomelinae) in the collections of "Grigore Antipa" National Museum of Natural History (Bucharest)

P 75.
Mirela Sabina RIDICHE - New specimens and species of birds introduced in the patrimony of the Museum of Oltenia Craiova in recent years

INVITED SPEAKERS

New insights into morphology, phylogeny, taxonomy, and systematics of the European *Phoxinus* species complex

Nina BOGUTSKAYA[1], Oleg A. DIRIPASKO[2],
Dusan JELIĆ[3], Tihomir STEFANOV[4]

[1]First Zoological Department, Vienna Museum of Natural History, 7 Burgring, 1010 Vienna, Austria, e-mail: ninabogutskaya@gmail.com
[2]Institute of Fisheries and Marine Ecology, 8 Konsulska St, Berdyansk, 71118, Ukraine
[3]Croatian Institute for Biodiversity, Croatian Biological Research Society, 7 Lipovac I, 10000 Zagreb, Croatia
[4]National Museum of Natural History, Bulgarian Academy of Sciences, 1 Tsar Osvoboditel Blvd, 1000 Sofia, Bulgaria

Key words: *Phoxinus*, common minnow, morphology, scalation pattern, taxonomy.

Quite recently, common minnow had been considered a widespread, pan-Palearctic species with many subspecies and local "forms" similar to, e.g., *Cottus gobio* and *Gobio gobio* until morphological revisions (e.g., Kottelat, 2007; Bianco & De Bonis, 2015) and studies that used genetic data (Palandačić et al. 2015, 2017; Vucić et al. 2018) re-established or described several considered-to-be-valid species. These publications revealed high molecular diversity of European *Phoxinus,* and indicated that morphological and molecular data are not well congruent with regard to existing taxonomic concepts. On the one hand, these studies discovered a number of morphologically diverse clades but, on the other hand, revealed a number of clades, which lack any morphological specificity. The conclusion was drawn about existence of several cryptic lineages/species in the genus. The present study was designed to get a better insight into morphology of *Phoxinus* (based on examination of over 2000 specimens all over Europe and western Turkey) with special emphasis on characters assumed to represent taxonomically sound features that do not apparently depend on state of museum-deposited specimens in contract to body shape and pigmentation. Major results are as follows. Considerable variability was observed in the lateral-line canal structure within the putative species including age-and-size variability, different stages of reduction or postponed development, and sexual dimorphism. Most dramatic changes occur between size-classes 40-45 mm and 45-50 mm, and we offer to use the lateral-line pattern for taxonomic identification in only specimens over 45 mm SL. There are exceptions indeed, for example a dwarf form, the Island of Krk that has never developed a lateral line definitive for Clade 1 it belongs to. Besides, we found some presumably species-specific characters of the scalation pattern that distinguish local populations and resumed species on different statistically significant levels. The axial skeleton structure (numbers of total, abdominal, predorsal abdominal, intermediate, and caudal vertebrae, and the number of precaudal anal-fin pterygiophores) that do not depend on size or sex, was also proved to be useful for taxonomy of the group. The pattern of geographic variation of the studied morphological characters partly corresponds to the published molecular schemes and supports taxonomic validity of several species, e.g. *P. chrysoprasius, P. bigerri, P. csikii, P. lumaireul, P. karsticus,* and existence of yet undescribed species. At the same time, some of

the (sub)clades cannot be morphologically distinguished at a taxonomic level. Different sorts of statistical analyses run in the study allowed to hypothesize on probable ancestral morphotype of *Phoxinus,* phylogenetic pattern in the group and relationships between populations, molecular clade and subclades, and species. The results of the study can shed more light on difficult cases of discrepancy between molecular and morphological data in taxonomic context.

The study is supported by the FWF (Meitner Programme) project M 2183-B25.

Romanians and Cell biology: Dimitrie Voinov (1867-1951), founder of cytology in Romania

Octavian BUDA

"Carol Davila" University of Medicine and Pharmacy, Bucharest, Romania, e-mail: octbuda@gmail.com.

Key words: condrioma, Golgi system, aneuploidy, histological physiology.

Born in Focsani in 1867, he graduated the Boarding High School from Iaşi, where he was a colleague with Emil Racoviţă and Grigore Antipa. At the High School, Grigore Cobalcescu, professor of natural sciences, stimulated his passion for biology. He went to Paris, to specialize in this field, alongside Emil Racoviţă, Paul Bujor and Ion Cantacuzino. At the University of Paris he became a zoologist. In 1891, after two years of research in Paris, Voinov returned to Romania, where he held the Department of Animal Zoology and Morphology of the Faculty of Sciences in Bucharest, until 1937. He made remarkable contributions in the field of cell morphology. He has done taxonomy and histological physiology studies on the cilio-phagocytic organ of the nephridia (of a parasitic worm on crayfish); he demonstrated the existence of three cellular (protoplasmic) constituents: condrioma, vacuum and Golgi system. He is one of the first in the world to discover aneuploidy or polysomia in animals, especially in *Gryllotalpa vulgaris*. In 1902, Voinov began a series of cytological researches, which he continued for three decades on various insect groups: Coleoptera, Lepidoptera and Orthoptera. Among his works we quote: *Microscopy Principles* (1906), *Mitochondria* (1916), *The Biological Problem of Gender Differentiation* (1929).

Dimitrie Voinov fought for the development of the scientific movement in Romania, being elected in 1927 member of the Romanian Academy.

The role of natural history and systematics in the age of biodiversity crisis

Philippe GRANDCOLAS

Institut de Systématique, Evolution, Biodiversité (ISYEB), Muséum national d'Histoire naturelle, CNRS, Sorbonne Université, EPHE, CP 50, 45 rue Buffon, 75005 Paris, France. E-mail: philippe.grandcolas@mnhn.fr.

Key words: biodiversity crisis, species extinction, data availability, metagenomics.

Our societies have become aware that we are in the midst of a major biodiversity crisis with massive species extinction and ecosystem functional collapse. Science has recently taken a special role by assessing the major changes we are facing and biodiversity sciences should be at a major place to describe and analyse this crisis and to bring solutions. I review hereafter how we could mobilize biodiversity data and carry out their analysis. Though biological processes are more and more studied in depth, this must be made clear that biodiversity is still in need of exploration. At the same time, data and knowledge already acquired should be made widely available and spread out. We should also explain how much this knowledge is still incomplete and in need of constant improvement. We should educate the next generation of biodiversity scientists with high-level knowledge of systematics, so that they are aware that species are intellectual constructions and hypotheses and that we should continue to build collections, classifications and identification tools. We must be aware that next generation methods such as digitization, or large molecular data including those obtained in the framework of metagenomics must be made compatible with our present system of knowledge.

Holarctic rose galls: what has been overlooked until now?

Zoltán LÁSZLÓ

UBB, Faculty of Biology and Geology, Hungarian Department of Biology and Ecology, 5-7 Clinicilor Str., Cluj-Napoca 400006, Romania, e-mail: laszlozoltan@gmail.com

Key words: *Rosa* sp., *Diplolepis*, diversity, center of origin.

Several plant species have among other groups also insects that cause on them, at least in a part of their life history, special formations called plant galls. The galls are produced by the parasitized plant but are induced by the insects. The most abundant and conspicuous galls in the temperate zones are perhaps those linked with oaks and wild roses. Gall inducers inhabiting wild roses (*Rosa* sp.) belong to the genus *Diplolepis* (Insecta: Hymenoptera: Cynipidae). The genus *Diplolepis* is distributed in the Holarctic. Until now the highest diversity of *Diplolepis* species is known from the Nearctic, while the Western Palearctic has the smallest diversity. It is interesting that in Asia, where almost hundred species of wild roses are known less *Diplolepis* species were described than in the Nearctic. It can be hypothesised that more species should be present in the Eastern Palearctic, than are known until now. I will present the centers of origin of the genus *Rosa*, then show the possible centers of origin of the genus *Diplolepis*, along with the presentation of the known gall forms from the whole distribution area of the genus.

Vector-borne and snail-borne nematodes of carnivores: new insights into their ecology and taxonomy

Andrei Daniel MIHALCA, Angela Monica IONICĂ, Georgiana DEAK, Călin Mircea GHERMAN

University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca, Department of Parasitology and Parasitic Diseases, 3-5 Calea Mănăștur, Cluj-Napoca 400372, Romania. E-mail: amihalca@usamvcluj.ro

Key words: carnivores, *Dirofilaria*, Metastrongyloidea, *Thelazia*.

Wild and domestic carnivores are hosts to a great variety of parasites. Among them, the vector-borne and snail-borne nematodes are particularly interesting due to their clinical impact, zoonotic potential, ecology and complex life cycle. Although some of these nematodes are known for a long time, their ecology remains poorly understood in some aspects. Recent studies have revealed a broader distribution of certain species than previously known, with new host and geographical records for various species of filaria (*Dirofilaria immitis*, *D. repens*, *Acanthocheilonema reconditum*, *Cercopithifilaria bainae*), vascular nematodes (*Angiostrongylus vasorum*, *A. chabaudi*, *A. daskalovi*) and lungworms (*Aelurostrongylus abstrusus*, *Troglostrongylus brevior*). The rapid emergence of the Oriental eye worm (*Thelazia callipaeda*) has been documented in the last few years in several parts of Europe. Genetic studies brought light to the phylogenetic relations of carnivore lungworms, with taxonomic rearrangements and a better understanding on their evolution. Experimental studies have demonstrated new transmission patterns for filariae and lungworms. The studies have demonstrated that wild carnivores are an important source of infection for domestic carnivores and vice-versa and the pose a great risk for human infection. The geographical distribution, definitive host spectrum and the specificity to their intermediate host of most of these nematodes are significantly broader than previously known.

Phylogeography, codispersals and host shifts in proctophyllodid feather mites (Astigmata: Proctophyllodidae) associated with passerines (Aves: Passeriformes)

Sergey V. MIRONOV[1], Pavel B. KLIMOV[2], Barry M. OCONNOR[2]

[1]Department of Parasitic Arthropods, Zoological Institute of the Russian Academy of Sciences, 1 Universitetskaya Embankment, Saint Petersburg, 199034, Russia; e-mail: sergei.mironov@zin.ru
[2]Department of Ecology and Evolutionary Biology, University of Michigan, Museum of Zoology, Ann Arbor, Michigan, 48109, USA; e-mails:pklimov@umich.edu; bmoc@umich.edu

Key words: coevolution, double-dating, molecular clock, Proctophyllodidae**,** Passeriformes.

Feather mites are a hyperdiverse group of astigmatan mites (Acari: Astigmata) represented by highly specialized and host-specific parasites and commensals, permanently living in the plumage or on the skin of birds. There are about 2500 species arranged in 38 families and 2 superfamilies (Analgoidea and Pterolichoidea) recorded from representatives of all presently recognized bird orders. The family Proctophyllodidae (Analgoidea) is the most rich species among all feather mites with over 500 species in 51 genera and 2 subfamilies (Proctophyllodinae and Pterodectinae). This family is distributed worldwide and predominately associated with passerine birds (Passeriformes).

Phylogeny of the family Proctophyllodidae was inferred based on molecular data (6 genes: 18S rDNA, 28S rDNA, EF1-α, SRP54, HSP70, and CO1; the ingroup included 117 proctophyllodid mite species from 116 bird species). Aligned matrix had 11,468 sites and did not have missing data. Time calibration of mite trees was inferred separately based on two independent time calibrations of host and parasite phylogenies: (i) outgroup fossil mite data time calibration, and (ii) time calibrated bird phylogeny. Inferring cophylogeographic events requires time matching of evolutionary events in both host and parasite phylogenies because divergences of hosts and their symbionts may not temporally coincide, and host switches may also take place. Important time-calibrated mite divergences and dispersals were compared with corresponding events in time-calibrated phylogeny of passerines.

We recognized 10 biologically significant events in mite trees, which can potentially be interrelated with some phylogeographic events in hosts. Out of these events, four well correspond in timing for both symbiont and host events representing synchronous co-origins or codispersals with hosts; three represented cases of host shifts, but agree in timing being very close to the origin of corresponding new host grouping; two disagree, since confidential interval of mite and host events did not overlap; and one large basal mite split was seemingly independent from host phylogeography. Among the time-matching events was the codivergence of two proctophyllodine generic groups, *Proctophyllodes* and *Nycteridocaulus,* and ancient passerines into the major lineages of oscines and suboscines in Gondwana (76.0–77.0 Mya). One more ancient synchronous codispersal is represented by passerids invaded from the Old World to the North America (21.0–22.0 Mya) that had led to the origin and diversifications of New World emberizoids (Cardinalidae, Emberizidae, Incteridae, Passerellidae, Thraupidae and others) and their specific mites, the *thraupis*+*quadratus* species groups of the genus *Proctophyllodes*. Based

on temporally concordant cophylogeographic events and host shifts inferred with our double dating analyses, a hypothetical historical scenario illustrating main phylogenetic diversification and long-distance dispersal events of the mite subfamily Proctophyllodinae and their avian host is proposed.

The Yukagir Mammoth

Dick MOL

Natural History Museum Rotterdam, Westzeedijk 345, 3015 AA Rotterdam, Netherlands; e-mail: dickmol@telfort.nl

Key words: woolly mammoth, Yakutia, expedition.

The Yukagir Mammoth consists of a unique, well-preserved partial carcass of a woolly mammoth, *Mammuthus primigenius* (Blumenbach, 1799). This specimen was discovered in the autumn of 2002 by Mr. V. Gorokhov and sons near the Maxunuokha River, in northern Yakutia, Arctic Siberia, Russia (GPS 71° 52´ 988" North - 140° 34´ 873´´ East). In September 2002, the head of this mammoth without the trunk, but otherwise almost completely covered with skin, was extracted from the permafrost. In June 2003, a team from CERPOLEX/Mammuthus, headed by Mr. Bernard Buigues, conducted a brief survey of the Yukagir Mammoth site in close cooperation with scientists of the Mammoth Museum in Yakutsk, Yakutia, and the scientific secretary of the Russian Mammoth Committee, Saint Petersburg, Russia. More remains of the Yukagir Mammoth were discovered. Soon it became evident that even more remains of this specimen are in the permafrost, not far below the surface, apparently in anatomical order and in well-preserved condition.

In the beginning of September 2003, a small team travelled to the site and excavated the left front leg of the Yukagir Mammoth. This leg was in anatomical position and frozen solid, with ice crystals covering some parts. The radius/ulna and the complete foot are covered with soft tissue, skin and hair, and the "toes" are clearly delineated. In addition, parts of the intestines were salvaged.

In June 2004, a team of Russian, Yakutian, Japanese and other scientists visited the site of the Yukagir Mammoth. The objective of this expedition was to clean and to protect the site for the coming summer. A thick layer of frozen snow was removed, exposing some fur and underfur of the Yukagir Mammoth.

The final expedition for extraction of remains of the Yukagir Mammoth took place in the first half of September 2004. Remains of the vertebral column and the rib cage were recovered, as well as remains of the intestine. Samples of sediments and vegetation, above and beneath the mammoth remains were collected to analyze the environment of this mammoth. The Yukagir Mammoth has been added to the inventory of the Mammoth Museum of Yakutsk, Yakutia, Institute of Applied Ecology, Academy of Sciences of Sakha (Yakutia) Republic (Lenina prospekt, 39, 677891 Yakutsk, Russia) and it is currently kept frozen in an ice cave in Yakutsk.

In this talk the "Crime Scene Investigation" on this Yukagir Mammoth which shed new light on the exterior of the woolly mammoth and the life-sized reconstruction will be presented.

Species distributions of marine benthic invertebrates at the northernmost North Atlantic Ocean – are these shaped by the extensive Greenland, Iceland, Faeroe Ridge?

Jörundur SVAVARSSON

Faculty of Life and Environmental Sciences, University of Iceland, Askja - Natural Science Building, Sturlugata 7, 101 Reykjavík, Iceland, email: jorundur@hi.is

Key words: ridges, temperature gradients, Nordic Seas, diversity, distribution.

The northernmost part of the North Atlantic Ocean is a very important faunistic region because of its unique topographical and thermal conditions. The large, submarine Greenland, Iceland, Faeroe Ridge (GIF Ridge), which separates the Nordic Seas (Norwegian, Greenland and Iceland Seas) and the Arctic Ocean from the North Atlantic proper, characterizes the region. This is the only shallow ridge crossing the Atlantic Ocean in east-west direction. The shallowest saddle depths are at around 840 meters, and the ridge separates oceans, which extend to depths over 4000 m. The temperatures of the overlying bottom waters on the ridge differ extensively between regions on the ridge, and even by time of the year, being from below zero towards 12°C. The region holds among the strongest thermal gradients in the world oceans.

The GIF Ridge and its thermal conditions have, accordingly, the potential of influencing extensively the dispersal of benthic animals between the North Atlantic proper and the Arctic. During recent years, large international projects (i.e. BIOICE and IceAGE projects) have focused at evaluating distributions and diversity of benthic invertebrates in the region. Most of the benthic invertebrate species occurring in the region find their distributional limits at the GIF Ridge. The distributions near and on the ridge differ though considerably between species. Species distributional models (SDMs) have been used to evaluate which predictors are the most important ones in shaping the distributions. The SMDs indicate that several environmental predictors jointly shape the distributions. The topography and the oceanography (i.e. the strong thermal gradients) appear, accordingly, to play an important role in shaping the dispersal of benthic organisms across the ridge. Accordingly, the resulting distributions of the benthic species at the ridge may have both historical (barrier effects of the ridge, young age of the Arctic) and well as ecological reasons (adaptations to temperatures, food, energy, etc.). New data on molecular genetics of some of the benthic species have shown cryptic diversity among some of the species, which may indicate further faunistic differences between the Nordic Seas and the North Atlantic proper. Furthermore, the diversity patterns with increasing depths differ between the Nordic Seas and the North Atlantic proper. These aspects are discussed in light of history of the region and further developments occurring with climate change.

Species concepts and species histories in leeches (Annelida: Hirudinida)

Serge UTEVSKY

Department of Zoology and Animal Ecology, V.N. Karazin Kharkiv National University, Maidan Svobody 4, Kharkiv 61022, Ukraine; e-mail: serge.utevsky@karazin.ua.

Key words: reproductive isolation, polytypic species concept, phylogeographical patterns.

The role of historical and environmental factors, interspecific competition and hybridization in speciation and range formation in leeches is discussed in a comparative manner. Different species concepts are compared to propose criteria that would be applicable for leech species. In our opinion, different species concepts should be viewed as tools for revealing species depending on characters and other data available. For example, on the morphological level, a species of leech can be revealed via a unique combination of characters, conforming with the Phylogenetic Species Concept (*sensu* Wheeler & Platnick). On the other hand, a species can be viewed as a monophyletic group with its unique morphological and molecular characters (Phylogenetic Species Concept *sensu* Mishler & Theriot). The criterion of reproductive isolation does not look decisive for leeches. Reproductive barriers appear not to be absolutely impermeable between related species of medicinal leeches (*Hirudo* spp.). Reinforcement has been played a certain role in shaping patterns of reproductive isolation between *Hirudo medicinalis*, *H. verbana* and *H. orientalis.*

The polytypic species concept should be reconsidered. A number of instances supports the concept of a local species. It has been found that geographical morphs and varieties are true species with rather local ranges. Molecular phylogenetic methods have corroborated the taxonomic status of a number of neglected species (e.g. *Hirudo verbana*). On the other hand, intraspecific genetic diversity should be carefully documented and analysed. Diverse phylogeographical patterns have been already found in *Hirudo verbana* and *Dina stschegolewi.* Moreover, the refugial structure of Palaearctic species might be more complicated than considered before. South Europe and the Middle East appear to harbour a number of unknown endemic haplotypes, morphs, subspecies and species.

The geographical distribution, phylogeography and reproductive biology of leeches suggest different modes of range formation in species with terrestrial stages in their life cycles and in species that are exclusively aquatic. The speciation and range formation of the species (e.g. erpobdellid leeches) that do not have the ability to spread on land have occurred under the effect of historical factors: the emergence of geographical barriers in the past. Their ranges have been shaped by drainage basins and mountain systems. The species with terrestrial stages (cocoon deposition on land and parasitism on terrestrial vertebrates) in their life cycles (e.g. *Hirudo* spp.), vice versa, have been affected by various ecological factors such as climate and interspecific competition. That has resulted in their belt-like ranges that extend from the east to the west and correspond to major terrestrial landscapes. Human

activities have caused the accidental spreads of a few leech species (*Helobdella* spp.) with the resulting formation of their worldwide distribution patterns.

The mode of speciation and pattern of geographical distribution depend on many circumstances of a species' evolutionary history and its biological traits that justify a variety of species concepts and patterns of range formations.

ORAL PRESENTATIONS

Two new feather mite species of the genus *Montesauria* Oudemans (Analgoidea: Proctophyllodidae) from thrushes (Passeriformes: Turdidae) in the Indian Subcontinent

Ioana Cristina CONSTANTINESCU[1], Oana Paula POPA[1], Luis Ovidiu POPA[1], Ioana COBZARU[2], D. Khlur B. MUKHIM[3], Rozalia Magda MOTOC[1], Costică ADAM[1]

[1]"Grigore Antipa" National Museum of Natural History, 1 Kiseleff Blvd, 011341 Bucharest 2, Romania, e-mails: cristinactinescu@yahoo.com; oppopa@antipa.ro; popaluis@antipa.ro; rozalia.motoc@antipa.ro; cadam@antipa.ro
[2]Ecology, Taxonomy and Nature Conservation Department, Institute of Biology, Romanian Academy, 296 Splaiul Independenței, 060031 Bucharest, Romania, e-mail: ioana.cobzaru@ibiol.ro
[3]Department of Zoology, Lady Keane College, 793001 Shillong, Meghalaya, India, e-mails: khlur678@gmail.com

Key words: feather mites, taxonomy, new species, *Montesauria*, India.

Two new feather mite species of the genus *Montesauria* Oudemans, 1905, collected from thrushes (Turdidae) in India, are described: *Montesauria hernandesi* sp. n. from *Turdus dissimilis* Blyth, 1847 and *M. caerulea* sp. n. from *Myophonus caeruleus* (Scopoli, 1786). Both species belong to the *merulae* species group, being morphologically closest to other two species of the genus, previously described from birds of the family Turdidae in Asia (Japan): *M. sibirica* Kuroki, Nagahori and Mironov, 2006 and *M. aurea* Kuroki, Nagahori and Mironov, 2006, respectively (Kuroki et al., 2006). The new species most clearly differ from those described in Japan by the dorsal shield ornamentation. In both sexes of *M. hernandesi* sp. n., the ornamentation of the prodorsal and hysteronotal shields is represented by round and ovate lacunae, and the ornamentation of the lobar shield of females has few ovate lacunae. In both sexes of *M. caerulea* sp. n., the ornamentation of the hysteronotal shield is very particular, with large and almost round lacunae in the anterior half and small ovate lacunae in the posterior half.

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A journey on plate tectonics sheds light on European crayfish phylogeography

Lucian PÂRVULESCU[1], Jorge L. PÉREZ-MORENO[2], Cristian PANAIOTU[3], Lucian DRĂGUȚ[4], Anne SCHRIMPF[5], Ioana-Diana POPOVICI[1,5], Claudia ZAHARIA[6], András WEIPERTH[7], Blanka GÁL[7,8], Christoph D. SCHUBART[9], Heather BRACKEN-GRISSOM[2]

[1]Department of Biology-Chemistry, Faculty of Chemistry, Biology, Geography, West University of Timişoara, 300115 Timişoara, Romania
[2]Department of Biology, Florida International University – Biscayne Bay Campus, FL 33181 North Miami, USA
[3]Paleomagnetic Laboratory, Faculty of Physics, University of Bucharest, 077125 Măgurele, Romania
[4]Department of Geography, Faculty of Chemistry, Biology, Geography, West University of Timişoara, 300223 Timişoara, Romania
[5]Institute for Environmental Sciences, University Koblenz-Landau, 76829 Landau, Germany
[6]Department of Mathematics, Faculty of Mathematics and Computer Science, West University of Timişoara, 300223 Timişoara, Romania
[7]MTA Centre for Ecological Research, Danube Research Institute, 1113 Budapest, Hungary
[8]Doctoral School of Environmental Sciences, Eötvös Loránd University, 1117 Budapest, Hungary
[9]Department of Zoology and Evolutionary Biology, University of Regensburg, 93040 Regensburg, Germany

Key words: Apuseni Mountains; Biogeographical pattern; Divergence time estimates; Endemic lineages; Freshwater species distribution; Molecular clock; Tisza-Dacia mega-unit.

Traditional molecular clock calibrations based on substitution rates can be imprecise, especially in comparison to divergence time estimates that incorporate accurately dated geological event from the relevant time period. We have carried out a comprehensive investigation into the phylogeography of *Austropotamobius torrentium*, including information from previously unstudied sites. Two mitochondrial (16S and COI) markers were sequenced from samples covering unstudied area in Eastern Europe (Hungary and Romania). Available sequences from GenBank were used to include known haplogroups and outgroups. Phylogenetic relationships and divergence time were estimated by substitution rate and geological calibration methods. Reconstructions of the ancestral distribution were addressed. A new haplogroup (APU) was discovered in Romania's Apuseni Mountains. This haplogroup is endemic and closely related to other haplogroups that are endemic in the Dinarides (NCD), despite their vast geographical separation (~600 km). The separation of this haplogroup is a result of tectonic displacement of the Tisza-Dacia microplate, which started in the Miocene (~16 Ma) and carried part of the *A. torrentium* population to the current location of the Apuseni Mountains, which was then cut off from the Dinarides for a period of ca. 11 m.y. by marine and lacustrine phases of the Pannonian Basin. The inclusion of the Apuseni Mts. displacement geological calibration point in divergence time analyses challenges the currently accepted crayfish evolutionary time frame for the region constraining the crayfish evolution in the area to a much earlier event (16 Ma) than the divergence time estimate based on the arthropod COI substitution rate (2.2 Ma). The previous molecular clock calibrations for the European crayfish species divergence should therefore be reconsidered.

Phylogenetic reconstructions of closely related species groups of the genus *Poecilimon* (Insecta: Orthoptera) from the Balkans, Anatolia and Crete

Simeon BORISSOV, Dragan CHOBANOV

Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 1 Tsar Osvoboditel Blvd., 1000 Sofia, Bulgaria; e-mail: borissovsb@gmail.com, dchobanov@gmail.com

Key words: insects, bush crickets, phylogeny, molecular marker, NAD2, Mediterranean region.

Poecilimon Fischer, 1853 is the most diverse genus of Orthoptera in the Western Palearctic. Species are wingless and prone to isolation and allopatric speciation. The complex bioacoustic behavior is another factor that boosts speciation by creating additional barriers for gene flow. Former studies suggest that the center of speciation of the genus is probably the Mediterranean region with the Balkan peninsula, Anatolia and some nearby islands. Active post-Oligocene geodynamics in this region caused consecutive connections and isolations of the relatively immobile populations of the genus.

Our study focuses on three closely related groups spread among the Balkans and Anatolia. The *Poecilimon brunneri* group has wide northern distribution in the Balkan peninsula with some populations reaching Hungary and Ukraine. The *Poecilimon jonicus* group has southwestern distribution from Montenegro, Albania, Macedonia and western Greece, reaching Peloponnese. *Poecilimon inflatus* group is spread in Southwestern Anatolia with one distinct species isolated on the island of Crete.

Material from the three groups was collected and preserved in alcohol. DNA was isolated by standard protocols. The mitochondrial NAD2 molecular marker was amplified and sequenced. Evolutionary relations were inferred using different phylogenetic approaches and respective software. Conclusions about the phylogeny and speciation in the groups were discussed.

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Morphometric and phylogeographic differentiation of the Mediterranean Pond Turtle, *Mauremys leprosa* (Schweigger, 1812) (Testudines: Geoemydidae): putative subspecies vs. evolutionary lineages / sub-lineages in Morocco

Mohamed NAIMI[1,3], Mohammed ZNARI[2,3], Soumia LOULIDA[2,3], Guillermo VELO-ANTON[4], Uwe FRITZ[5]

[1]Polyvalent Laboratory of Research and Development, Sultan Moulay Slimane University, Department of Biology and Geology, Beni Mellal, Morocco
[2]Laboratory of Biodiversity and Ecosystem Dynamics, Cadi Ayyad University, Biology Department, Marrakech, Morocco
[3] Natural History Museum of Marrakech
[4]CIBIO-InBIO, Universidade do Porto, Campus de Vairão, Portugal
[5]Museum of Zoology (Museum für Tierkunde), Senckenberg Dresden, Germany

Key words: *Mauremys leprosa, Morphometry, putative subspecies, Molecular Phylogeography*

Mauremys leprosa is a freshwater turtle endemic to western Mediterranean (Iberian Peninsula, Southern France and Maghreb). It has a large morphological diversity that has previously led to describe eight subspecies with seven in Morocco. On the other hand, a first analysis of maternal phylogeography (mtDNA: Cyt b) identified only two principal lineages: *M. l. leprosa* (A) (north of Moroccan Atlas, Iberian Peninsula France) and *M. l. leprosa saharica* (B) (south and east of Morocco to northeastern Algeria and Tunisia). The aim of our study was to determine: i) whether the morphologically-based subspecies in Morocco are morphometrically distinct (body weight and nine shell dimensions were taken along with the total tail and pre-anal lengths), and ii) if they fulfil the requirements to be considered as emerging evolutionary lineages and sub-lineages under low genetic differentiation (mDNA, Cytb and D-loop). The phylogeographic re-assessment revealed the existence of different sub-lineages within these two previous lineages: *M. l. leprosa* with three sublineages: A1, A2 and A3 (corresponding respectively to *M. marokkensis*, *M. l. wernerkaestlei* and [*M. I. ssp.* + *M. I. atlantica*]), and *M. l. saharica* with four sublineages: B1, B2, B3 and B4 (corresponding respectively to *M. l. sharica*, [*M. vanmeerhaguei* + *M. l. zizii*], *M. l. erhardi* and again *M. l.atlantica*). However, the morphometric analysis concerning five putative morphological subspecies in Morocco: *M. marokensis*, *M. wernerkaestlei*, *M. atlantica*, *M. vanmeerhaghei* and *M. zizii*, revealed the existence of at least three allopatric sub-lineages, morphologically and genetically differentiated including two within the clade *M. l. leprosa* [*marokkensis* (A1) and *wernerkaestlei* (A2)] and one within the clade (B), *M. l. saharica* with the putative subspecies *M. l. vanmeerhaghei* and *M. l. zizi* forming the same morphological and genetic sub-lineage (B2). As for *M. l. atlantica*, co-occurrence of both sublineages A3 and B4, but apparently morphologically undifferentiated.

The Orthoptera of Dobrogea. The Atlas

Ionuț Ștefan IORGU[1], Elena Iulia IORGU[1], Dragan CHOBANOV[2]

[1]"Grigore Antipa" National Museum of Natural History, 1 Kiseleff street, 011341 Bucharest, Romania, e-mails: ionut.iorgu@antipa.ro; elenap@antipa.ro
[2]Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 1 Tsar Osvoboditel Blvd., 1000 Sofia, Bulgaria, e-mail: dchobanov@gmail.com

Key words: Orthoptera, Dobrogea, taxonomy, new records, key, distribution, bioacoustics.

The book aims to review and showcase the orthopteran species fauna from the steppes and forests of Dobrogea, the north-easternmost extremity of Balkan Peninsula. Comprising south-eastern Romania and north-eastern Bulgaria, the historical region of Dobrogea is a unique territory with wide Ponto-Sarmatic steppe grasslands, sub-Mediterranean and Balkan forests and Pontic sandy dunes along the western shores of the Black Sea. Continental Dobrogea is bordered to the north-east by the Danube Delta, the only river delta declared as Biosphere Reserve and the largest compact reedbed on the planet. The Bulgarian part is dominated by agricultural areas on flat and hilly terrain, divided by more humid relief depressions – former river valleys, preserving original or degraded steppe vegetation along the steep slopes. On a diverse relief consisting of loess or steep limestone cliffs, terraces and calcareous plains, sandy beaches, the Black Sea coastal area harbours a variety of ecosystems: highly diverse habitats and unique Pontic and steppe flora and fauna.

Even though Dobrogea is one of the most studied areas in Romania, several new findings within the past years proved that ambitious, exhaustive field work in unknown territories will always provide surprises: 16 species were recently recorded for the first time in the studied territory, some of them being new for the Romanian fauna. Of the 110 species known to occur in Dobrogea (61 ensiferans and 49 caeliferans), only one is endemic to this historical region: *Isophya dobrogensis* Kis, 1994.

The vast illustration of bush-crickets, crickets and grasshoppers – photos, oscillograms and maps – is accompanied by morphologic and acoustic identification keys, brief description of the species morphology, sound production behaviour, preferred habitat, distribution within the studied area and the IUCN Red List status in Europe.

Contributions to the knowledge of planthoppers and spittlebugs of Romania, with two new records for Romanian fauna

Cosmin-Ovidiu MANCI[1], Ioan-Alexandru RĂDAC[2]

[1]S.E.O.P.M.M. Oceanic-Club Constanța, Romania, email: cosminom@gmail.com,
[2]"Babes-Bolyai" University, Faculty of Biology and Geology, 5-7 Clinicilor Str., Cluj Napoca, Cluj, 400084, Romania, e-mail: radac.alexandru@yahoo.ro

Key words: Hemiptera, Cercopidae, Tropiduchidae, Cercopis, Trypetimorpha.

In Romania, the studies on Hemiptera are scarce and were mainly focused in the last decades on the Heteroptera suborder with the contributions on various entomologists. The knowledge on the former Homoptera suborder in Romania, comes from studies of pest control as many species are feeding on crops and garden plants. Thus, species that were not feeding on cultivated plants were usually neglected. Another possible reason on the lack of data in Romania is the lack of literature and specialists on this taxonomic group. Therefore, although some species may be common, precise data is missing on many species.

A good example of a group with common species but with a few reliable data is the spittlebugs (Cercopidae). In this case, although the bugs have a characteristic contrasting color with black background and red spots, which make them easy to spot and collect, few data is known on their distribution in Romania. On a closer investigation of *Cercopis* species and records from Romania, a species new for Romania was detected, *Cercopis intermedia* Kirschbaum, 1868, which was photographed in Dobrogea (south-east Romania) in the spring of 2018. After the first record was discovered, we reviewed old data and found additional records in south Romania, suggesting that the species might be even more wide-spread but overlooked.

On the other hand, some species might have specific hostplants with limited distribution which makes them harder to find. Such case may be the *Trypetimorpha* genera (even the family, Tropiduchidae, being new for Romanian fauna) with the life cycle and host plants that are not yet precisely known. In the sumer of 2018, in July and August, we collected 3 females (2 brachypterous and 1 macropterus), identified as *Trypetimorpha cf. fenestra* Costa, 1862, using a sweep net in grassy vegetations along a road.

The present work contributes to the knowledge of Romanian planthoppers and spittlebugs by presenting the new records for the country, representing a starting point for further research on the species mentioned above.

First record in Romania of the genus *Isodontia* with *Isodontia mexicana* (Hymenoptera: Sphecidae)

Alexandra Florina POPA[1,3], Irinel Eugen POPESCU[2]

[1]"Grigore Antipa" National Museum of Natural History, 1 Kiseleff Blvd, 011341 Bucharest 2, Romania, e-mail: alexandra.levarda@antipa.ro
[2]"Alexandru Ioan Cuza" University, Faculty of Biology, 11 Carol I Str., 700506 Iaşi, Romania, e-mail: irinellus@yahoo.com
[3]Faculty of Biology, University of Bucharest, 91-95 Splaiul Independenţei, 050095 Bucharest, Romania.

Key words: *Isodontia mexicana*, Hymenoptera, Sphecidae, distribution, Romania.

The *Isodontia* Patton, 1880 genus comprises more than 60 species recognized worldwide. Three of these species are currently known from Europe: two native species - *I. paludosa* (Rossi, 1790) and *I. splendidula* (A. Costa, 1858), and one invasive species from North America - *I. mexicana* (de Saussure, 1867) (the grass-carrying wasp). The native range of *I. mexicana* is spread from North America through Central America. The species was probably introduced accidentally in Europe during the World War II by the U. S. army and was reported for the first time in France in the early '60s, in this case it can be considered an invasive species. Since the initial establishment in Europe, more than 5 decades have passed and the species is now reported from 18 European countries (Gradinarov 2017, Fatergaya et al. 2014).

The grass carrying wasp is a nonfossorial sphecid that nests in old burrows made by bees, other wasps or beetles. The nest can be also found in crevices, between stones or hollow branches. The species uses grass stems, leaves or other plant material to construct nest partitions between cells. The prey that they feed to the larvae is represented by Orthoptera species, usually tree crickets (Grillidae) and katydids (Tettigoniidae) (Fatergaya et al. 2014).

The species was found this year in Văcărești Natural Park from Bucharest city. The present record represents the first record of the *Isodontia* genus in Romania and it most likely reflects the expanding of its areal to Eastern Europe. The previous recent findings of *I. mexicana* in Europe nearest to Romania were in Hungary in 2010, Serbia in 2014, Ukraine in 2014 and Bulgaria in 2017.

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First record of Torymidae family (Insecta: Hymenoptera: Chalcidoidea) from the Maldives Archipelago

Irinel Eugen POPESCU, Irina Neta GOSTIN

"Alexandru Ioan Cuza" University, Faculty of Biology, 11 Carol I Str., 700506 Iaşi, Romania, e-mails: irinellus@yahoo.com, irinagostin@yahoo.com

Key words: Torymidae, Chalcidoidea, Hymenoptera, Insecta, fauna, distribution, Maldives archipelago.

Torymidae Walker, 1833 family contain 71 genera with more than 1000 species according to Noyes (2018). Generally, torymids are entomophagous but some species especially genus *Megastigmus* and some *Torymus* species are phytophagous.

Within the period 16-26.07.2017, we organised an expedition in the Maldives Archipelago, in five islands, Nalaguraidhoo (Sun Island, from Alif Dhaal Atoll), Dhigurah (from Alif Dhaal Atoll), Maamigili (from Alif Dhaal Atoll), Dhiffushi (Holiday Island, from Kaafu Atoll) and Hulhumale (from North Male Atoll) and collected entomological material from Chalcidoidea superfamily. The results were communicated the same year presenting specimens from seven families from Chalcidoidea: Chalcididae, Eurytomidae, Eupelmidae, Pteromalidae, Perilampidae, Encyrtidae, Eulophidae (Popescu & Gostin 2017). After that, we also discovered specimens of Perilampidae family in the collected material. All families, excepting Eulophidae, were for the first time recorded from Maldives Archipelago because the Chalcidoidea fauna of Maldives archipelago are almost unknown. According to Noyes (2018) only four species of two families from Chalcidoidea were mentioned in various papers, three from Aphelinidae: *Encarsia dispersa* Polaszek, 2004 (Schmidt & Polaszek 2007), *Encarsia abundantia* Chou and Su, 1996 (Huang & Polaszek 1998), *Encarsia smithi* (Silvestri, 1926) (Myartseva & Evans 2008) and one from Eulophidae: *Platyplectrus orthocraspedae* Ferrière, 1941 (Zhu & Huang 2004).

Within the period 20-26.07.2018, we organised an expedition in the Maldives Archipelago in Lhohifushi Island (from Kaafu Atoll) and we collected entomological material from Chalcidoidea superfamily. For the first time, we recorded Torymidae family in the Maldives Archipelago. For now, we recorded material from nine Chalcidoidea families, only two being recorded previously to this research.

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Ants (Hymenoptera: Formicidae) of Dobrogea (Romania) – an updated checklist

Ioan TĂUȘAN[1], Balint MARKÓ[2]

[1]"Lucian Blaga" University of Sibiu, Faculty of Sciences, Applied Ecology Research Center, Sibiu, 5-7 Dr. Ion Rațiu Str., Sibiu, 550012, Romania, e-mail: itausan@gmail.com
[2]Hungarian Department of Biology and Ecology, Babeş-Bolyai University, 5-7 Clinicilor Str., 400006 Cluj-Napoca, Romania; e-mail: balintm@gmail.com

Key words: faunistics, pontic influences, meadows, deciduous forests.

Dobrogea, the south-easternmost part of Romania, is characterized by low altitudes (200 m in the south), reaching only slightly over 450 m in the north-western part (Măcin Mountains, 467 m). Dobrogea is considered a "Mecca" for entomologists, due to its unique characteristics in terms of climate and vegetation. In the last decades, many important taxonomical findings were obtained from this region.

The first ant checklist for Dobrogea dates back more than 40 years ago and comprises 36 species. During the last 15 years, several faunistical campaings were carried out in different areas in Dobogea and the results improved. Species new to science were described from Dobrogea (e.g. *Messor ponticus* Steiner et al. 2018). Moreover, species new to the Romanian ant fauna were collected from different parts of Dobrogea (e.g. *Myrmica bergi* Ruzsky, 1902*, Camponotus samius* Forel, 1889). Thus, the new checklist consists of more than 60 species.

In addition, besides a high species number, Dobrogea is characterized by ant assemblages that are different from those of the rest of Romania. Species such as *Aphaenogaster subterranea* (Latreille, 1798), *Temnothorax parvulus* (Schenck, 1852), *Plagiolepis pygmaea* (Latreille, 1798)*, Cardiocondyla stambuloffii* Forel, 1892, *Messor spp,* are more common than in other parts of Romania. In the present study, we highlight the faunistical importance that Dobrogea possesses in terms of ants, with comments on an updated checklist for the region.

A review on insect pests of tomato crop in the Republic of Moldova

Natalia MUNTEANU-MOLOTIEVSKIY[1], Ion TODERAȘ[1],
Anna MOLDOVAN[1, 2], Nicola SASANELLI[3], Elena IURCU-STRĂISTARU[1]

[1]Institute of Zoology, 1 Academiei Str., Chișinău, MD 2028, Republic of Moldova, e-mail: munteanu_natalia_v@yahoo.com
[2]Moldova State University, 65A M. Kogalniceanu Str., Chișinău, MD 2009, Republic of Moldova
[3]Institute for Plant Protection, National Research Council, 122/D G. Amendola Str., 70126 Bari, Italy

Key words: tomatoes, pests, biological control, Republic of Moldova

Tomatoes (*Lycopersicon esculentum* Mill.) are one of the most popular and widely cultivated vegetables in the world and Republic of Moldova inclusively. However, tomatoes yield per ha, in the Republic of Moldova, is about ten times lower compared to developed countries. Local production cannot cover the population demand, tomatoes productivity being affected by different factors among which pests and diseases are one of the most harmful.

The aim of the study was to reveal and characterize the insect community of tomatoes in protected-ground and in greenhouses in the Republic of Moldova.

Sampling events were conducted in tomato crops during 2017-2018, in 12 localities of the Republic of Moldova. Insects were collected using light traps, yellow sticky traps and manually. Additionally, each plant was individually examined to count the frequency of insect attacks.

Thus, over the territory of the Republic of Moldova, the species *Lycopersicon esculentum* Mill. is attacked by 20 pest insect species from 10 families and 6 orders: Coleoptera (Scarabaeidae, Elateridae and Chrysomelidae), Lepidoptera (Noctuidae and Gelechiidae), Hemiptera (Aphididae and Aleyrodidae), Diptera (Agromyzidae), Orthoptera (Gryllotalpidae) and Thysanoptera (Thripidae). The following complexes of pests were identified: 1) pests of roots and underground rhizosphere (5 species); 2) pests of leaves (15 species); 3) pests of reproductive organs (4 species).

Regular monitoring of insect complexes is a crucial component of integrated pest management strategies. Knowledge regarding relationships between host plants and their pest insects is a key to successful development of biological control agents and replacement of chemical insecticides.

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Postglacial recolonization of North America: integrating niche models and corridor modeling to study species' range dynamics over geologic time

Iulian GHERGHEL, Ryan Andrew MARTIN

Department of Biology, Case Western Reserve University, 10900 Euclid Ave, 44106-7080, Cleveland 44106, Ohio, USA.

Key words: biogeography, distribution, spadefoot toad, Last Glacial Maximum.

Understanding the factors that influence and shape species' distributions is a central topic in biogeography. As climates change, species either cope with these changes through evolution or plasticity, or shift their ranges to track the optimal climatic conditions. Ecological niche modeling (ENM), quantifies the niche of the organism by using occurrences and environmental data to estimate species' potential distributions. ENMs are often criticized for failing to take into consideration species' dispersal ability. Here we attempt to fill in this gap by combining ENMs, dispersal and corridor modeling to study the range dynamics of North American spadefoot toads over the Holocene. We first estimated the current and past distributions of spadefoot toads, and then estimated the past distributions from when the last major geologic process occurred (Last Glacial Maximum - LGM) to present day. Then, we estimated how each taxon recolonized North America by using dispersal and corridor modeling. By combining these two modeling approaches we were able to 1) identify the LGM refugia used by the American spadefoot toads, 2) further refine these projections by estimating which of the putative LGM refugia have contributed to the recolonization of the North America via dispersal, 3) estimate the relative influence of each LGM refugia to the current distribution. The models were tested using previously published phylogeographic data. This effort aims to pave the way towards a new approach in studying species' range dynamics by combining ENMs and dispersal modeling over time.

Reproductive behaviour of *Triturus vulgaris* L. (Amphibia, Caudata) in Central Forest (Republic of Moldova)

Larisa PLOP

"Alexandru cel Bun" Military Academy, Chişinău, Republic of Moldova, e-mail: larisaplop4@gmail.com)

Key words: Caudata, reproductive behavior, phases of courting, synoptic species, orientation phases.

Reproductive behavior is one of the indispensable and extremely important components of the reproduction of all amphibians, including tritons. Thus, the whole process of breeding activity of caudates represents a sequence closely guided by specio-specific behaviors which, depending on the species, differ in the form of manifestation and the specific function at each behavioral stage, while remaining at the same time, to be directed to the final act of reproduction - the fertilization of the eggs. In most species of the *Triturus* species, the reproductive behavior is manifested through a complex of ritualized movements and positions performed by the male in front of the female, which ends with the final act - fecundation.

The common triton developed during its evolution a complex nuptial behavior, the success of which depends on certain endogenous and exogenous ecological factors and its ecological plasticity in different ambient conditions provides reproductive populations with some reproductive success of which depends largely on their perpetuation in time and space.

The reproductive behavior of the common triton is quite complex and diverse: with some components similar to those of other *Triturus* species, it also shows certain specific features, which allow it to avoid unwanted hybridizations in the case of synopsis during the reproduction period. These specific behavioral peculiarities may also serve as an effective criterion for establishing phylogenetic and evolutionary relationships of different species.

The main role in the conduct of nuptial behavioral acts, with few exceptions, belongs to males, who usually have a very active, sometimes even aggressive behavior. The whole arsenal of demonstrations and characteristic pictures is aimed at achieving the highest reproductive success, obtained by the suckling and seduction by the male of several females during the breeding season. Females are the sexier (more demanding) sex in setting up a couple relationship, trying to choose the most suitable male.

Biogeography and biodiversity of bat fauna in the Carpathian Mountains

Bronisław W. WOŁOSZYN[1], Dumitru MURARIU[2]

[1]Institute of Animal Systematics and Evolution, Polish Academy of Sciences, Krakow. Ul. Slawkowska 17, 31-016 Krakow, Poland. E-mail: bwwoloszyn@gmail.com
[2]Institute of Biology of the Romanian Academy, 296 Splaiul Independentei, C.P. 56-53, 060031 Sectorul 6, Bucharest, Romania. E-mail: dumitru.murariu@ibiol.ro

Key words: Carpathians Mts., bats, biological diversity, diversity indexes,

The Carpathian Mountains sickle-like in aspect, are the Europe's largest mountain range (approx. 1.500 km across seven countries) and a natural treasure of global significance, forming the backbone of Central and South-Eastern Europe. The Carpathians support the largest remaining area of virgin forest, many endemic species of plants and significant population of big mammals like brown bears, wolves, lynx etc. From Alpine regions to vast tracts of natural forests they support a wealth of natural diversity which is unparalleled in Europe.

The long Carpathians' Range is a natural bridge between Mediterranean and Pontic Regions with Central European temperate climate regions. For this reason, the Carpathian Mts. are a very important region for the study of biogeography and biodiversity of Europe.

In 2010, The International Year of Biodiversity, an agreement sponsored by the United Nations and representing 193 countries, committed to:

1. Protecting 17 % of the planet's terrestrial ecosystems and 10 % of marine and coastal areas
2. Reducing the extinction rate by half by 2020
3. Providing financial assistance to poorer nations to meet these goals.

Following this proposals The United Nations General Assembly declared years 2011 to 2020 as "The UN Decade of Biodiversity" to promote strategic plan for biodiversity. Our study on biogeography and biodiversity of bats in the Carpathian Region will perfectly correspond to the main idea of this declaration in our opinion.

Biological diversity or biodiversity refers to the variety and variability among living organisms and to the ecological complex in which they are occurring. The most commonly considered facet of biodiversity is defined as the "*Totality of genera, species and ecosystems of the region*".

From 53 European bat species, a number of 33 are reported from the Carpathian Mountains. This means about 70 % of the whole bat fauna of Europe. Generally, there is a decreasing trend of biodiversity from the south to the north. We can also observe these phenomena in the Carpathian Mountains and quantitative evaluation of this phenomenon is a main topic of our study. For example recent bat fauna in the North of the Carpathian area (Southern Poland) consists of 25 species. This means about 55% of whole European bat fauna and 78% of bat fauna of the South Carpathians Mountains.

Some bat species are possible allied to other mountains being species in regionalization of Carpathian Range. Because of global trend to decrease bat populations and some species became endangered, serious efforts are necessary

to save them from extinction. Therefore, our purpose is to update and synthesize distribution of all reported bat species from the Carpathian Range – as important bioindicators of the quality of their preferred habitats.

Biogeographical principles and ecological conditions will be correlated to get a most possible right chorological situation. Why? Because bats are important consumer of pest insects for agriculture, forests and not least - for animal and human health.

The bats are relatively easily recognizable. In case of hibernating colony of bats the virtual biodiversity is close to the real biodiversity. In spite of this, because of their behavior which they use in biotopes during summer activity, transitory hibernating periods, the standard methods of evaluation of both Alpha and Beta diversity are not comparable.

We must find new standards for quantitative evaluation of diversity of bat fauna during different periods of their activities' as a part of biodiversity. Probably evaluation, mainly of winter colony of bats, will be the most accurate solution of this problem.

Better knowledge of actual biodiversity of bats in the Carpathians' region, and dynamic of this process will lead to an easier path for scientists to promote documentation, to include new protected areas, and to protect natural landscape with their biodiversity and cultural traditions in each part of the Carpathians.

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On the sequence variations of mitochondrial COI gene in *Microtus arvalis* (Pallas, 1778)

Derya ÇETINTÜRK[1], Nuri YIĞIT[1], Ercüment COLAK[1], Georgi MARKOV[2], Duško ĆIROVIĆ[3], Mihály MÁRTON[4]

[1]Ankara University, Faculty of Science, Biology Department, 06100, Besevler, Ankara, Turkey, e-mails: dcetinturk@ankara.edu.tr, nyigit@science.ankara.edu.tr, colak@science.ankara.edu.tr
[2]Bulgarian Academy of Science, Institute of Biodiversity and Ecosystem Research, 1113, Sofia, Bulgaria, e-mail: georgimar@gmail.com
[3]Institute of Zoology, Faculty of Biology, University of Belgrade, 11000 Belgrade, Studentski trg 16, Serbia, e-mail: dcirovic@bio.bg.ac.rs
[4]Institute for Wildlife Conservation, Szent István University,2100 Gödöllő, 1 Páter Street, Pf. 303, Hungary, e-mail: marton.mihaly1990@gmail.com

Keywords: *Microtus arvalis*, COI gene, phylogeny

Common vole *Microtus arvalis* (Pallas, 1778) is distributed in highland meadows across Central Asia and most parts of Europe. The total 27 samples were taken from 5 countries for analysing mitochondrial barcoding gene Cytochrome-oxidase I (COI) gene with 548 base-pair sequence. DNA isolation was performed from kidney, liver, heart and muscle tissues using GeneAll® ExgeneTM Tissue SV mini kit. COI gene region (700 base pair) was amplified using BatL5310/ R6036R primers with Polimerase Chain Reaction. Alignment of COI sequences and constructing of Maximum Likelihood Dendrogram were performed in MEGA6 Program and number of haplotypes, haplotype and nucleotide variations were calculated in DNAsp v5 Program. Bayesian Markov Chain Monte Carlo Dendrogram was constructed in MrBayes ver. 3.2.5 Program. Analyses showed that the number of haplotypes is 13, haplotype diversity and nucleotide diversity values are 0.912 and 0.019, respectively. Also, the number of polymorphic sites was found to be 37; 12 of which is singleton variable sites and 25 of which is parsimony informative sites. Maximum Likelihood and Bayesian Markov Chain Monte Carlo Dendrograms were also constructed using haplotypes based on Kimura-2 Parameter and The Hasegawa-Kishino-Yano Parameter, respectively. According to these dendrograms, Asian and European haplotypes were separated with high bootstrap support values.

Best sampling techniques for examining the terrestrial cave-dwelling invertebrate communities

Raluca Ioana BĂNCILĂ[1,2], Rodica PLĂIAŞU[1,2], Andrei GIURGINCA[1], Ioana NAE[1], Ştefan Cătălin BABĂ[1], Augustin NAE[1]

[1]"Emil Racoviţă" Institute of Speleology of Romanian Academy, 13 Septembrie Road, 050711 Bucharest, Romania, e-mails: bancila_ralucaioana@yahoo.com; rodica_plaiasu@yahoo.com; ioana.iser@gmail.com; sankao2@yahoo.com; catalinstefanbaba@gmail.com; augustin.iser@gmail.com
[2]Ovidius University Constanţa, Faculty of Natural and Agricultural Sciences, 900470 Constanţa, Romania

Key words: sampling techniques, opportunistic collecting, timed searches (TS), quadrat sampling, cave-dwelling invertebrate

Caves are extremely sensitive environments and present a unique habitat for numerous cave-adapted invertebrates, among which many are rare, relict or endemic species. Biological sampling is a key component to study the response of subterranean species to environmental and anthropogenic threats in order to promote actions for their conservation and cave protection. However, due to logistical difficulties sampling of cave-dwelling invertebrates is a challenge and consequently, cave fauna in many areas is still uncharacterized. Several techniques for sampling cave-dwelling invertebrates have been proposed but little efforts have been undertaken to test their efficacy. In this study we examined the efficiency of three sampling methods, the opportunistic collecting (OC), timed searches (TS), quadrat sampling (QS) and a combination of the two quantitative techniques (TS and QS) in terms of sampling effort, time expended and completeness. We further examined if cave habitat physical characteristics influenced the effectiveness of each sampling technique. To elucidate the efficiency and completeness of the sampling methods we used abundance data of cave-dwelling invertebrates collected using OC, TS and QS from eight caves located in Banat region, Romania. The results showed that the sampling techniques differed in their efficiency and completeness depending both on the taxonomic groups and cave habitat physical characteristics. This suggests that a multi-technique sampling approach is required to best characterize the cave-dwelling invertebrate communities and to maximize the detection of cave-restricted species.

Can land snail assemblages act as bioindicators of riparian forest quality?

Voichița GHEOCA[1], Ana Maria BENEDEK[1], Erika SCHNEIDER[1,2]

[1]"Lucian Blaga" University of Sibiu, 10 Victoriei Blvd, 550042 Sibiu, Romania, e-mails: voichita.gheoca@ulbsibiu.ro; ana.benedek@ulbsibiu.ro
[2]Department WWF Institute for Floodplain Ecology, Karlsruhe Institute of Technology (KIT), 1 Josefstrasse, D-76437 Rastatt, Germany, e-mail: erika.schneider@partner.kit.edu

Key words: land snails, assemblages, riparian forest, small natural features, bioindicators.

Riparian zones are habitats created along river valleys, at the interface between terrestrial and freshwater ecosystems. Although riparian ecosystems cover only a small surface of a region, they have a significant impact both on the landscape and biodiversity. This characteristic qualifies the riparian areas as (small natural features) with disproportionate ecological importance.

A number of 48 sites were sampled in riparian forests of 91E0 Habitat type, habitat subtype 44.13 Salicion albae, primarily established by *Salix alba* and *Salix fragilis*. Most of the sampling points were located in three Natura 2000 Sites: Sighișoara Târnava Mare, Hârtibaciu Nord-Est and Hârtibaciu Nord-Vest. In each point we used the same sampling effort and we assessed habitat features, some of which were used to describe the global quality of the riparian habitat. We sampled 12570 land snail specimens representing 22 families, 49 genera and 69 species. Species richness, snail abundance and community structure varied greatly across sampling points. Observed species richness ranged between 10 and 44, with a median value of 13 species per point and the abundance between 48 and 947 specimens. Snail abundance, species richness (observed and estimated) and Shannon diversity index were significantly related to the quality of the habitat. Among the species with a strong response to habitat quality were *Faustina faustina, Monachoides vicinus, Balea fallax, Laciniaria plicata, Isognomostoma isognomostoma* and *Vestia gulo*. The ecological categories that have a significant positive response to the main parameters describing the quality of the riparian forest are the snails living in the leaf litter and those in the woody debris. By responding to alterations of the riparian forest, land snail communities have been proven to be efficient bioindicators of its quality.

Resistance of commercial walnut cultivars and genotypes to *Aceria tristriatus* (Nalepa)

Mohammad AHMAD-HOSSEINI, Mohammad KHANJANI*

*Department of Plant Protection, Faculty of Agriculture, Bu-Ali Sina University, Hamedan, I. R. Iran, E-mail:mkhanjani@gmail.com

Key words: Walnut, plant resistance, gall mite, antibiosise, antixenosise, injury, defensive compounds.

The walnut leaf gall mite *Aceria tristriatus* Nalepa is one of the major pests of walnut in western Iran. Host plant resistance has not been explored as a method for the integrated mite management of walnut leaf gall mite (Javdi-Khedri, et al., 2014). In this order the resistance of 10 native and non-native walnut cultivar genotypes including Lara, Hartly, Chandler, Jamal, Pedro, Franqutte, Tahghighat, Z60, Z53 and B21 as well as seedling were preliminary evaluated under same conditions using Antixenosis, Antibiosis and injure tests. In this study, wax amount, total phenol, flavonoid, juglone, total carbohydrate, total protein, PPO and POD enzymes activities, DPPH and FE with above mentioned cultivars and genotypes resistance to walnut leaf gall mite were evaluated. In addition, photosynthetic pigments were assessed in order to evaluate plant injury. In free choice assay, significant differences were observed in mite performance on Seedling, Hartly, Lara and Z60 leaves while Chandler and Jamal leaves contained a significant lower number of the mites. Seedling and Hartly allowed the highest mite density within the galled leaves whereas Jamal and Chandler showed the lowest mite density. In addition, the highest percentage of infestation occurred again on Seedling, Hartly, Lara and Z53 while the lowest one was observed on Chandler and Jamal cultivars. Regarding biochemical content, nearly all of the above mentioned biomarkers showed negative correlation with mite infestation. Generally, resistance cultivars such as Chandler, Jamal and Pedro significantly produced defensive compounds more than control after mite infestation, while this procedure in susceptible cultivars such as Seedling, Hartly and Lara were recorded in low amount. Amounts of photosynthetic pigments containing Chlorophyll a and b as well as carotenoid significantly were reduced in sensitive cultivars after manipulation.

In conclusion, the current experimental model screened preliminary a three cultivars (Chandler, Jamal and Pedro) quite promising for developing resistance programs in western Iran against walnut leaf gall mite.

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Soil predator mites (Acari: Mesostigmata) from different types of moss habitats, in Romania

Minodora MANU[1], Raluca Ioana BĂNCILĂ[2,3], Marilena ONETE[1]

[1]Romanian Academy, Institute of Biology Bucharest, Department of Ecology, Taxonomy and Nature Conservation, 296 Splaiul Independenţei, zip code 0603100, PO-BOX 56-53, fax 040212219071, tel. 040212219202, Bucharest, Romania, e-mail: minodoramanu@gmail.com; marilena.onete@gmail.com
[2]University Ovidius Constanţa, Faculty of Natural Sciences, Al. Universităţii, corp B, Constanţa, Romania;
[3]Romanian Academy, "Emil Racoviţă" Institute of Speleology, Department of Biospeleology and Soil Edaphobiology, 13 Septembrie Road, No. 13, 050711, Bucharest, Romania, bancila_ralucaioana@yahoo.com

Key words: bark, Mesostigmata, moss, rock, soil, structure.

Moss layers represent ecological corridors between isolated habitat patches, preventing or slowing down the process of disassembly of complex soil communities. It increases the dispersal among habitat patches under harsh climatic conditions and maintaining of population sizes of vulnerable species and favorable environment conditions. Soil microarthropod communities from isolated habitats were found to be less resilient than those in more connected habitats (through moss), implying a role for dispersal in the recovery of impacted communities.

In Romania, ecological studies were focused mainly on moss from soil, as a component of litter-fermentation layer. In order to fill this gap, we established the structure characterization of soil mite populations (Acari: Mesostigmata) from three moss habitats (rock, bark and soil). Fourteen natural forest ecosystems were analyzed, from eight counties of Romania. In total, 240 soil samples, 97 mite species and 3018 individuals were identified. The period of study was from April 2012 to October 2013. The highest value of numerical abundance was obtained in soil moss habitat (1622 individuals), in comparison with bark moss (627 individuals). The Shannon index of diversity recorded the highest value in soil moss ($H=2.99$), in comparison with bark moss ($H=2.63$) and rock moss ($H=2.31$). We found a significant effect of habitat type on both abundance ($F [1,237] = 18.538$, $P<0.0001$) and species richness ($F [1,237] = 33.1821$, $P<0.0001$).

Using multivariate statistical analysis, in each three types of moss, distinct mites' populations were identified. If we take into consideration the high values of species diversity and the presence of the characteristic mites (53.59% of the total number), we considered that moss habitats, from natural undisturbed forests, are very important from the conservative point of view.

This study was carried out within the framework of the projects: RO1567-IBB01/2018 from the Institute of Biology Bucharest, Romanian Academy.

Distribution, numerical abundance (A) and dominance (D) of *Calathus* (*Dolichus*) *halensis* (Schall.) in the investigated agricultural ecosystems, in Romania (1981-2001) and the Republic of Moldova (1985-1998)

Mircea VARVARA[1], Zaharia NECULIȘEANU[2]

[1]Faculty of Biology, "Alexadru Ioan Cuza" University, 20A Copou Blvd, 700506 Iași, Romania, e-mail: mvarvara@uaic.ro
[2]Institutul de Zoologie al A.Ş.M., 1 Academiei Str, 2028 Chişinău, Republic of Moldova, e-mail: zneculiseanu@yahoo.com

Key words: *Calathus* (*Dolichus*) *halensis*, collecting, Moldavia, Romania, Republic of Moldova, ecological characteristics.

The aim of the paper is to present a synthesis of numerical and percentage collecting of the species *Calathus* (*Dolichus*) *halensis* (Schall.) (Coleoptera, Carabidae) from eight agricultural ecosystems, both in Romania and the Republic of Moldova.

In Romania, the individuals of *Calathus halensis* were collected from eight agricultural crops (wheat, potatoes, sorghum, sugar beet, chicory, maize, sun flower, alfalfa) and two orchards (apples and plums), using 12 Barber pitfalls, protected against rainfall, with preservative liquid, 4% formalin solution.

In the Republic of Moldova, the material was collected from eight agricultural crops, namely: wheat, potatoes, sun flower, green peas, alfalfa, apple orchards, plum orchards and vineyards. In Romania, in total, the pit-falls were active in 28 localities for eight seasons (1977, 1981-1984, 1986, 1996, 2001). In total, 825 specimens of *Calathus halensis* were collected. In the Republic of Moldova, only 45 specimens were collected.

The ecological characteristics of the *Calathus halensis* are presented below. The species is distributed in open habitats: in agricultural fields, in the forest strips, in the ecotone, under various objects in wet places. Adults fly well in the summer months, being attracted to ultraviolet light. The species is breeding in summer-autumn, wintering in the larval and adult stages. Its peak activity is in August-September. Older adults can lay eggs also in the second year, but only fewer eggs and for a shorter period. In the second year, young adults emerge at the end of June-early July.

Long term changes of Chironomidae fauna from the Danube Delta

Orhan IBRAM[1,2], Gabriel LUPU[1], Dan COGĂLNICEANU[2]

[1]"Danube Delta" National Institute, 165 Babadag Str., 820112, Tulcea, Romania, e-mail: orhan.ibram@ddni.ro
[2]"Ovidius" University of Constanţa, Faculty of Natural Sciences and Agricultural Sciences, 1 Aleea Universităţii, Constanţa, Romania

Key words: Chironomidae, eutrophication, long term changes, Danube Delta.

Chironomidae is a widely distributed family of dipteran insects and their larvae represents one of the most abundant and diverse benthic community in aquatic ecosystems and provides information on water quality. The Danube Delta, with more than 300 shallow lakes interconnected by a network of man-made canals, natural channels and river branches, is the largest natural delta in Europe. The trophic state of the aquatic ecosystems of the Danube Delta have increased in early '80s with consequences on the structure of different biotic compartments. Chironomid species number was reduced and only 2-3 species were numerically dominant.

The objective of this research was to examine the long term changes in the composition of chironomid fauna of Danube Delta lakes. We compared historical data (1950's as a reference period, and 1980's as a transition to fast eutrophication period) with the results of a survey we made on chironomid fauna from 6 lakes, over three seasons in 2016. This survey yielded a total of 42 species. Three subfamilies are represented: Chironomine (67% from the total number of species), Orthocladiinae (25%) and Tanypodinae (8%). In the reference period a number of 28 species were identified in the literature with only 16 species in common with the present survey data. *Chironomus plumosus*, the dominant species of the hypetrophic period was also one of the important components from reference and survey data. Our study shows that the chironomidae community is recovering after the hypertrophy episode.

Lower Danube inland bodies of water fragmentation for fish in a potential future climate variation sequence of events

Angela CURTEAN-BĂNĂDUC[1*], Michael JOY[2], Horea OLOSUTEAN[1], Sergey AFANASYEV[3], Doru BĂNĂDUC[1]

[1*]"Lucian Blaga" University of Sibiu, Faculty of Sciences, 5-7 Dr. I. Raţiu Street, Sibiu, RO-550012, Romania, angela.banaduc@ulbsibiu.ro, mesaje.facultate@yahoo.com, ad.banaduc@yahoo.com
[2]School of Agriculture and Environment, Massey University, Private Bag 11 222 Palmerston North 4442, New Zeeland, m.k.joy@massey.ac.nz
[3]National Academy of Sciences of Ukraine, Institute of Hydrobiology, Geroiiv Stalingrada Avenue 12, Kyiv, Ukraine, UA-210, 04210, safanasyev@ukr.net

Key words: climate change, human impact, lakes, fish, Lower Danube Basin.

This research highlights a possible fragmentation of some of the Danube River Basin inland waters fish populations, overlapping with other fragmentation situations induced by other human activities impact.

The studied climate change potential events will affect 18 fish species of economic interest and eight fish species of conservation interest and will induce a significant disorder in some of the Lower Danube specific type of fish associations.

The studied area was identified as one of the significant hot spots regarding the fish fauna ecological status major hazard, in a possible climate change (heating-drought-water depth decreasing) sequence of potential future events.

Primarily the southern lakes of the studied area can be negatively influenced by the decreasing of the lakes water quality and quantity, some of the spawning habitats will vanish, some habitats and species will disappear, suspended sediment and nutrient levels in water will increase, eutrophication phenomenon will increase, the hydrological connectivity will diminish, fish associations' structure will change, etc.

The future potential relative isolation of researched lakes by the surrounding hydrographical nets, for safety reasons of human communities or to convert inland areas should be banned specially for the lakes: Balta Domnească, Razelm, Tăbăcărie, Siutghiol, Taşaul, Tatlageac, Sinoe, Potcoava, Snagov, Comana, Victoria Gheromane, Dunărea Veche, Oltina and Bugeac.

Some of the researched lakes can be managed as wetlands of international importance and are important stepping stone areas for the fish fauna of the Danube Basin: Snagov, Comana, Victoria Gheromane, Dunărea Veche, Oltina, Bugeac.

Food habitats of the Lepiney's Barbel (*Luciobarbus lepineyi*) (Teleosts: Cyprinidae) in the Draa valley, Southeast Morocco: impact of water salinisation

Mohamed NAIMI[1,4], Soufiane TAKI[2,4], Hassan BENAISSA[2,4], Elisabeth BERGER[3], Soumia LOULIDA[2,4], Mohamed GHAMIZI[2,4], Mohammed ZNARI[2,4]

[1]Polyvalent Laboratory of Research and Development, Sultan Moulay Slimane University, Department of Biology and Geology, Beni Mellal, Morocco
[2]Laboratory of Biodiversity and Ecosystem Dynamics, Cadi Ayyad University, Biology Department, Marrakech, Morocco
3Department Quantitative Landscape Ecology, Institute for Environmental Sciences, University Koblenz-Landau, Germany
[4]Natural History Museum of Marrakech, Morocco

Key words: Luciobarbus lepiney, Draa basin, water salinization, climate change, spring diet, body condition.

The increasing water salinization in the Draa basin, Southern Morocco, one of the 10 World most arid basins, due to climate change (chronic drought), and anthropic activities, can directly and/or indirectly affect freshwater biota. This would reduce and modify food availability for omnivorous and carnivorous animal species including freshwater fish, and therefore could impact their food habits and body condition. The last one can be also affected by fish tolerance to salinity that modifies physico-chemical characteristics of water, especially oxygen concentration. The present study aims to investigate the variation of spring diet composition in the Lepiney's Barbel *Luciobarbus lepiney*, an endemic fish to the Draa basin, along a salinity gradient. 155 individuals were caught using both electric fishing and hoop traps in March-April 2018 in three sites located in the Upper-Middle Draa valley. Potential preys and vegetal food materials were simultaneously sampled for reference collections. Collected water samples were analysed for electric conductivity, pH, temperature and concentrations of oxygen and other chemicals. The salinity varied from 0.7 to 3 ppt. Stomach contents were microscopically analysed and expressed using different dietary frequencies and indices. A morphometric index was used to assess the relative body condition. Barbel's reaveled to be rather omnivorous with a herbivorous trend (more than 70%). The animal parts included mostly insects (Ephemeroptera, Coleoptera, Trichoptera and Diptera) along with some crustaceans, molluscs and fish. There was a significant decrease in the diversity of animal food items with increasing water salinity. Yet, Ephemeroptera were particularly predominant in the most brackish site. This decrease in dietary diversity was accompanied by a decline of body condition. Increasing water salinization would limit the relative abundance and the species distribution range within the Draa basin which highly vulnerable to climate change and human activities that could affect the conservation status of this endemic species.

Does the type of competition matter in disruptive selection?

Alexandru STRUGARIU[1,2], Ryan Andrew MARTIN[1]

[1]Department of Biology, Case Western Reserve University, 2080 Adelbert Rd., Cleveland, OH, 44106, USA. e-mail: alex.strugariu@gmail.com; ram225@case.edu.
[2]Faculty of Biology, "Alexandru Ioan Cuza" University of Iaşi, 20A Carol I Blvd., 700505, Iaşi, Romania.

Key words: Resource polymorphism, exploitative competition, interference competition, behaviour, *Spea multiplicata*.

Disruptive selection arises when extreme phenotypes have a greater fitness advantage compared to the intermediate phenotypes between them. Disruptive selection is regarded as an important source of variation in natural populations, having the potential to initiate speciation. Current theory and recent empirical evidence suggest that by causing negative frequency dependent interactions, intraspecific resource competition is one of the key drivers of disruptive selection. However, intraspecific competition for resources can take different forms and be either indirect (exploitative competition) or direct (interference competition). While most general models of disruptive selection assume competition is exploitative, empirical data are lacking.

We experimentally investigated whether the type of competition is relevant in disruptive selection using a system where disruptive selection is common: the Mexican spadefoot toads (*Spea multiplicata*). Tadpoles of this species develop into one of two extreme phenotypes; carnivore morphs, which have large jaw muscles, serrated mouthparts and short intenstines consume mainly fairy shrimp as well as other tadpoles, and omnivore morphs, with small jaw muscles, large intenstines and smooth mouthparts, feed mainly on algae and detritus. Previous studies have shown that intermediate morphs have a much lower fitness, as they are outcompeted by the specialized tadpoles for both resources.

Our experiments revealed that (i) carnivorous tadpoles (that were briefly starved in order to initiate cannibalism) do not have a significant preference for intermediate or omnivore tadpoles, (ii) the presence of carnivores significantly modified the foraging behaviour of omnivore and intermediate tapoles, and (iii) intermediate tapoles exhibited a significantly lower growth rates in direct (interference) competition treatments in comparison to exploitative competition treatments, when in competition with carnivores but not omnivores. These results suggest that interference competition may play a role in driving disruptive selection but is unlikely to be the major cause, as it was not significatly greater for intermediate morphs.

Disentangling the effects of dispersal, niche and biotic interactions in shaping species distributions of amphibious marine snakes (Reptilia: Laticauda)

Iulian GHERGHEL[1,2], Francois BRISCHOUX[3], Monica PAPES[4]

[1]Department of Biology, Case Western Reserve University, Cleveland, Ohio, USA;
[2]Faculty of Geography and Geology, Alexandru Ioan Cuza University, Iași, Romania;
[3]Centre d'Etudes Biologiques de Chize,CEBC-CNRS, UMR 7372, Villiers en Bois, France;
[4]Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville,Tennessee, USA.

Key words: species distribution modeling, biotic interactions, dispersal ability, marine snakes.

Species distribution modeling (SDM) is an important technique to study diverse questions in biogeography. SDMs are correlating the occurrence records of a species with its environmental (usually, climatic) variables to estimate species distributions. Although the effects of climate on species distributions have been studied for a long time, the effects of dispersal and biotic interactions have attracted less attention. Here, we are estimating the species distribution of sea kraits (Reptilia: Laticauda), which are amphibious marine snakes specialized in feeding on eels and live in South-East Asia and Pacific. First, we estimated the sea krait species distributions in both marine and terrestrial environmental domains. We found that when the two domains are being modeled separated, the distribution estimates are overpredicted; however, when both domains are taken into account, then the species distribution estimates are more restricted. Hence, we can conclude that when studying amphibious species, is important to take both environmental domains into consideration. Second, we tested whether a) biotic interactions are being important in shaping species distributions, and b) whether biotic interactions improve the accuracy of species distribution estimates. We found that biotic interactions are a significant influence in shaping sea krait species distributions, and that inclusion of biotic interactions into SDMs results into more accurate models. Hence, we can conclude that when available, biotic interactions should be included in the models. Finally, we tested whether sea kraits distributions are corresponding to the niche availability or dispersal ability. We found that the most suitable pixels for all species are found within the estimated accessible area. Hence, we can conclude that sea kraits are restricted by the niche availability. Dispersal is an important aspect of estimating species distributions, hence, it should be considered in the process of studying species distributions.

Chromosomal instability in the common vole *Microtus arvalis*, obscurus karyotypic form (Rodentia, Arvicolinae) in the north-east of European Russia: exploring the causes of a rare mutant karyotype appearance

Lidia E. YALKOVSKAYA, Evgenia MARKOVA,
Sergey ZYKOV, Petr SIBIRYAKOV

Institute of Plant and Animal Ecology, Ural Division Russian Academy of Sciences, 202, 8 Marta Str., 620144 Yekaterinburg Russia, e-mail: lida@ipae.uran.ru

Key words: rodents, karyotype, chromosomal aberrations, mutagenic potential, environmental stressors

In order to identify taxonomic status of common voles in the parapatric contact zone between two chromosome forms - "arvalis" and "obscurus", a karyotypic analysis of 65 individuals from 5 localities in the north-east of European Russia (the Vyatka-Kama Cis-Urals) was carried out. All individuals have the "obscurus" karyotype (2*n*=46, NFa=68). However, in the offspring (5 males) of a pregnant female captured in one of the localities, three males with an unusual karyotype 2n=45, NF=71 were found; probably, this karyotype is a result of translocation between the Y-chromosome and a small acrocentric autosome. This rare mutation has been found previously in laboratory mice in the offspring of an irradiated male (Leonard & Deknudt, 1969). We had assumed that the appearance of that mutant karyotype in common voles from the Vyatka-Kama Cis-Urals could be a result of a mutagenic impact of the environment.

Chromosomal instability assessed by the frequency of chromosomal aberrations in bone marrow cells is widely used in estimation of the mutagenic potential of environmental contaminants and stressors. To test our assumption, the chromosomal instability in 65 common voles captured in north-eastern part of European Russia and in their offspring (27 individuals) from pregnant females was studied. The results were compared with the data obtained in the conspecific natural populations inhabiting territories polluted by heavy metals and radionuclides and unpolluted areas.

The analysis of chromosomal instability reveals no significant increase in the frequencies of chromosome aberrations, thus suggesting the low levels of the mutagenic potential of the environment in the habitats of common voles in the north-eastern part of European Russia. According to this result, the mutant karyotype in the offspring of common voles from the Vyatka-Kama Cis-Urals might not be a consequence of environmental mutagenic impacts.

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The importance of apex predators for forest ecosystem – an example of the wolf

Zbigniew BOROWSKI[1], Adam WÓJCICKI[1],
Andżelika HAJDT[1], Lidia E. YALKOVSKAYA[2]

[1]Department of Forest Ecology, Forest Research Institute, Braci Lesnej 3, 05-090 Raszyn, Poland; e-mail: z.borowski@ibles.waw.pl
[2]Institute of Plant and Animal Ecology, Ural Division of RAS, 8 Marta Street, Ekaterinburg, Russia

Key words: wolves, ungulate, forest districts, forest regeneration

Large predators can both directly and indirectly influence ungulate populations and in consequence can help shape the structure and functioning of terrestrial ecosystems. In Europe, ungulates create the biggest problem for forest regeneration, whereas the wolf is known to be a species creating density-mediated and behaviourally-mediated effects on their ungulate prey species. That is why we analysed on the big and the fine scales, the role of wolf presence on the deer pressure on forest regeneration.

On the large scale, we analysed 116 forest districts located in different parts of Poland which were chosen for this analysis. These forest districts were divided into three categories: (1) districts where wolves were present at least from 2000, (2) where they were present from 2005, (3) districts without wolves' presence. The impact of ungulate populations on forest ecosystem were calculated as an area of trees damaged by deer.

On the fine scale we created the study with experimental manipulation of wolf predation risk by their scats exposition in artificially created plots with oak (*Quercus* sp.) seedlings.

Generally, in forest districts where wolves were present the ungulate pressure on youngest forest stages is significantly lower than in districts without this predator. The lowest damaged was observed on forest plantations in locations where wolves were present (both for a long and short period). However, in forests recently inhabited by wolves the intensity of tree damages in forest thicket (forest regeneration 10 – 20 years old) was the highest.

More detailed, the wolf presence changed deer behaviour and caused significantly lower pressure on oak regeneration.

Our results indicate that long-lasting presence of large predators like wolves in European forest ecosystems has positive impact on forest regeneration, because their presence helps to protect commercial forests against deer's browsing and bark stripping.

New data on the distribution of the oak lace bug *Corythucha arcuata* (Say, 1832) (Hemiptera: Tingidae) in Romania

Elena BUHACIUC-IONIȚĂ[1], Marin IONIȚĂ[1]

[1]"NATURA-Z" Research and Education Society for Biodiversity Conservation, 123 Dorului Str., 900374, Constanța, Romania, e-mail: scecbnaturaz@gmail.com

Key words: *Corythucha arcuata*, invasive species, new record, oak lace bug, natural protected area.

Native to North America, the oak lace bug *Corythucha arcuata* (Say, 1832) (Hemiptera: Tingidae) was reported for the first time in Europe in 2000 from northern Italy. 13 other observations of this species where reported until 2017 from Switzerland, Turkey, Iran, Bulgaria, Hungary, Croatia, Serbia, Russia and Romania.

In September 2018, during a biodiversity study for several natural protected areas, we found a 34, 61 ha surface with *Querqus* ssp. entirely affected by *Corythucha arcuata*, in ROSPA0111 Berteștii de Sus - Gura Ialomitei. In October 2018, we have made another observation of this species on the Querqus ssp. from the Railway Station Park, Constanța. This is the first observation for Dobrogea County.

Considering the wide distribution of *Corythucha arcuata* in Romania for the present, and the large distances between the four distribution points, we assume there are several affected areas all around our country, that have not yet been studied, and that its introduction was not recent. In other European countries it has been conducted a CSL Pest Risk Analysis, and *Corythucha arcuata* is listed on the Alert List of the European and Mediterranean Plant Protection Organization (EPPO).

We consider that further studies are necessary in order to properly evaluate *Corythucha arcuata* distribution in Romania, along with the study of ecological implications for the affected *Querqus* ssp. areas. Therefore, we have created the *Corythucha arcuata* national observation project (CANOP) for a prompt and efficient identification of this pest distribution in our country.

Multifaceted implications of the competition between the native crayfish *Astacus leptodactylus* and the invasive *Orconectes limosus* in the Lower Danube: a glimmer of hope for the native's long-term survival

Octavian PACIOGLU[1], Kathrin THEISSINGER[2], Andreea ALEXA[3], Corina SAMOILĂ[3], Ovidiu-Ioan SÎRBU[3], Anne SCHRIMPF[2], Jochen P. ZUBROD[2], Ralf SCHULZ[2], Mălina PÎRVU[1], Sandra-Florina LELE[1], John Iwan JONES[4], Lucian PÂRVULESCU[1]

[1]Department of Biology-Chemistry, Faculty of Chemistry, Biology, Geography, West University of Timisoara, 300115 Timisoara, Romania; e-mails: octavian.pacioglu@e-uvt.ro; pacioglu@yahoo.com .
[2]Institute for Environmental Sciences, University of Koblenz-Landau, 76829 Landau, Germany
[3]Department of Biochemistry and Pharmacology, Faculty of Medicine, "Victor Babeș" University of Medicine and Pharmacy Timișoara, 300041 Timișoara, Romania
[4]School of Biological and Chemical Sciences, Queen Mary University of London, E1 4NS London, UK

Key words: *Astacus leptodactylus*; Biological invasions; *Orconectes limosus*; Principle of Competitive Exclusion

In this study, a real-time invasion process between a native (*Astacus leptodactylus*) and an invasive (*Orconectes limosus*) crayfish species was capitalized in the Lower Danube through an interdisciplinary approach, by measuring various ecological, genetical, physiological and biometrical endpoints. The results revealed that the prolonged competition either drove the native species to extinction, or, surprisingly, allowed its survival as highly fragmented populations. However, for the latter situation, severe costs for several biological traits were depicted in the remnant populations, showing increased elemental imbalance for two major macronutrients (C and N), decreased trophic position, omnivory index within the food webs and strongly contracted trophic niche widths. The strong interspecific competition in the invaded areas, where the native crayfish survived, favoured the preponderance of males with bigger and heavier claws, which expectedly increased their chances for securing resources in face of prolonged competition. The genetic diversity of the native crayfish populations was strongly reduced in invaded sectors, showing that the population size contraction and spatial patchy distribution decreased significantly the odds of encountering with other conspecifics from the metapopulations from non-invaded areas of the Lower Danube. The invasive crayfish proved to be superior regarding the abovementioned aspects, raising its trophic position, degree of omnivory and strongly overlapping the trophic niche with the native species in the active areas of encountered competition. Our findings shed hope for the expected future of native crayfish species in the context of upcoming generalized invasions.

Parasitological research of terrestrial mollusks in Samegrelo region of west Georgia

Lela ARABULI

Ilia State University, Institute of Zoology, Cholokashvili ave. 3/5, 0162 Tbilisi, Georgia, e-mail: lela.arabuli.1@iliauni.edu.ge

Key words: mollusks, nematoda, trematoda, intermediate host, Georgia.

Terrestial mollusks as intermediate hosts have the important role in spreading parasitic diseases. Their role in the cycle of helminths development is studied less in Georgia. The aim of this research was to investigate the role of terrestrial mollusks in spreading helminthoses over the Samegrelo region of Western Georgia which is famous for livestock farming and characterized by a humid subtropical climate.

Investigation was provided in the spring of 2017. 346 individuals of 12 species land snails, which belong to 6 families, were collected and investigated. The study of the parasites was carried out on live objects with temporary preparation. 8 species (*Lytopelte sp., Caucasigena eichwaldi, Jasonella mingrelica, Oxychilus mingrelicus, Circassina frutis, Caucasotachea calligera, Mucronaria duboisi, Elia derasa, Pomatias rivularis, Quadriplicata dipolauchen,*) 101 specimens (29,1%) of mollusks were invaded by larval forms of tremetodes and nematodes. Invasive mollusks were invaded much more with nematodes (*Protostrongylus* sp., *Muellerius* sp.). High percent of invasion was distinguished *O. mingrelicus* (87,7%) and *Lytopelte sp.* (71,4%). Trematodes – cercariae and metacercariae of *Dicrocelium* were registered with low intensity (7,7%) only in *O. Mingrelicus* and together larval stages of nematodes.

Research showed that above listed 8 species terrestrial mollusks, particularly *Oxychilus Mingrelicus* and *Lytopelte sp.* play the significant role in the spreading of nematodoses (protostrongyloses and muellerioses) in Samegrelo region. Subtropical, humid, damp climate is the promotional factor for the larvae intensive segregation from invaded mollusks in the environment, which provides invasing host animals, mainly sheep and goats. *Lytopelte sp., C. eichwaldi, J. mingrelica, O. mingrelicus, C. frutis, C. calligera, P. rivularis.* is identified as new intermediate hosts of nematodes (*Muellerius* sp.*; Protostrongylus sp.*) and trematodes (*Dicrocelium* sp.) in Georgia.

Homo erectus paleoenvironments in the early Pleistocene Denizli Basin: an integrated paleontological, sedimentological and geochemical approach

Lea RAUSCH[1], Hülya ALÇIÇEK[2], Amelie VIALET[3], Nicolas BOULBES[3], Serdar MAYDA[4], Vadim V. TITOV[5], Marius STOICA[1], Sylvain CHARBONIER[6], Yeşim BÜYÜKMERIÇ[7], Hemmo ABELS[8], Alexey S. TESAKOV[9], Anne-Marie MOIGNE[3], Frank P. WESSELINGH[10], M. Cihat ALÇIÇEK[2]

[1]Faculty of Geology and Geophysics, 1 Balcescu Blvd, 010041 Bucharest, Romania, email: lean.rausch@gmail.com
[2]Department of Geology, Pamukkale University Denizli, Turkey.
[3]Muséum National d'Histoire Naturelle, Département Homme & Environnement, UMR 7194, Université de Perpignan UPVD, France
[4]Ege University, Dept. of Biology, 35100, Izmir, Turkey
[5]Institute of Arid zones SSC RAS, 41 Chekhov Str., 41, Rostov-on-Don, Russia
[6]Muséum National d'Histoire Naturelle, Département Origines & Evolution, 8 rue Buffon 75005 Paris Cedex, France
[7]Bülent Ecevit University, Dept. of Geology, 67100, Zonguldak, Turkey
[8]Delft Technical University, Faculty of Civil Engineering and Geosciences Stevinweg 1, Delft, The Netherlands
[9]Geological Institute of the Russian Academy of Sciences, 7 Pyzhevsky, 119017, Moscow, Russia
[10]Naturalis Biodiversity Center, P.O. Box 9517, 2300 RA Leiden, The Netherlands

Key words: Quaternary, Kocabaş, travertine, ostracods.

The early Pleistocene travertines from the Denizli Basin (Turkey) that host the only one known *Homo erectus* from Anatolia (Kocabaş) are laterally interfingering with a succession of shallow, alkaline lake deposits. We studied the sedimentary succession, micro- and macropaleontology of the deposits and stable isotope compositions ($\delta^{18}O$ and $\delta^{13}C$) of the mollusc shells in order to reconstruct paleoenvironments for these early hominins and explore the opportunities and limiting landscapes providing their life. Three units are defined in the upper part of the Quaternary succession which consists of a partially coeval succession of shallow lake carbonates, bedded fine-grained carbonates and travertines. The age of the studied fossiliferous travertine units is constrained by a variety of approaches between 1.2 and 1.6 Ma. The vertebrate fossils (*Archidiskodon meridionalis*, *Palaeotragus*, *Metacervoceros*, *Cervalces*, *Stephanorhinus* and two species of *Equus*) including *Homo erectus* derive from the uppermost travertines that formed at the shore of a shallow alkaline lake. The ostracods derived from the underlying lake deposits are abundant and well preserved. The assemblage consists of a mixture of brackish or strongly alkaline taxa (e.g. *Cyprideis, Tyrrhenocythere, Loxoconcha* and *Amnicythere*) together with fresh water ostracods (e.g. *Candona, Pseudocandona, Eucypris, Lineocypris*). The molluscs from the shore zone deposits experienced diagenetic alterations, probably caused by the travertine forming process, resulting in a unique recrystallization. Both ostracod and mollusc associations suggest the presence of an anomalohaline (or strongly alkaline) lake setting, constraining the habitat of the *Homo erectus*. The presence of travertine terraces next to the

alkaline lake may have posed challenges on hominin occurrences, their habitat and landscape adaption.

Marine species in the Romanian Red Data Book of Invertebrates

Marius SKOLKA[1], Adrian TEACA[2], Tatiana BEGUN[2],
Mihaela MUREȘAN[2], Victor SURUGIU[3]

[1]Natural Sciences Department, Ovidius University of Constanţa, 1 Aleea Universităţii, Corp B, 900470, Constanta, Romania, e-mail: mskolka@gmail.com
[2]National Institute for Research and Development of Marine Geology and Geoecology – GeoEcoMar, 304 Mamaia Blv., Constanta, Romania
[3]Faculty of Biology, „Alexandru Ioan Cuza" University of Iasi, 22 Carol I Boulevard, Iaşi RO 700505

Key words: marine invertebrate species, Romanian Red Data Book, conservation status.

Species with special conservation status are currently a constant presence around the globe, be it terrestrial, freshwater or marine. The inclusion of species in the Red List and Red Data Book is an initiative that has as result an increased awareness of the public about the complex issues of biodiversity conservation. On the other hand, such initiative creates the premises for administrative measures regarding endangered species. For the Black Sea there are initiatives in this respect, there are Red Data Books of neighbouring countries that include marine species and habitats (*e.g.* Red Data Book of Bulgaria, vol. 3 Natural habitats (2015), Red Book of Ukraine (2009)), and even a Black Sea Red Data Book (1999).

Taking into account IUCN criteria, we are proposing a number of 52 marine and brackish water species to be included in the future Red Data Book of invertebrates of Romania: sponges (Porifera) - 2 species, jellyfishes (Cnidaria) – 1 species, ribbon worms (Nemertea) - 1 species, bryozoans (Bryozoa) - 1 species, flatworms (Plathelminthes) - 1 species, bristleworms (Polychaeta) - 5 species, crustaceans (Crustacea) – 19 species and mollusks (Bivalvia, Gastropoda and Polyplacophora) – 21 species.

After analyzing the literature data and direct observations in recent years, the authors propose their classification into the following IUCN categories: CR - 12 species, EN - 29 species and VU - 10 species.

Rare species - how endangered are they? Butterflies from Dobrogea case study

Marius SKOLKA[1]

[1]Natural Sciences Department, Ovidius University of Constanţa, 1 Aleea Universităţii, Corp B, 900470, Constanta, Romania, e-mail: mskolka@gmail.com

Key words: Rhopalocera, Dobrogea.

It is a fact that butterflies are one of the most visible group of insects, and the presence or the absence of some species could provide valuable informations about the conservation status of natural habitats (Settele et al, 2008). For this reason, a relative high number of Rhopalocera were included in the annexes of the Habitat Directive. In Dobrogea, among the species included in annexes of the Government Ordinance nr. 57/2007, we find over 30 species of Rhopalocera.

In the last decades, some of the species included in this categories had an interesting trend concerning the population distribution at regional level (Dincă & Vila, 2008; Dincă et al., 2009, Székely, 2016). Species like *Zerynthia polyxena* Denis et Schiffermuller 1775*, Zerynthia cerisyi ferdinandi* Stichel 1907*, Euchloe ausonia taurica* Rober 1907*, Tomares nogelii dobrogensis* Caradja 1895*, Kirinia roxelana* Cramer 1777*, Neptis sappho* Pallas 1771*, Euphydryas maturna* Linnaeus, 1758 are some examples where obvious changes were observed at a population level.

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About the critically endangered butterfly *Colias myrmidone* and one of its last refuges in the European Union in Transylvania (Romania)

Tibor-Csaba VIZAUER[1,2], Ágnes KASTAL[2], Jacqueline LOOS[3], Matthias DOLEK[4], László RÁKOSY[1,2]

[1]Babeş-Bolyai University, Faculty of Biology and Geology, 5-7 Clinicilor Str., 400006 Cluj-Napoca, Romania, emails: vizauercsaba@gmail.com; laszlo.rakosy@ubbcluj.ro
[2]Romanian Lepidopterological Society, 5-7 Clinicilor Str., 400006 Cluj-Napoca, Romania, email: kastalagi@gmail.com
[3]Leuphana University, Institute of Ecology, Faculty of Sustainability Science, Universitätsallee 1, 21335 Lüneburg, Germany. email: loos@leuphana.de
[4]Ecological Research & Planning Geyer & Dolek, Alpenblick 12, 82237 Wörthsee, Germany, email: Matthias.Dolek@Geyer-und-Dolek.de

Key words: decline, conservation status, distribution, mark-release-recapture, Natura 2000.

The European Red List of Butterflies published in 2010 states that only two out of 421 diurnal butterfly species in the European Union are listed as critically endangered. One of them, the endemic *Pieris wollastoni,* has not been seen for at least 40 years, and may be considered extinct in the world. The other species, the Danube Clouded Yellow (*Colias myrmidone*), has become extinct in eight countries of the European Union, mainly in the last decades.

Also, in Romania, *C. myrmidone* suffered dramatic declines. Based on collection and publication data, this species occurred in about 100 locations before 2010. In the last decade, however, *C. myrmidone* was recorded only in a few localities in Romania, all of them in Transylvania; more precisely in the central part of the Eastern Carpathians and in the northern parts of the Apuseni Mountains. After joining the European Union in 2007, Romanian's government has designated 18 Natura 2000 sites for the conservation of *C. myrmidone*. Further studies have shown that in many of these areas *C. myrmidone* was extinct or the designation was based on erroneous data. As a result, three additional Natura 2000 sites with extant *C. myrmidone* populations were designated in 2016.

Between end of July and beginning of September 2018 we conducted a mark-release-recapture study on a *Colias myrmidone* population in one of these recently established Natura 2000 sites namely ROSCI0274 Agârbiciu. We marked more than 700 individuals in an area of 120 ha. Our preliminary findings reveal that we recaptured about one third of the marked butterflies at least once. Our study suggests that we found probably one of the most abundant *C. myrmidone* populations of the European Union, confirming that Transylvania is of special importance for biodiversity.

Managing and restoring aquatic EcologicAl corridors for migratory fiSh species in the danUbe RivEr baSin – MEASURES Project in Romania

Simona MIHĂILESCU[1], Iuliana Florentina GHEORGHE[1], Cristina Alina DUMITRACHE[1], Cristina SANDU[2]

[1]Institute of Biology Bucharest, Romanian Academy, Splaiul Independenţei no. 296, 060031, Bucharest 6, Romania, e-mail: simona.mihailescu@gmail.com
[2]DSTF – Danube Sturgeon Task Force, http://www.dstf.eu

Key words: MEASURES Project, key habitats, ecological corridors, migratory fish.

MEASURES will pave the way for the establishment of ecological corridors through identifying key habitats and initiating protective measures along the Danube and its main tributaries. A methodology for migratory fish habitat mapping will be developed and tested. Two pilot actions are envisaged: (1) identify and map key habitats, (2) restocking of two native species to conserve their genetic pool.

A MEASURES Information System (MIS) will facilitate access to information for experts, decision makers and the general public. The MIS is a unique online information center. It includes a reference library, a metadatabase and a data center to provide scientists, decision makers and the general public with information about ecological corridors and the connectivity of habitats for long- and medium-distance migratory fish of the Danube River Basin.

Enhancing capacity at national and transnational levels aims to strengthen the support for ecological corridors, migratory fish and their habitats beyond the project end.

At national level, Romanian team of the Institute of Biology Bucharest, together with Lead partner (University of Natural Resources and Life Sciences, Vienna) and other 10 partners and associated strategic partners from different countries (Austria, Bulgaria, Croatia, Germany, Hungary, Netherlands, Romania, Serbia, Slovakia, Slovenia) intends to establish national nuclei for the conservation of migratory fish and their ecological corridors in the Danube countries in order to coordinate conservation efforts between existing programs and legislations.

MEASURES Project is co-funded by European Union funds (ERDF, IPA).

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New data regarding the trophic spectrum of the Large Whip Snake (*Dolichophis caspius)* in Dobrudja, Romania

Marian TUDOR[1], Alexandra TELEA[1], Costin TIMOFTE[1]

[1]"Ovidius" University of Constanţa, Faculty of Natural and Agricultural Sciences, Department of Natural Sciences, 1 Aleea Universităţii, corp B, Constanţa 900470, Romania, e-mail: marian.tudor@univ-ovidius.ro

Key words: Large Whip Snake, feeding habits, prey items, post-hibernation, road-kills.

One of the largest and fastest snakes in Europe, *Dolichophis caspius* is, at the same time, one of the least researched snakes. Over time, only a few aspects of the biology and ecology of this species were studied and published.

For over ten years, we have collected and analyzed the stomach content of 256 individuals of both sexes and from all age groups. We chose methods that were least invasive and when this was not possible, we analyzed the freshly collected faeces. Almost a third of the analyzed cases were road-killed snakes. In such situations, the animals were dissected and their stomach content analyzed in detail.

The obtained results clarified and supplemented the data related to the trophic spectrum of *Dolichophis caspius* and offer arguments on the major differences existing among the feeding habits of adults, subadults and juveniles. Also, we took into account the stages of the snake lifecycle and we attempted an analysis of the differences existing between the type of prey ingested during the post-hibernation period and the one ingested in the rest of the active season. Also, in this case, the results obtained show marked differences among the analyzed stages, but also among the volume, number and type of pray ingested by adult individuals of both sexes, especially during the first month from hibernation emergence.

Territoriality song in Blackbirds (*Turdus merula*) – a potential bioindicator of noise disturbance levels in urban parks

Andreea CIOBOTĂ[1], Cristina-Andrea STAICU[2],
Mihaela CIOBOTĂ[3], Dumitru MURARIU[4]

[1,3]Doctoral School of Biology, University of Bucharest, 91-95 Splaiul Independenţei, 050095 Bucharest, Romania, e-mail: andreya893@yahoo.com
[2]Department of Biochemistry and Molecular Biology, College of Biology, University of Bucharest, 91-95 Splaiul Independenţei, 050095 Bucharest, Romania
[4]Department of Ecology, Taxonomy and Environment Protection, Biological Institute of the Romanian Academy, 060031 Bucharest, Romania

Key words: acoustic adaptations, background noise, Blackbird, bioindicator, low-pitched migrants, urban park

Urban parks come forth as unavoidable connectivity sites on songbird migrational routes, when crossing over large cities. However, most migratory songbirds are low-pitched and, consequently, exposure to high levels of low frequency background noise in anthropic habitats disrupts interspecies communication and may affect individual fitness so that the use of urban parks results in extra costs to the migrational phenomenon. Our research launches the hypothesis that an analysis of the acoustic adaptations of a resident low-pitched species could prove an useful bioindicator of urban parks suitability for other low-pitched migrants in terms of levels of disturbance.

As such, territoriality dusk songs of male Blackbirds (*Turdus merula*) were recorded during the singing period (March – June, 2018) in 2 Bucharest parks ("D. Brândză" Botanical Garden and Cişmigiu Urban Park), similar in size (approx. 16 km^2), age (over 100 years) and topography. The records were analyzed with RavenLite2.0 for note length and peak low-frequency in the motif parts of the song, and compared to background noise levels registered at the moment of singing. Additionally, the presence and incidence of song disturbance sources was listed for each park, with Cişmigiu Urban Park disclosing the highest and most constant levels of anthropogenic sound interference. The T-test and linear regression analysis showed that Male Blackbirds tended to extend syllable length in louder areas and to shift vocal emission frequency to higher pitches in response to urban noise in Cişmigiu Park. Furthermore, park artificial lightening caused them to extend dusk singing by one hour in Cişmigiu.

Further research is needed on low-pitched migrants in urban parks, but acoustic adaptations of male song in city Blackbirds could serve as a groundwork for songbird-adequate urban park designing, holding broader implications in terms of ex-situ conservation for low-pitched migrants in human-altered habitats.

Actual status of *Neomys* species in the Republic of Moldova

Victoria NISTREANU

Institute of Zoology, 1 Academiei Str, Chisinau, MD-2028, e-mail: vicnistreanu@gmail.com

Key words: *Neomys* species, multiannual dynamics, abundance, rare species

The studies were performed during 2014-2017 on the whole territory of the Republic of Moldova. The Water shrew (*Neomys fodiens*) wasn't recorded in our studies neither in other researcher's studies for over 90 years. The species is mentioned only by Brauner (1923), after which it was cited as occurring on the territory of the republic even after numerous studies of small mammal fauna. But all the researchers that studied the shrew fauna didn't find the Water shrew on the republic territory. It is possible that Brauner registered the Water shrew in the northern and southern parts of Bessarabia, which now belong to Ukraine.

Neomys anomalus is the most hydrophilous species among the shrews from our territory. The Mediterranean shrew was mentioned as rare species in the first studies, but later Lozan (1975) mention that it is a rather common shrew species in paludous and riparian habitats from central and southern zones, being even more abundant than the common shrew (up to 10% among small mammals in the southern zone). Toward the end of the past century the species became very rare and its abundance decreased from 10% in the 1960's to 0.4% in the 90's (Mihainlenko, 1997). After 2000 the Mediterranean shrew was registered in small amount in reserves and in wet habitats from several districts of the republic, with the abundance ranging from 0 to 11% from the shrew communities. It was registered in paludous biotopes, wet ditch with hydrophilous vegetation, in wet valleys from natural woods in the center of the republic and at ecotone forest-paludous biotope, where it was rather abundant (up to 15%). Its abundance, in the republic ecosystems, decreased drastically in the last 20 years and it becomes a very rare and critically endangered species listed in the Red Book of Moldova (Nistreanu, 2015).

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POSTER PRESENTATIONS

Ion Licherdopol - scientific personality and founder of museological collections

Angela PETRESCU, Gabriela ANDREI

"Grigore Antipa" National Museum of Natural History, 1 Kiseleff Blvd, 011341, Bucharest 2, Romania, e-mail: angelap@antipa.ro, arnold4386@gmail.com

Key words: Ion Licherdopol, biographical data, museum, malacological collection, bird collection.

Romanian intellectual, professor and science personality, Ion. P. Licherdopol (1842-1908), is commemorated this year, at 110 years since his death. He was among the first generations from the Faculty of Sciences from the recently founded University of Bucharest. At Gregoriu Ştefănescu's advise, as his professor, he pursued his studies on Romanian molluscs. He also took part in "The Fauna of Romania" study group, from Romanian Academy and succeeded in publishing an Academy awarded volume, "*Malacological Fauna of Romania*".

During his studentship and even afterwards he was a professor in "Elena Doamna" Asylum and next he taught sciences at the Commercial Superior School from Bucharest. He worked as Professor Gregoriu Ştefănescu's assistant, at the Zoology Museum and also in the Geological Bureau, which was founded to elaborate the first geological map of Romania. During his career he participated at geology international congresses, he published papers on the malacological fauna from different areas of the country, studied the urban fauna of Bucharest and also for the first time he had analyzed Romania's mineral waters composition. In addition to the published volumes he organized a complete collection of shells from Romanian fauna and also a bird egg collection; nowadays, both of them are in the patrimony of natural sciences museums from Bucharest and Craiova.

Ion P. Licherdopol, illustrious personality, with mutiple intellectual preoccupations, will rest in the Romania's pantheon of sciences through his published studies, but most of all through his collections which are nowadays in different museums from Romania.

Preliminary results on the decapoda fauna collected from Mauritania

Ana-Maria PETRESCU, Iorgu PETRESCU

"Grigore Antipa" National Museum of Natural History, Şos. Kiseleff no. 1, 011341 Bucharest 2, Romania, e-mails: anapetrescu@antipa.ro; iorgup@antipa.ro

Key words: Mauritania, decapoda, Banc d'Arguin, Grigore Antipa, Mihai Băcescu, Petre Mureşeanu

This year we celebrate 110 years since the birth of savant Mihai Băcescu, the founder of the Romanian school of carcinology at the "Grigore Antipa" National Museum of Natural History. On this occasion we report the first comprehensive list of the decapods collected by Prof. Băcescu during the scientific expedition with the ship "Thalassa", on the coasts of Mauritania and other decapods collected by his collaborator, Commander Petre Mureşeanu.

In 1971, two surveys were made along the coasts of Western Sahara (Cap Blanc) and Mauritania (Banc d'Arguin). During the third campaign on the NW coast of Africa of "Thalassa", between January and February, various families of decapods were collected from 17 stations (dredging and bottom trawls), 15 to 270 m depth, from muddy and sandy bottoms.

In the Brachyura, section Heterotremata, we have identified 13 families (Calappidae, Leucosiidae, Epialtidae, Inachidae, Atelecyclidae, Matutidae, Parthenopidae, Ethusidae, Dorippidae, Polybiidae, Portunidae, Xanthidae, Majidae), while in section Podotremata, only three families (Homolidae, Dromiidae, Raninidae) and a total of 30 genuses and 40 species.

From Anomura Infraorder, Paguroidea (with two families, Diogenidae and Paguridae) and Galatheoidea (with three families, Galatheidae, Munididae and Pocellanidae), we have identified nine genera and 11 species.

Shrimps and prawns are well represented from numerous stations, reuniting 16 genera and 19 species. Caridea are well represented, with six families (Acanthephyridae, Alpheidae, Crangonidae, Processidae, Pandalidae, Pasiphaeidae) and Dendrobranchiata, with only 7 species from 4 families (Penaeidae, Sicyoniidae, Solenoceridae , Sergestidae).

After surveying the collection, almost 30% of the jars were labeled as unidentified specimens or partially identified only to genus. More than 900 specimens had been collected during the two campaigns and from those, more than one third were introduced in the museum's patrimony this year.

A few interesting Romanian *Carabus* species and subspecies (Coleoptera: Carabidae) from the *Dr. Pompiliu Lie* collection

Melanya STAN

"Grigore Antipa" National Museum of Natural History, 1 Kiseleff Blvd, 011341 Bucharest 2, Romania, e-mails: mstan@antipa.ro

Key words: *Carabus,* Romania, Dr. Pompiliu Lie collection.

The Coleoptera collections of the Museum grew through the acquisition of one private collection, valuable through the number of specimens and diversity of species, in 2016: the *Carabus* Collection, pertaining to both Romanian and world fauna, gathered by Dr. Pompiliu Lie (Lugoj, Timiș County). Dr. Pompiliu Lie (1926-2012) was a physician and a passionate researcher of natural sciences. The Romanian *Carabus* collection is a standard collection for the Romanian region of Banat, but many specimens were collected from different collecting sites in other historical regions of Romania: Transylvania, Bukovina, Oltenia, Moldova, Muntenia, Dobrogea.

The collection contains species and subspecies which are rare in the Romanian fauna or endemic in the Carpathians:

Carabus clathratus auraniensis J. Müller from Letea forest (Danube Delta)

C. planicollis planicollis Küster from Domogled Mt., Retezat, Parâng, Făgăraș, Bucegi Mts, Păltiniș, Bistra (Maramureș)

C. rothi alutensis Săvulescu from Călimănești and Râmnicu Vâlcea

C. cavernosus rozneri Retezár & Szél from Trascău Mts (Râmetea, Piatra Secuiului)

C. graecus morio Mannerheim from Codru-Babadag forest

C. fabricii malachiticus C. G. Thomson from Rodna Mts

C. irregularis montandoni Buysson from Retezat, Bucegi, Giurgeu and Gutâi Mts

C. gigas gigas Creutzer from Băile Herculane, Domogled Mt., Sasca Montană, Pojoga, Dubova

C. marginalis Fabricius collected from Vârghișului valley (Harghita) and Răstolița (Mureș)

C. besseri Fischer von Waldheim from Oituz (Bacău) and Roman (Neamț)

In the collection there are four species/subspecies which are protected by law in Romania and Europe:

Carabus (*Hygrocarabus*) *variolosus* Fabricius from Domogled Mt., Bucegi, Semenic, Poiana Ruscă, Mezeș Mts, Nădrag and Nemești (Timiș)

C. (*Morphocarabus*) *hampei hampe*i Küster, with about 300 specimens from 34 collecting site from Transilvania, Banat, Maramureș, Crișana

C. (*M.*) *zawadzkii seriatissimus* Reitter from Vișeu de Sus (800 m asl) and Bocicoiu Mare (600 m asl) (Maramureș)

C. (*Pachystus*) *hungaricus hungaricus* Fabricius collected from Șemita forest, between Jamu Mare and Lățunaș (Timiș).

The genus *Chrysolina* (Coleoptera: Chrysomelidae: Chrysomelinae) in the collections of "Grigore Antipa" National Museum of Natural History (Bucharest)

Sanda MAICAN[1], Rodica SERAFIM[2]

[1]Institute of Biology Bucharest of Romanian Academy, 296 Splaiul Independenţei, 060031 Bucharest, P.O. Box 56–53, Romania, e-mail: sanda.maican@ibiol.ro
[2]"Grigore Antipa" National Museum of Natural History, 1 Kiseleff Blvd, 011341 Bucharest 2, Romania, e-mail: serafim@antipa.ro

Key words: Chrysomelidae, Chrysomelinae, *Chrysolina*, collections, "Grigore Antipa" Museum.

The Chrysomelinae subfamily (Coleoptera: Chrysomelidae) comprises about 130 genera and 3000 species and subspecies, most of them being widely distributed in dried tropical and temperate areas. The genus *Chrysolina* Motschulsky, 1860 includes over 450 species, most of them being distributed in the Palaearctic Region (Bieńkowski, 2010).

In the collections of "Grigore Antipa" National Museum of Natural History (Bucharest), the material of *Chrysolina* is included in the old Collection of Palaearctic Coleoptera and in the recently formed Collection of Chrysomelidae (Maican & Serafim, 2017).

So far, over 2,000 specimens of *Chrysolina* were studied, part of them being organized in systematical order (according to *Catalogue of Palaearctic Coleoptera*, Löbl & Smetana, 2010) in the new Chrysomelidae Collection of the museum. The material was collected from Romania and from the Mediterranean area (Turkey, Syria, Morocco, Italy, Greece etc.).

Of the 33 species identified until now, some rare species should be highlighted: *Chrysolina weisei* (Frivaldszky, 1883), *C. carpathica* (Fuss, 1856), *C. americana* (Linnaeus, 1758), *C. bankii* (Fabricius, 1775), *C. fimbrialis hungarica* Fuss, 1861, *C. vernalis ottomana* (Weise, 1906), *C. marcasitica turgida* (Weise, 1882).

A catalogue of *Chrysolina* species preserved in the collections of "Grigore Antipa" Museum will be published.

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New specimens and species of birds introduced in the patrimony of the Museum of Oltenia Craiova in recent years

Mirela Sabina RIDICHE

Museum of Oltenia Craiova – Natural Sciences Department, 8 Popa Șapcă Str., Craiova, 200422, Romania, e-mail: rimirela@yahoo.com

Key words: birds, patrimony, the Museum of Oltenia Craiova

The Ornithological Patrimony of the Museum of Oltenia Craiova (M.O.C.) has been established over the decades starting with 1923 (the year of the foundation of the Museum of Natural History in Craiova, which became a section of the Oltenia Museum in 1928); consequently, it presently has 1808 exhibits (stuffed birds – most of them, skins, trophies, skeletons, rings and nests). The composition and diversification of the bird collection were achieved by donations (D. Lintia, Constantina Sorescu, D. Dumitrescu, etc.), acquisitions (Herman Fülop Collection, Valeria Breahmă Collection, Mircea Popescu Collection) and, to a lesser extent, through field collections made by the museum specialists during scientific researches.

Most of the ornithological material has been scientifically processed and published over the years in various papers and catalogues (Bazilescu et al., 1980; Ridiche, 2004, 2011, 2017, etc.).

The present paper is a tool for scientific capitalization of the data provided by the 28 bird species introduced in the museum collection in 2016-2017 and aims to complete the latest edition of the Ornithological Catalogue of the M.O.C. The birds in question belong to 17 species of 17 taxonomic genera (*Phalacrocorax, Anas, Tadorna, Phoenicopterus, Ardea, Botaurus, Recurvirostra, Himantopus, Scolopax, Numenius, Calidris, Alcedo, Buteo, Accipiter, Phasianus, Perdix, Oriolus*). For each bird specimen, the following data sequence is presented: place and date of collection, age and sex, name of the collector, preparation and preservation method and inventory number. At the same time, it is mentioned the status of Monument of Nature, where appropriate (*Tadorna tadorna* and *Himantopus himantopus*).
Most of the specimens (16) were recovered in the area of Bistreț Lake (the Danube Flood Plain in the southern part of Dolj County) where poaching activities are quite frequent. Two of the species (*Phoenicopterus ruber* and *Numenius arquat*a) are singular in the ornithological collection of the M.O.C. representing an added value to the ornithological patrimony of the museum.

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Karyological data of stylommatophoran mollusks (Gastropoda:Heterobranchia:Eupulmonata) of Georgia

Nino CHAKVETADZE, Nana BAKHTADZE,
George BAKHTADZE, Edisher TSKHADAIA

Institute of Zoology, Ilia State University, Kakutsa 3/5 Cholokashvili Ave., 0162 Tbilisi, Georgia, e-mails: ninochako@yahoo.com; nanabakhtadze@yahoo.com

Key words: chromosome numbers, stylommatophora, Georgia.

The work gives the results of karyological studies of Georgian (Caucasus region) species of order Stylommatophora A. Schmidt, 1855. The chromosome number data for 10 genera (6 families) belonging to the suborder Helicina Rafinesque, 1815 are provided.

In agriolimacid genus *Lytopelte* O. Boettger, 1886 the haploid chromosome number n=19 was registered (The data are given for the first time). The chromosome number n=27 was recorded in clausiliid genus *Elia* O. Boettger, 1877. Two chromosome numbers n=26 and n=27 were found in helicid genera *Caucasotachea* C. R. Boettger, 1909 and *Helix* Linnaeus, 1758, respectively. Two values of haploid chromosome number were determined also for hygromiid genera. n=23 in genera *Caucasigena* Lindholm, 1927 (The data are given for the first time), *Circassina* P. Hesse, 1921 and *Fruticocampylaea* Kobelt, 1871, n=26 in genus *Xeropicta* Monterosato, 1892. In limacid genus *Gigantomilax* O. Boettger, 1883 the diploid chromosome number ca 2n=62 was observed. The haploid chromosome number n=26 was registered for oleacinid genus *Poiretia* Fischer, 1887.

The genera *Caucasotachea*, *Helix*, *Caucasigena*, *Circassina*, *Fruticocampylaea*, *Xeropicta*, *Gigantomilax* and *Poiretia* do not show deviation in chromosome numbers known for the respective families (Helicidae Rafinesque, 1815, Hygromiidae Tryon, 1866, Limacidae Lamarck, 1801 and Oleacinidae H. Adams & A. Adams, 1855). The observed numbers of chromosomes in genera *Lytopelte* and *Elia* are a new numbers not reported until now in Agriolimacidae H. Wagner, 1935 and Clausiliidae Gray, 1855.

On the bases of karyological data, an opinion about the characteristic chromosome numbers of Georgian stylommatophoran mollusks is discussed.

A comparative study of granular leukocyte morphology and cytochemistry of five species of Teleost

Mădălina-Elena RISTEA[1] Cecilia BUCUR[2],
Mioara COSTACHE[2], Otilia ZĂRNESCU[1]

[1]Faculty of Biology, University of Bucharest, 91-95 Splaiul Independentei, Bucharest, R-050095, Romania, e-mails: madalina_ristea11@yahoo.com; otilia.zarnescu@bio.unibuc.ro
[2]Fish Culture Research and Development Station Nucet – Dambovita, Romania

Key words: granulocytes, *Hypophalmichys molitrix*, *Aristichtys nobilis*, *Ctenopharyngodon idella*, *Cyprinus carpio, Perca fluviatilis*, cytochemistry.

Fishes are the most numerous and diverse of all vertebrate groups, making hematological characterisation difficult and sometimes imposibile (Grant, 2015). Study of blood cells in different species of fishes provides an important comparison between fishes and the other vertebrates highlighting aspects of evolution (Fänge, 1992). Our study focuses on the morphological and cytochemical characterization of granular leukocytes from peripheral blood of five species: *Hypophalmichys molitrix*, *Aristichtys nobilis*, *Ctenopharyngodon idella*, *Cyprinus carpio* and *Perca fluviatilis*, reared in captivity at Fish Culture Research and Development Station Nucet - Dambovita.

Morphology and cytochemical characteristics of granulocytes has been evaluated by light microscopy after staining with hematoxylin-eosin-alcian blue pH 2.5, Wright, toluidine blue pH 3.2, bromphenol blue, naphthol AS-D chloroacetate esterase, PAS, peroxidase, alkaline phosphatase and Sudan black and by fluorescence microscopy after Nile Red-DAPI staining. Morphometric analyses of the diameter of granulocytes was made using an ocular micrometer on smears stained by hematoxylin-eosin-alcian blue and Wright for neutrophils and eosinophils and toluidine blue for basophils, at a magnification of 100x. The number of granulocytes was analyzed by using ImageJ software. Results were expressed as mean values ± standard deviation. Differences were considered statistically significant at $P < 0.05$.

Our study shows that neutrophils were the most abundant leukocytes in blood, followed by eosinophils and basophils. Also, the largest cell diameter was recorded in the case of eosinophils and the smallest in basophils. Another aspect that our study indicates is that neutrophils was positive for bromphenol blue, AS-D chloroacetate esterase, PAS, peroxidase and Sudan black, eosinophils for PAS and basophils for toluidine blue.

In this study, we have cytochemically characterized granulocytes from *Ctenopharyngodon idella*, *Hypophalmichys molitrix* and *Perca fluviatilis* for the first time,and identified eosinophils and basophils in *Aristichtys nobilis* and *Perca fluviatilis*.

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Comparative aspects of embryonic development of *Gallus domesticus in ovo* and *ex ovo*

Ioana Patricia RÎUREAN, Otilia ZĂRNESCU

Faculty of Biology, University of Bucharest, 91-95 Splaiul Independentei, Bucharest, R-050095, Romania, e-mails : riurean_i@yahoo.com; otilia,zarnescu@bio.unibuc.ro

Key words: chorioallantoic membrane, embryo, *in ovo*, *ex ovo*, *Gallus domesticus*

Chicken embryo occupies a privileged place among higher vertebrates as it provides an excellent model used in studies of the evolution of developmental mechanisms.

In the last years, *ex ovo* is a technique for the culture of chicken embryos outside of shell membrane using synthetic environments including artificial vessels. Various improvements in the *in ovo* or *ex ovo* culture systems have been reported to facilitate embryonic manipulations and to generate transgenic chickens for research into biological mechanisms, drug discovery, gene manipulation and production of functional proteins necessary for basic and applied sciences (Farzaneh et al., 2018).

The chorioallantoic membrane is a vascular membrane found in bird eggs and other amniotes. This membrane plays a main role in calcium transport, maintenance of the acid-base balance, electrolyte reabsorbtion, waste disposal and thermoregulation. It is used in many scientific fields as an experimental model in angiogenic and tumorigenic studies, as well as in evaluation of biomaterials involved in tissue engineering.

In order to evaluate the different aspects of embryonic development of the embryo and the chorioallantoic membrane, we used fertilized eggs of *Gallus domesticus* (n=84), that were incubated for 14 days *in ovo* and *ex ovo*. Both the morphological aspects of the embryos and the development stage of the chorioallantoic membrane, were analised. Embryos were weighed, their length measured every day and they were stained with Nile blue sulphate for the identification of embryonic apoptosis.

Our studies have shown that *ex ovo* culture of chicken embryos is associated with lower weight, delayed development of chorioallantoic membrane and embryonic vascular system. Moreover, *ex ovo* development has been associated with embryonic malformations such as: *spina bifida* and *cranium bifidum*.

In conclusion, our data indicates that the lack of the egg shell leads to slowing of the normal development of the chick embryo and chorioallantoic membrane.

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Using R language and Bioclim algorithm for Species Distribution Modelling

Victor SÎTNIC

Institute of Zoology of Academy of Sciences of Moldova, 1 Academiei Str., MD-2028 Chișinău, Moldova
Moldova State University, 65 M. Kogălniceanu Str., MD-2009, Chișinău, Moldova, e-mail: sitnic.md@gmail.com

Key words: endangered animal species, distribution, modelling, Bioclim algorithm, R language, maps.

Species Distribution Modelling is a method of predicting the habitable niche of species in a geographic area using computational algorithms. This is a modelling tool based on the correlations between certain known locations and the environmental/climatic data related to them. So, the correlations appear between observed occurrence of a species and the values of the environmental/climatic variables of those locations. The probability of reflecting a more real distribution of species depends on a number of factors such as: sufficient and accurate input data, algorithm and informatic tools used in the research, type of relief and vegetation, biological dispersion, biotic interactions, etc. In some recent studies conducted at the Academy of Sciences of Moldova, Institute of Zoology this method has been used for the first time with the goal of performing Spatial Distribution Modelling of some rare and endangered species such as *Elaphe quatuorlineata* and *Neomys anomalus*. Both species are found in the Red Book of the Republic of Moldova, the first having the status of Critically Endangered (CR) and the second - Endangered (EN). In order to accomplish the goal, as informatic tools were used R programming language and Bioclim algorithm. During the study were created GIS maps of the known distribution and spatial distribution modelling maps for these two rare species.

Morphological and molecular characterization of *Scolelepis* (*Scolelepis*) *neglecta* (Polychaeta: Spionidae)

Victor SURUGIU[1], Oana Paula POPA[2], Andrei ŞTEFAN[2], Luis Ovidiu POPA[2]

[1]"Alexandru Ioan Cuza" University of Iaşi, Faculty of Biology, 20A Carol I Blvd, 700507 Iaşi, Romania, e-mail: vsurugiu@uaic.ro
[2]"Grigore Antipa" National Museum of Natural History, 1 Kiseleff Blvd, 011341 Bucharest 1, Romania, e-mail: oppopa@antipa.ro

Key words: polychaetes, Spionidae, morphology, molecular analysis, COI gene sequences, genetic distances

Scolelepis (*Scolelepis*) *neglecta* Surugiu, 2016 was originally described from the Cantabrian coast of Asturias (northern Spain) based only on anterior fragments from museum collections. Newly collected material from near type locality (the intertidal sand flats of the Villaviciosa estuary, Asturias, Bay of Biscay, northern Spain) contained also one complete specimen of *S.* (*S.*) *neglecta*. Based on this new material, it was shown that *S.* (*S.*) *neglecta* has a ventral cushion-like pygidium and that there are 1–3 notopodial hooded hooks first present from chaetigers 95–128. For the molecular confirmation of the new species and in order to assess the phylogenetic relationship between *S.* (*S.*) *neglecta* and species of the same genus occurring in the Black Sea, we used a fragment of the mitochondrial cytochrome oxidase subunit 1 (COI) and we analysed one specimen of *S.* (*S.*) *neglecta*, collected in the Villaviciosa estuary (Spain), four specimens of *S.* (*S.*) cf. *cirratulus* (Cap Midia, Romanian Black Sea coast), and four specimens of *S.* (*S.*) cf. *mesnili* (Cap Midia, Romanian Black Sea coast). Sequences obtained in the present study were also compared with sequences of *S. foliosa* and *S. squamata* retrieved from the BOLD Systems database. In the final alignment comprised of 25 sequences, 563 bp long, we identified 187 Parsimony Informative Sites. The nucleotide diversity was 0.14751 and 16 halotypes were identified. We performed a Median Joining Network analysis as implemented in PopArt and identified four haplogroups. The genetic distances between groups calculated with the Kimura 2-parameter model implemented in MEGA7 was 23.4% between *S.* (*S.*) *neglecta* and *S.* (*S.*) cf. *mesnili*, 20.5% between *S.* (*S.*) *neglecta* and *S.* (*S.*) cf. *cirratulus*, 27.2%, between *S.* (*S.*) *neglecta* and *S.* (*S.*) cf. *squamata* and 21% and between *S.* (*S.*) *neglecta* and *S.* (*S.*) *folioasa*. The results provide a molecular characterization of the *Scolelepis* species from the Black Sea for the first time.

Faunistic study of bdelloid mites (Acari: Trombidiformes) from Tuyserkan region, Western Iran

Amir Hossein EGHBALIAN, Reza ATTARI

Department of Plant Protection, College of Agriculture, Bu–Ali Sina University, Hamedan, Iran.
E-mails: ah_eghbalian@yahoo.com; reza.attari1989@gmail.com

Key word: Mite, Bdelloidea, snout mites, Bdellidae, Cunaxidae, Hamedan.

The superfamily Bdelloidea (snout mites) are counted active predatory and cosmopolitan mites in suborder Prostigmata. They are recorded from plants, mosses, litter, decomposing bark, soil and with wide variety of prey *e.g.* nematodes, insects and other mites (den Heyer, 1981; Walter and Kaplan, 1991). In this study, fauna of bdelloid mites (Bdellidae and Cunaxidae) from Tyserkan region, Hamedan province, Western Iran was carried out during 2017. The specimens were collected from soil and litter under trees (apricot and walnut), lichen and areas of river bank by using a Berlese-Tullgren funnel. The mites were prepared on microscope slides with Hoyer's medium, dried at 50° for one week, covered with insulating varnish, and examined with an Olympus BX51 phase contrast microscope. The identified species were as follows (2 familiese:12 species belonging to 8 genera): **Bdellidae:** *B. muscorum* Ewing; *Bdella* sp.; *Cyta leliae* Eghbalian et al.; *Hexabdella quercusi* Eghbalian et al.; *Odontoscirus denheyeri* Eghbalian et al.; *Spinibdella pourmirzaei* Eghbalian et al.; *Spinibdella* sp.; **Cunaxidae:** *Cunaxa capreolus* Berlese; *Cunaxa setirostris* (Hermann); *Cunaxa* sp.; *Cunaxoides decastroae* den Heyer et al.; *Lupaeus iranensis* den Heyer et al.

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Faunistic study of the genus *Tyrophagus* (Acari: Acaridae) from Hamedan region, Western Iran

Farshad MASOUDIAN, Mohammad KHANJANI, Bahman ASALI FAYAZ

Department of Plant Protection, College of Agriculture, Bu-Ali Sina University, Hamedan, Iran (e-mails: f.masoodian@gmail.com; mkhanjani@gmail.com; basalifayaz@gmail.com)

Key words: mite, astigmatid, fungivorous, trees, Iran.

The cosmopolitan genus *Tyrophagus* (with 35 valid species) was erected by Oudemans, 1924. Most species of this genus are fungivorous, commonly associated with stored products and have a substantial economic impact (Fan & Zhang, 2007). Eight species of *Tyrophagus* have been recorded in Iran (Masoudian et al., 2018). In this study, fauna of astigmatid mites (genus *Tyrophagus*) from Hamedan region (Western Iran) was investigated in 2016. The specimens were collected and extracted form soil and litter under trees (*e.g.* ash, almond, elm, firethorn, hawthorn, oak, plane, poplar, quince, raspberry, sure cherry, walnut, wild plum and white willow) by using a Berlese funnel. The mites were prepared on microscope slides in Hoyer's medium and examined under an Olympus BX51 microscope. The identified species were as follows: *T. longior* (Gervais, 1844); *T. neiswanderi* Johnston & Bruce, 1965; *T. perniciosus* Zakhvatkin, 1941; *T. putrescentiae* (Schrank, 1781); *T. similis* Volgin, 1949; *T.* sp. and *T. vanheurni* Oudemans, 1924. Among them *T. perniciosus* Zakhvatkin was found abundantly in different ecosystems and with highly distribution.

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The Oniscidea, Diplopoda, Chilopoda and Symphyla of the Putna-Vrancea Natural Park (Vrancea Mountains, Romania)

Ştefan Cătălin BABA[1,2], Andrei GIURGINCA[1], Dumitru MURARIU[1,2]

[1]"Emil Racovita" Institute of Speleology, 13 Septembrie Road, no. 13, Sector 5, 050711 Bucharest, Roumania, e-mail: sankao2@yahoo.com
[2]Faculty of Biology, University of Bucharest, 91-95 Splaiul Independenței, Sector 5, 050095 Bucharest, Roumania, e-mails: cata_stef92@yahoo.com

Key words: Putna Vrancea, Oniscidea, Diplopoda, Chilopoda, Symphyla.

The Putna-Vrancea Natural Park is one of the geographic areas less known from the point of view of faunistic studies concerning the Oniscidea and the Myriapoda and represent a continuation of the studies on soil dwelling arthropodes started in the Curvature Subcarpathians with the Buzău Montains.

Our work is the first attempt to investigate the Oniscidea, Diplopoda, Chilopoda and the Symphyla of the Putna-Vrancea Natural Park.

For this aim, we used only qualitative sampling methods (direct sampling, litter sifting) from the following locations: Tișița Gorges and the route between Lepșa Monastery and Țiua Neagră. The sampling took place during spring-summer 2018 and will continue for an entire year.

There are 5 species of Oniscidea included in 5 families: Ligiidae (*Ligidium germanicym*), Trichoniscidae (*Hyloniscus siculus*), Agnaridae (*Protracheoniscus politus*), Cylisticidae (*Cylisticus* cf. *transsylvanicus*) and Trachelipidae (*Porcellium conspersum*).

The 8 species of diplopods belong to 4 families: Polydesmidae (*Polydesmus montanus*), Paradoxosomatidae (*Strongylosoma stigmatosum*), Chordeumatidae (*Melogona broelemanni*) and Julidae (*Unciger transsilvanicus*, *Cylindroiulus luridus*, *Leptoiulus trilobatus*, *Leptoiulus proximus* and *Xestoiulus laeticollis*).

There are 10 species of Chilopoda included in 5 families: Lithobiidae (*Lithobius forficatus*, *Lithobius parietum*, *Lithobius mutabilis*, *Lithobius muticus*, *Lithobius burzenlandicus*), Dignathodontidae (*Henia illyrica*), Geophilidae (*Geophilus flavus*), Linotaeniidae (*Strigamia acuminata*, *Strigamia crassipes*), and Cryptopidae (*Cryptops hortensis*).

There is only one species of Symphyla (*Scutigerella orghidani*).

The differences in the number of species found in the sampling stations are detailed.

Records on the centipede fauna (Myriapoda: Chilopoda) from "Scrovistea" Natura 2000 site (ROSCI0224, Romania)

Constanța Mihaela ION[1,2], Ioana COBZARU[1], Dumitru MURARIU[1]

[1]Institute of Biology Bucharest of Romanian Academy, 296 Splaiul Independenței, 060031 Bucharest, P.O. Box 56-53, Romania
[2]University of Bucharest, Faculty of Biology, 91-95 Splaiul Independenței, Bucharest, R-050095, Romania, e-mail: mihacion@yahoo.com

Key words: Scrovistea forest, Chilopoda.

Scroviștea forest is situated in the southern part of Romania, 40 km north from the capital Bucharest. First a protected area (H.G. nr.792/1990), it was declared a Natura 2000 site by MO 1964/2008, modified by Ord. no. 2387/2011, with a surface of 3391 ha. The area is covered mainly by woodland, a remnant of an ancient vast forest which dominated this part of the country, Vlăsiei Woodland. The site is including five types of protected habitats, forests and wetlands and the list of species for which it was declared includes amfibians (Triturus cristatus), reptiles (Emys orbicularis), fish (Umbra krameri), invertebrates (Lucanus cervus, Euphydryas maturna) and plants (Aldrovanda vesiculosa, Marsilea quadrifolia).

Even though close to Bucharest, where several myriapodologist are based, the centipede fauna from the area is almost unknown. We did a review of the literature and between 2012-2018 we visited the area several times and collected invertebrate soil fauna with emphasis on the centipedes. Direct sampling with the tweezers from soil, litter and dead wood was used in the field. Geographical coordinates were recorded for every sampling point (using Garmin GPSMAP 76CSX). In 1967 only two species of centipedes were known from this forest: *Lithobius muticus* and *Lithobius parietum*. In 1968, Iosif Căpușe described a new geophilomorph species *Pachymerium tabacarui* Căpușe, 1968, but this was later synonymized under *Pachymerium ferrugineum* (C.L. Koch, 1835).

Although most of the species collected are common for the centipede fauna in the Romanian Plain (like *Lithobius muticus*, *Lithobius forficatus*, *Geophilus flavus*) we also report a new record for *Dignathodon microcephalus* (Lucas, 1846), previously know only from few locations in Romania: Sihlea (Vrancea), Iabalcea (Caras-Severin), Horezu (Valcea) and Gherla (Cluj), all records being before 1972. A checklist with all centipede species from this area with data on their biology and distribution in Romania is included.

Clinopodes intermedius (Dărăbanţu & Matic, 1969): the first description of a male and a new locality in Romania (Geophilomorpha: Geophilidae)

George POPOVICI[1,2], Ana Alexandra STRATAN[1,3]

[1]"Grigore Antipa" National Museum of Natural History, 1 Pavel Dimitrievici Kiseleff Str., 011341, Bucharest, Romania
[2]British School of Bucharest, 42 Erou Iancu Nicolae Str., 077190 Voluntari, Ilfov County, Romania; email: georgepopovici2004@gmail.com
[3]"Saint Sava" National College, 23 General H.M. Berthelot Str., 010164, Bucharest, Romania; email: ana.stratan@gmail.com

Key words: Chilopoda, centipede, taxonomy, DNA-Barcoding.

Clinopodes is one of the most commonly found centipede genera in South-Eastern and Central Europe, where the highest diversity of species has been recorded. Of the seven European *Clinopodes* species, six have been found in Romania (*C. carinthiacus*, *C. escherichii*, *C. flavidus*, *C. intermedius*, *C. rodnaensis*, *C. verhoeffi*) and all of them, with the exception of *C. intermedius*, have been given a taxonomic re-evaluation and an updated diagnosis based on examined material of each species.

Clinopodes intermedius has been described from the Măcin mountains in Southern Romania. Its description was short, incomplete and based exclusively on female specimens. Afterwards, it was also mentioned in Matic's monograph on the Chilopoda of Romania and, more recently, it came to be considered as a species needing further studies in order to establish its taxonomic status.

In the present study, we provide a re-description of *C. intermedius*, including the first description of a male, and a comparison of the female specimens to the original description. We have also used DNA-Barcoding techniques in order to have a more complete species description and to establish the systematic relationship between *C. intermedius* and other *Clinopodes* species. Two specimens of *C. intermedius* were sequenced for DNA-Barcoding and deposited in the Chilopoda Collection of the "Grigore Antipa" National Museum of Natural History, Bucharest (Romania) under the following inventory numbers: CHI095, CHI096. To estimate the interspecific genetic distances, we used the K2P model and implemented it in MEGA7. The results were as follows: a distance of 20.7% between *C. intermedius* and *C. flavidus* (JN306671) and one of 23.6% between *C. intermedius* and *C. carinthiacus* (KF569292).

The taxonomic re-description and data obtained from DNA Barcoding analysis lead to the conclusion that *C. intermedius* is a valid species and clearly distinguishable from other *Clinopodes* species. In order to provide further knowledge about the distribution and ecology of *C. intermedius*, more material needs to be collected in the future. Due to the fact that the database of DNA sequences for *Clinopodes* is very poor, the relation of *C. intermedius* to other congeneric species needs to be investigated in the future.

Using environmental niche modeling to uncover new search sites for the grasshopper *Epacromius coerulipes* in a poorly understood area within its distribution range (Romania)

Ionuț Ștefan IORGU, Elena Iulia IORGU, Tiberiu C. SAHLEAN

"Grigore Antipa" National Museum of Natural History, 1 Kiseleff street, 011341 Bucharest, Romania, e-mails: tiberiu.sahlean@gmail.com; ionut.iorgu@antipa.ro; elenap@antipa.ro

Key words: *Epacromius coerulipes*, environmental niche modeling, distribution, occurrence records.

The Small Blue-legged Grasshopper *Epacromius coerulipes* (Ivanov, 1887) is a remarkable example of a habitat specialist: practically, the species inhabits exclusively the halophytic habitats with small sparse vegetation. An Eurasian species described from Ukraine and known to occur in China, Russia, Moldova, Romania, Hungary, Austria, Italy and Croatia, *E. coerulipes* was recently assessed as Near Threatened (NT) in the EU IUCN Redlist (Hochkirch et al., 2016). Because the distribution of the species in Romania is patchy and poorly understood, the aim of the study was to uncover new areas to be explored for the presence of Small Blue-legged Grasshopper populations.

We used 40 occurrence records from the authors' personal database and from the "Grigore Antipa" National Museum of Natural History and Maxent to model the distribution of the species in Romania. The bioclimatic variables used for modeling were downloaded from the WorldClim website (www.worldclim.org, WorldClim v2.0) and we also included elevation data and aspect. As we only had a limited number of occurrences, the modeling strategy was to create 39 replicate models and examine the minimum, average and maximum ensemble results for accuracy. In the end areas with high suitability outside the known distribution were selected as candidates.

Mean AUC for the 39 models was 0.973 and visual inspection confirmed the models' accuracy. The models highlighted new areas along the Prut river, Jijia and Bahlui, the lower meadow of Siret river, along the Danube between Călărași and Galați. We used the maximum model to allow for more extrapolation from the model when selecting high suitability areas (>65%). Candidate sites were found mainly in the north-eastern part of Brăila county, east of Pardina village and along the Black Sea coast, the lower Prut meadow and towards the Jijia – Prut confluence.

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Contributions to the knowledge of beetles (Insecta: Coleoptera) from the northern area of the Republic of Moldova

Livia CALESTRU, Svetlana BACAL, Elena BABAN

Institute of Zoology, 1 Academiei Str., MD-2028, Chișinău, Republic of Moldova, e-mail: liviacalestru@gmail.com

Key words: Coleoptera, species, crops.

In this paper, new data concerning the study of Coleoptera fauna from crops: alfalfa (*Medicago sativa* L.), corn (*Zea mays* L.) and rape (*Brassica napus oleifera* L.) from the Republic of Moldova are given.

Agricultural lands cover 75.6% of the republic territory, of which 64.5% are intensively used.

The faunistic materials were sampled in 4 different localities from the northern zone of Republic of Moldova during the 2017–2018.

Coleoptera were collected using pitfall traps, some were gathered by hand from the leaves or soil surfaces.

The investigation allows us revealing 97 species of Coleoptera belonging to 51 genera and 9 families (Carabidae, Silphidae, Staphylinidae, Scarabaeidae, Coccinellidae, Tenebrionidae, Cerambycidae, Chrysomelidae and Curculionidae). The highest number of individuals revealed in all three crops were from the family Carabidae followed by the families Chrysomelidae, Tenebrionidae, Curculionidae and Scarabaeidae. The most abundant species were *Harpalus rufipes* De Geer, 1774, *H. distinguendus* (Duftschmid, 1812) and *Opatrum sabulosum* (Linnaeus, 1761).

According to the trophic spectrum, the investigated species belong to 5 trophic groups: phytophagous, zoophagous, necrophagous, coprophagous and saprophagous. The coleopteran pest species for alfalfa crops, *Subcoccinella vigintiquatuorpunctata* and *Gonioctena fornicate*, and for corn crops, *Blaps lethifera*, *Opatrum sabulosum* and *Pentodon idiota*, were also revealed. Several predatory species from the families Carabidae, Coccinellidae and Staphylinidae that keep under control the phytophagous insect number were reported from the studied fields too.

The study was funded by bilateral project between the Academy of Sciences of Moldova and National Agency for Science Issues, Innovation and Informatization of Ukraine (no. 17.80013.5007.05/Ua).

Three new beetle species (Coleoptera: Bruchinae, Dytiscinae, Lixinae) for Romanian fauna

Ioan-Alexandru RĂDAC[1], Alexandru-Mihai PINTILIOAIE[2]

[1]"Babes-Bolyai" University, Faculty of Biology and Geology, No. 5-7 Clinicilor Str, Cluj Napoca, Cluj, 400084, Romania, e-mail: radac.alexandru@yahoo.ro
[2]"Alexandru Ioan Cuza" University of Iași, Faculty of Biology, Carol I avenue, No. 11, Iași 700506, Romania, e-mail: alexaandru2009@gmail.com

Key words: new records, alien species, rare species, Curculionidae, Chrysomelidae, Dytiscidae.

Insects are representing more than half of global biodiversity with over one million species worldwide of which a third are beetles. In Europe, it was estimated to live a number of 28,000-30,000 species of beetles from which around 7,000 species are also occurring in Romania. The number of Romanian coleopteran species is slowly rising due to several reasons: introduction of alien species, natural expansion of the species range, new research in areas were few studies were made, but new species are also appearing due to the fact that few entomologist were studying beetles in the past.

The present work contributes on the knowledge of Romanian Coleoptera by presenting the first record of tree beetle species in this country. *Amblycerus robiniae* is a seed beetle originated from North America, in Europe it was recorded only from Hungary. The larvae of this species are feeding and developing inside the seeds of *Gleditsia* spp. We obtained the species from *Gleditsia triacanthos* seeds collected in Răcăşdia (Caraş-Severin County), so we tend to believe that this seed beetle has most likely an established population in Romania. *Leucomigus candidatus* is a weevil species present in Asia, Northern Africa and Europe (Ukraine). The host plant is *Artemisia santonica*. We collected 3 specimens in a xerophilous habitat, in Iași County, but probably it is widespread in similar areas. *Eretes sticticus* is a species of diving beetle that prefer larger warm standing waters, with usually very little vegetation on the bottom. It occurs in Africa, southwestern and Central Asia, Central America and Europe. The old records from Europe are only from the Mediterranean, and only in the last 10 years the species was found inhabited in Central Europe. It is considered that this expanding from the Mediterranean is due to climate change. We found 2 specimens in Rădmâneşti and Cheglevici (Timiş County).

Data on the distribution of *Onthophagus (Paleonthophagus) vacca* (Linnaeus, 1767) and *O. (P.) medius* (Kugelann, 1792) (Coleoptera: Scarabaeidae, Scarabaeinae) in Romania

Andreea-Cătălina DRĂGHICI[1], Cosmin-Ovidiu MANCI[2], Gabriela CUZEPAN-BEBEȘELEA[3], Cornelia CHIMIȘLIU[4], Adrian RUICĂNESCU[5]

[1]"Grigore Antipa" National Museum of Natural History, 1 Kiseleff, 011341 Bucharest, Romania, e-mail: andreea.draghici@antipa.ro
[2]S.E.O.P.M.M. Oceanic-Club, Constanța, email: cosminom@gmail.com
[3]Brukenthal National Museum, Natural History Museum Department, 1 Cetății, 550160 Sibiu, Romania, e-mail: gabrielacuzepan@gmail.com
[4]Oltenia Museum Craiova, 8 Popa Șapcă, 200422 Craiova, Romania, e- mail: chimisliu_cornelia@yahoo.com
[5]Institute of Biological Research, 48 Republicii, 400015 Cluj-Napoca, Romania, e-mail: adrian.ruicanescu@icbcluj.ro

Key words: *Onthophagus vacca*, *Onthophagus medius*, distribution, altitude preference, Romania.

The morphological and molecular data examined indicate the existence of two valid distinct species (Roy et al., 2015) in Europe within the *O. vacca* (Linnaeus, 1767) complex that are widely sympatric: *O. vacca* and *O. medius* (Kugelann, 1792) (Rössner et. al., 2010). The research of Rössner et. al. (2010) mentions the species *O. medius* for Romania for the first time. The aim of our study is to check major collections from the country's museums and to assign them to *O. medius* or *O. vacca*.

We examinated 360 specimens belonging to the following collections: National Museum of Natural History ''Grigore Antipa'' Bucharest, Brukenthal National Museum- Natural History Museum Department from Sibiu and the personal collections of authors. We extracted elevation date for each specimen and we created distribution maps.

The biogeographic distribution for Romania shows the ranges of *O. vacca* and *O. medius* overlap and they are found in all the country's bioregions. Our study shows a high ecological plasticity in both species. From our data, there is an altitude preference up to 500 meters, possibly influenced by non-random sampling.

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Leaf beetles (Coleoptera: Chrysomelidae) of Algeti National Park (Georgia, the Caucasus)

Nino GABROSHVILI, Nana BAKHTADZE

Institute of Zoology, Ilia State University, 3/5 Kakutsa Cholokashvili Ave, 0162 Tbilisi, Georgia, e-mails: gabroshvilin@yahoo.com; nanabakhtadze@yahoo.com

Key words: Chrysomelidae, diversity, Georgia.

The work presents the results of the study of leaf beetle diversity from Algeti National Park (Georgia, the Caucasus).

The Algeti National Park was established in 1965. It is located in Tetritskaro district at an altitude of 1,100-1,950 m above sea level. The total area of the park is of 6822 hectares. One of the first data about leaf beetles (which are the largest group of insects with up to 40 000 species described) from Algeti National Park are found in the 18-19 c.c. In total, based on fragmentary literary data and scarce materials of the collections of the Institute of Zoology only 24 species of 12 genera *Calomicrus, Cassida, Chrysolina, Chrysomela, Cryptocephalus, Galeruca, Galerucella, Gastrophysa, Luperus, Mniophila, Pilemostoma* and *Psylliodes* of this family were registered in Algeti National Park and its environs. We are interested in present-day state of leaf beetle fauna in Algeti National Park and started investigations in 2018. The researches covered spring-summer seasons of the current year. According to our data 13 species of 9 genera *Agelastica, Cassida, Chrysolina, Clytra, Cryptocephalus, Labidostomis, Lilloceris, Luperus* and *Smaragdina* on 10 species of host plants (families Asteraceae, Betulaceae, Fabaceae, Poaceae) are registered in the study area. Five genera of leaf beetles *Agelastica, Clytra, Labidostomis, Lilloceris* and *Smaragdina* are recorded for the first time in Algeti National Park.

The day-flying Lepidoptera from SCI0004 Băgău protected site (Alba County, Romania)

Sergiu-Cornel TÖRÖK[1], Andreea BOCIOACĂ[2], Mădălin POPESCU[2], Ioan TĂUȘAN[2]

[1]Mediaş Municipal Museum, 46 Mihai Viteazul Str., 551034, Mediaş, Romania, e-mail: ser.torok@yahoo.com
[2]"Lucian Blaga" University of Sibiu, Faculty of Sciences, Applied Ecology Research Center, Sibiu, 5-7 Dr. Ion Rațiu, Sibiu, 550012, Romania, e-mails: andreea_97_andreea@yahoo.com, maddaliyn@yahoo.com, itausan@gmail.com

Key words: butterflies, Natura 2000, faunistics, endangered taxa.

The Lepidoptera fauna of Băgău (SCI0004) protected site was investigated in 2018. The site is situated in North-Eastern part of Alba County, and incorporates mainly deciduous forests (70%) and grassland habitats. Butterfly transects were undertaken between March and September and all species were recorded. The aim of this study was to assess the actual number of diurnal Lepidoptera species from this protected site. In order to achieve this aim different types of habitats have been analyzed, varying from deciduous forests, forest edges, shrubs to grasslands.

Altogether, we have identified 60 Lepidoptera species. Within our results, we emphasize the presence of endangered taxa *Heteropterus morpheus* (Pallas, 1771).

In addition, here we have encountered five vulnerable species: *Iphiclides podalirius* (Linnaeus, 1758), *Lycaena dispar* (Haworth, 1802), *Neptis sappho* (Pallas, 1771), *Issoria lathonia* (Linnaeus, 1758), *Euphydryas maturna* (Linnaeus, 1758) and nine near threatened species. Six species are also protected by the Romanian Habitats Directive, namely *Heteropterus morpheus* (Pallas, 1771), *Lycaena dispar* (Haworth, 1802), *Maculinea arion* (Linnaeus, 1758), *Neptis sappho* (Pallas, 1771), *Euphydryas maturna* (Linnaeus, 1758) and *Euplagia quadripunctaria* (Poda, 1761).

The research was carried out in the project MySMIS 102369 "Elaborarea a 3 planuri de management pentru situri Natura 2000 din județul Alba" [Elaboration of 3 management plans for Natura 2000 sites in Alba County] supported by Biounivers NGO, Alba-Iulia.

First record of *Culex martinii* in the Republic of Moldova

Tatiana ȘULEȘCO[1], Alexei KHALIN[2], Ion TODERAȘ[1]

[1]Institute of Zoology, Ministry of Education Culture and Research, 1 Academiei Str., Chișinău MD-2028, Republic of Moldova, e-mail: tatiana_sulesco@yahoo.com, e-mail: iontoderas@yahoo.com
[2]Zoological Institute, Russian Academy of Sciences, 1 Universitetskaya Emb., St Petersburg 199034, Russia, e-mail: alexei.khalin@zin.ru

Key words: Culicidae, mosquito, *Culex martinii,* Republic of Moldova.

Prutul de Jos Natural reserve located in the Cahul region of the Republic of Moldova is a protected area of importance for flora and fauna and presents a favorable place for migratory bird species. The mosquito surveys have been conducted in this area since 2011 using CDC traps and dipping techniques. The mosquito larvae were sampled in ground pools, ditches, rain pools, floodplains and swamps. All positive breeding sites were inhabited by mosquitoes from the genera *Anopheles* and *Culex*. The most abundant taxon was *Anopheles maculipennis* s.l. usually sampled along with *Culex modestus* Ficalbi, 1889 larvae.

On July 19th 2017, all larval stages of *Culex* spp. were collected from one artificial ditch (45°35'31.6"N 28°09'38.7"E) located in the Prutul de Jos reserve. The larvae were reared individually to the adult stage in separate plastic containers. Larval skin, pupa and the adult stage belonged to the same individual were stored togather in 96% ethanol. The morphological identification of larval skin and male genitalia reveald the presence of *Culex martinii* Medschid, 1930 one male and one female in the sample. Other specimens sampled along with *C. martinii* belonged to *C. territans* Walker, 1856. One *C. martinii* female was captured by CDC trap placed close to the ditch and used overnight on July 18th, 2017. This species was not find in CDC trap collections placed close to the human dwellings and animal shelters in Slobozia Mare village located close to the Prutul de Jos reserve. *Culex martinii* specimens from Moldova were compared with *C. martinii* specimens stored in the collection of the Zoological Institute, Russian Academy of Sciences and with the specimens stored in the ARIM collection of the Institute for Research and Development (IRD), Montpellier, France.

This is the first confirmed report of *C. martinii* in the Republic of Moldova.

Distribution of amphibians in Timiș County (West Romania)

Ionela SLEJIUC[1,2], Ștefan POPA[1], Milca PETROVICI[2]

[1]National Museum of Banat, Department of Natural Science, 4, Martin Luther Str, Timișoara, Timiș, 300054, România, email: ionela.slejiuc93@e-uvt.ro
[2]West University of Timisoara, Faculty of Chemistry, Biology, Geography, 16A, Pestalozzi Str, Timișoara, Timiș, 300115, România

Key words: frogs, newts, salamanders, herpetofauna, species distribution, Banat region.

Amphibians are protected and heavily endangered species, which is why studying their distribution is essential for their preservation. Studies regarding the herpetofaunal distribution in Romania have increased in the last few decades. However, there are areas where this information is still incomplete.

In our study we investigated the Timis County area (West Romania) in order to establish the distribution areas of amphibian species. This paper is based upon field work performed between February 2015 and September 2018 and the field results where combine with existing records. Sixteen species of amphibians where recorded in the field during the study: *Salamandra Salamandra* (Linnaeus, 1758)*, Triturus cristatus* (Laurenti, 1768), *Triturus dobrogicus* (Kiritzescu, 1903), *Lissotriton vulgaris* (Linnaeus, 1758), *Ichthyosaura alpestris* (Laurenti, 1768), *Bombina bombina* (Linnaeus, 1761), *Bombina variegata* (Linnaeus, 1758), *Hyla arborea* (Linnaeus, 1758), *Pelobates fuscus* (Laurenti, 1768), *Pelobates syriacus* Boettger, 1889, *Bufo bufo* (Linnaeus, 1758), *Bufotes viridis* (Laurenti, 1768), *Pelophylax ridibundus* (Pallas, 1771), *Pelophylax lessonae* (Camerano, 1882), *Rana dalmatina* Bonaparte, 1840 and *Rana temporaria* Linnaeus, 1758. Two hybrid forms were also identified: between *Bombina bombina* and *Bombina variegata,* and between *Pelophylax ridibundus* and *Pelophylax lessonae* (*Pelophylax kl. esculentus*).

Among the interesting records, *Pelophylax lessonae* is mentioned for the first time in this area as a result of our study, with 3 new populations discovered in the eastern area of the Timis County. We added 43 new locations for *Pelophylax kl.esculentus* and *Pelobates syriacus* was recorded from 8 new locations after it was mentioned for the first time in Timiș County in 2017.

The reproduction of the green frogs *Rana ridibunda* Pallas, 1771 and *Rana lessonae* Camerano, 1882 in the Codrii Centrali ecosystems of the Republic of Moldova

Tudor COZARI[1,2], Elena GHERASIM[1]

[1]Institute of Zoology of MECC, MD- 2028; e-mails: cozaritudoe@gmail.com; gherasimlenuta@gmail.com
[2]State University of Tiraspol (Chisinau), MD - Republic of Moldova

Key words: green frogs, reproduction, nuptial arenas, Moldova.

For amphybians, in relation with their amphybiont lifestyle, it is characteristic an original life cycle. We can notice some phenological phases of green frogs such as reproductive migrations, reproduction, the process of indwelling habitats and going into the hibernation phase, all of which depends in a large measure on the temperature of air and soil.

As a result of the assessments that were conducted in the ecosystems of Codrii Centrali in 2018 it was determined that the first phase of the annual cycle of green frogs, is the coming of the mature specimens out of hibernation in the first half of April, when the average temperature of air reaches values of $+10^0$C.

The breeding sites include groups formed of 5-6 males placed in sections named „nuptial arenas". Besides the males' tactics based on employment and protection of the teritory they have an efficient strategy which consists in a vocalization behavior.

Vocalization is periodic and goes for 15-20 minutes under the form of sound waves „activity – rest", which allows customisation of the breeding area. Based on this specific feature of vocalization of the species it can be concluded that the sounds produced by males not only aim to attract suitable females but also to attract females ready for reproduction.

An exclusive case in the R. of Moldova is that, during mating, *Rana ridibunda* forms mixed populations with breeders of *Rana lessonae* species, and as a result of their pairing prolific hybrids are formed.

Therefore, the results that we obtained display that phenology of these species during their active period of life is completely in accordance with certain climatic conditions – temperature and humidity, rhythm and duration with which they get out of hibernation, the migration pre- and postreproduction, the process of coupling, laying of the eggs with embryonic and larva development that follows, are all subject to seasonal and daytime variations of reproduction and relative humidity.

Geographic patterns and environmental determinants of color polymorphism in the Grass snake (*Natrix natrix*) populations from Eastern and Southern Romania

Raluca MELENCIUC[1*], Alexandru STRUGARIU[1], Ștefan R. ZAMFIRESCU[1], Iulian GHERGHEL[2,3]

[1]Faculty of Biology, Alexandru Ioan Cuza University, 20A Carol I Blvd, Iași 700505, Romania
[2]Faculty of Geography and Geology, Alexandru Ioan Cuza University, 20A Carol I Blvd, Iași 700505Romania;
[3]Department of Biology, Case Western Reserve University, Cleveland, Ohio, USA.
[*]Corresponding author: raluca.melenciuc@gmail.com

Key words: phenotype, distribution, climatic conditions.

Understanding the factors that influence, shape and maintain phenotypic diversity are key topics in biology. Populations are generally composed by a suite of phenotypes that are under the selection of the environment. Unfortunately, we know very little about the factors that shape the phenotypic composition and allow these phenotypes to persist or even become dominant. Here, we used distribution and phenotypic data from a polymorphic species (the Grass Snake, *Natrix natrix*) which is widely distributed in Europe and locally abundant in Romania. Generally, we can distinguish three phenotypes within the grass snakes of Romania: the melanistic morph (all black), the persa morph (with stripes), and the default morph (without stripes and no melanistic). The aim of this study is 1) to find the distribution patterns of these three morphs in Eastern and Southern Romania, 2) correlate the presence of each morph with climatic conditions. We found that the default morph is found all over the study region, whereas persa morph is found mainly in the southern part of the region and the melanistic individuals are more characteristic to south-eastern part of the study region. Precipitations and temperature were found to be main drivers of the distributions of the color morphs.

Long term study on monitoring the Grey Heron (*Ardea cinerea*) colony from Bavna Forest (N-W, Romania)

Denisa-Paula KALISCH[1*], Alexandru LAPOŞI[2], Alexandru Nicolae STERMIN[1]

[1]"Babeş-Bolyai University, Cluj Napoca, Mihail Kogălniceanu Str., no.1, 400084, Romania, *e-mail: kalischdenisa@yahoo.ro
[2.]Palatul copiilor, Baia Mare, 7A Culturii Str., 430316, Romania

Key words: Grey Heron, Bavna Forest, monitoring, breeding population, wetlands

During the past century, 50% of wetlands throughout the world have been destroyed, their loss or degradation exert undeniable negative impacts on wetland-dependent birds (Ma et al., 2010). In this context, here we present the results of a long therm study of monitoring a Grey Heron (*Ardea cinerea*) colony, a species wetland-dependent. For 11 years (2007-2018) we collected data, by ground counting of all nests from Bavna Forest colony, located in Maramureş County, N-W Romania. The studied colony represents the main reproduction point of this species in the lower Someş basin and the only one in Baia Mare Depression. The maximum number of recorded nests was 163 (2010) (Laposi et al., 2017) and the minimum was 70 (2017-2018). The trees used for nesting were oscillating between 17 (2014) and 40 (2010), but in the last two years, the number of trees was 25. During the monitoring period, the colony had decreased. From our observation, it was revealed that the main causes of the population decrease were the drought from the last period that caused the draining of the sourounded area, the deforestation, the wery low temperatures from the last winters and also the antropogenic impact. Even though the forest is under Natura 2000 custody, the level of awarness and carring for it is not as high as we expected. Therefore, highlighting the anthropogenic and environmental factors affecting the colony will lead to the identification of specific measures for an efficient colony conservation.

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The Eastern Imperial Eagle (*Aquila heliaca* Savigny, 1809) and the Saker Falcon (*Falco cherrug* Gray, 1834) in Bucharest

Andrei GIURGINCA

"Emil Racovita" Institute of Speleology, 13 Septembrie Road, no. 13, Sector 5, 050711 Bucharest, Romania, e-mail: sankao2@yahoo.com

Key words: Imperial Eagle, Saker Falcon, Bucharest.

The Imperial Eagle and the Saker Falcon are critically endangered species, as both have undergone an accentuated decline in the last half century.

As a result, in Romania, the Imperial Eagle is regularly recorded only in Dobrogea and in the eastern part of Transylvania although it used to be found preponderantly in Dobrogea, Walachia, Moldavia, Banat and, rarely, Transylvania. The Saker Falcon nested constantly in the Danube Delta, in the plains from the southern part of Romania and even in Banat: in the present, only one nesting pair is recorded from Măcin Mountains and the species was recorded in the Western Plain (Munteanu, 2009).

Both species have been recorded in the Ilfov County, but not inside Bucharest (Papadopol & Tălpeanu, 1979; Papadopol & Petrescu, 1991).

Within this context, we record the presence of a juvenile Imperial Eagle on 6 April 2013 and one on 29 April 2018, during the spring passage, flying on a SSE-WNW direction over Piaţa Iancului. The birds were identified as juveniles on the basis of the distinct contrast between streaked lower neck and breast, and the unmarked pale abdomen; also by the distinctly paler three innermost primaries below contrasting with remaining dark flight feathers with whitish trailing-edge (Porter, Willis, Christensen & Nielsen, 1992).

In the same place, we recorded a juvenile Saker Falcon harried by a Peregrine Falcon on 26 January 2013 during a blizzard. The Saker differed clearly from the Peregrine by larger size, longer tail and wings with a broad base and rounded tips. The underparts of the Saker were prominently streaked, had dark "trousers" and a thin moustachial streak in comparison with the Peregrine's heavier one (Porter, Willis, Christensen & Nielsen, 1992).

The observation of the Imperial Eagle and the Saker Falcon inside Bucharest increases the knowledge on both species in Romania.

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Invertebrate fauna associated with macrophytes algae on the rocky faces of the Romanian littoral

Manuela Diana SAMARGIU, Andreea RĂDULESCU, Daciana SAVA

"Ovidius" University, Faculty of Natural Sciences and Agricultural Sciences, 1 University Alley, Corp B, Constanta, Romania , manuelasamargiu@yahoo.com, daciana.sava@gmail.com

Key words: Black Sea, zoobenthos, invertebrates, macrophytes algae.

The current study presents data regarding the invertebrates which live associated with sea-weeds fields in infralittoral rock from the Romanian coast of the Black sea.

Quantitative sampling were done in 8 sites, from north to south, between Navodari and Vama Veche. The macophytes samples have been taken from hard substrata, during several months of 2016 and 2017. In the laboratory, the fresh seaweeds samples were washed and sieved in order to obtain the associated fauna; afterwards the macroalgae were separated per phylla and identified.

Algae from 13 species belonging to 3 phyla – Chlorophyta, Rhodophyta and Phaeophyta were identified along the studied area.

The paper will analyze the structure of the invertebrate populations for each site, comparing the abundance and the qualitative composition, depending on the type of algal talus.

A list of algae species found in each zone will be done.

A list with invertebrates found in all sites and percent composition of identified taxa for each sample site will be presented.

Aspects regarding the diversity of biocoenosis will show which rocky faces have suitable conditions for the development of more complex and stable populations.

Based on quantitative data some synecological indices will be calculated – such as frequency (F %), relative abundance (A %), dominance (D %) and the ecological significance index W %, in order to reveal the constant and characteristic species for these habitats from the hard substrata, covered by seaweeds.

Benthic invertebrates from more than 40 species were identified in the samples, most of them belonging to Crustacea and Mollusca, some of them to Annelida and the rest of them to other taxonomic groups – Foraminifera, Platyhelminthes, Nematoda and Insecta (larvae).

Their proportion varies strongly from one area to another, depending on the type of algae on the hard substrate and on season.

Species diversity in quarries - a study case from Iglicioara Quarry, Romania

Alexandra TELEA[1,2], Theodor-Sebastian TOPLICEANU[1,2], Dragoş BĂLĂŞOIU[2], Robert ŞERBAN, Dan COGĂLNICEANU[1,2]

[1]"Ovidius" University Constanţa, Faculty of Natural and Agricultural Sciences, Constanţa, Romania, e-mails: alexandra.telea@gmail.com; topliceanu.sebastian@gmail.com; dcogalniceanu@univ-ovidius.ro
[2]Association Chelonia Romania, Bucharest, Romania, 5 Aleea Paşcani, 62082, Bucureşti, Romania; e-mails: contact@dragosb.com; robertserban97@gmail.com

Key words: quarries, biodiversity, habitats, conservation, rehabilitation

The quarrying industry is an important resource for the human society; just surface mining is the source for 20% of the mineral resources used in civil construction. The environmental impact is severe as it strongly affects biodiversity on a larger area than just the quarry itself, because of the impact of blasting opertions. During 2016 and 2018, with the support of HeidelbergCement S.A., through the Quarry Life Award Contest, we inventoried bird, reptile and amphibian species richness in Iglicioara Quarry, located in eastern Romania (Tulcea county).

The quarry is still active and all the activities for exploitation of quartz porphyry are performed on a 35 surface. The human activities in the quarry created new habitats: aquatic and vertical ones. We identified 5 main habitat types: temporary ponds (0.7 ha and 30 cm maximum depth), steppe vegetation (13.8 ha), ruderal vegetation (4.4 ha), cliffs (3.4 ha and 74 m maximum heigth) and rock deposits (4.4 ha). We inventoried 78 species of birds, but only a small percentage are permanent or seasonal residents (12 species), 2 species of amphibians and 7 species of reptiles.

The analysis of species richness showed no peak for the species accumulation curve despite our inventory effort. The highest species density is located in the ruderal vegetation habitat, at the base of the quarry near the operational buildings, where it mixes with temporary ponds and deposits habitats.

When planning quarry restoration this should be done alongside the natural processes of spontaneous succession. Long-term populational studies in quarries are important to quantify the response of the animal communities to human impact and to identify best actions for a successfull restoration process.

Knowledge gaps in plant pollinator interactions and pollen supplementation experiments: a Romanian case study

Joanne M. BENNETT[1,2], Amibeth THOMPSON[1,2], Irina GOIA[4], Reinart FELDMANN[5], Valentin ŞTEFAN[3,2], Ana BOGDAN[4], Demetra RAKOSY[*3,6], Mirela BELOIU[7], Inge-Beatrice BIRO[8], Simon BLUEMEL[9], Milena FILIP[4], Anna-Maria MADAJ[1,3], Alina MARTIN[10], Sarah PASSONNEAU[2,3], Denisa-Paula KALISCH[4], Gwydion SCHERER[11], Tiffany M. KNIGHT[1,3,2]

[1]Institute of Biology, Martin Luther University Halle-Wittenberg, Am Kirchtor 1, 06108, Halle (Saale), Germany
[2]German Centre for Integrative Biodiversity Research (iDiv), Halle-Jena-Leipzig, Deutscher Platz 5e, 04103 Leipzig, Germany
[3]Dept. Community Ecology, Helmholtz Centre for Environmental Research – UFZ, Theodor-Lieser-Straße 4, 06120 Halle (Saale), Germany
[4]Faculty of Biology and Geology, Babeş-Bolyai University, Republicii str. 42, 400015 Cluj-Napoca, Romania
[5]Helmholtz Centre for Environmental Research – UFZ, Permoserstr. 15, 04318 Leipzig, Germany
[6]Department for Integrative Zoology, Faculty of Life Sciences, University Vienna, Althanstrasse 14, 1090 Vienna, Austria.
[7]University of Bayreuth, Department of Biogeography, Universitätsstr. 30. D - 95447 Bayreuth
[8]University of Freiburg, Chair of Environmental Governance, Tennenbacher Str. 4, 79106 Freiburg, Germany
[9]Faculty of Biology and Biotechnology, Ruhr University Bochum, Universitätsstraße 150, 44801 Bochum, Germany
[10]Nees Institut für Biodiversität der Pflanzen, Rheinische Friedrich-Wilhelms-Universität Bonn, Meckenheimer Allee 170, 53115 Bonn
[11]Osnabrück University, Department of Biodiversity and Landscape Ecology, Barbarastraße 11, D-49076 Osnabrück, Germany
[*]Presenting author. E-mail: demetra.rakosy@ufz.de

Key words: plant-pollinator networks, pollen limitation, conservation, pollinators, Hymenoptera, Diptera.

Anthropogenic environmental change can disrupt interactions between plants and their pollinators, and further information is needed on pollination networks and plant reproductive success around the world so that the importance of different drivers can be quantitatively assessed. We conducted a systematic literature review to determine the state of our knowledge on plant-pollinator interactions and the ecosystem services they provide for European ecosystems. We focused on studies that published information on plant-pollinator networks, as a community level assessment of plant pollinator interactions and pollen limitation. We found that most of our knowledge comes from Western Europe, and thus there is a need for baseline assessments in the less disturbed landscapes of Eastern Europe. To address this data gap, we quantified plant-pollinator interactions and conducted breeding system and pollen supplementation experiments in a traditionally managed mountain meadow in the Apuseni Mountains (Romania). We found the Romanian meadow to be highly diverse, with a healthy plant-pollinator network. Despite the presence of many pollinator dependent plant species, there was no evidence of pollen limitation. Our study is the first to provide baseline information for a

healthy meadow at the community level on both plant-pollinator interactions and their relationship with ecosystem function (e.g., plant reproduction) in an Eastern European country. Based on both the literature survey and the first plant-pollinator network for Romania we provide recommendations for future research. Thus, our study can provide the baseline data and methodological information needed for the continued monitoring and management of Eastern European meadows.

Oviposition strategies of the threatened moth *Eriogaster catax* and its sister species *Eriogaster lanestris* (Lepidoptera, Lasiocampidae) – a comparative approach

Cristian SITAR[1,3], Dragomir-Cosmin DAVID[1], Geanina Magdalena IACOB[1], Angela Monica IONICĂ[2], László RÁKOSY[1]

[1]"Babeş-Bolyai" University, Department of Taxonomy and Ecology, 5-7 Clinicilor, 400006, Cluj-Napoca, Romania, e-mail: cristiansitar@yahoo.com; davidcosmin18@yahoo.com, giacob@yahoo.com, laszlo.rakosy@ubbcluj.ro
[2]"University of Agricultural Sciences and Veterinary Medicine", Department of Parasitology and Parasitic Diseases, 3 -5 Calea Mănăştur, 400372, Cluj-Napoca, Romania, e-mail: ionica.angela@usamvcluj.ro
[3]"Babeş-Bolyai" University, Museum of Zoology, 5-7 Clinicilor, 400006, Cluj-Napoca, Romania

Key words: *Eriogaster catax*, *E. lanestris*, oviposition strategy, ecological niche, protection, conservation

Eriogaster catax (Linnaeus, 1758) and *E. lanestris* (Linnaeus, 1758) are two related species in the family Lasiocampidae with decreasing distribution areas and extremely isolated populations, thus being vulnerable to numerous threats, particularly human impact. Until presently, the biological and ecological studies regarding the species in question are scarce, particularly for *E. catax*, a species protected through Annexes II and IV of the Council Directive 92/43/EEC, Annex II of the Bern Convention and Law no. 49/2011 in Romania.

The study was performed on the left side of the Turda Gorge a Nature 2000 protected area, where the two species co-exist in the same habitat, which is colonized by their main host plants, *Prunus spinosa* and *Crataegus monogyna*. Data on nest distribution, nest height, number of eggs, host plant, host plant height and the cardinal orientation were recorded for further analysis.

This study was conducted on vigorous populations consisting of a great number of inventoried nests of the two moth species, namely *E. catax* with 48 nests and *E. lanestris* with 111 nests, contributing to a better understanding of their oviposition strategy.

The observed differences in their oviposition strategy were confirmed by statistical analysis. The results show that habitat overlapping occurs for the studied species, while their oviposition strategies reflect differences in their preferences for the host plant.

Leptotes pirithous is back again: Mediterranean species versus harsh winters

Marius SKOLKA[1]

[1]Natural Sciences Department, Ovidius University of Constanţa, 1 Aleea Universităţii, Corp B, 900470, Constanta, Romania, e-mail: mskolka@gmail.com

Key words: *Leptotes pirithous,* Dobrogea.

Some years ago, at the end of 20th century, *Leptotes pirithous* was an "exotic" species in Romania, mentioned only occasionally by fortunate lepidopterists. In the late 2000's, this species became a common presence in Dobroudja, being mentioned from natural habitats and anthropic areas in the summer and autumn seasons but especially from mid-August to late September (Rákosy, 2012; Szèkely, 2008). In some cases, a large number of specimens of this species was observed (Dincă et al., 2009) and it seems that this species established self-sustaining populations all over Dobrogea. In fact, this is the case of an expansive migratory species that is able to establish populations outside the Mediterranean initial habitat area (Van Swaay et al, 2010; Wiemers et al, 2013).

After the cold winter of 2017, when temperatures have remained negative for more than a month in Dobrogea, *Leptotes pirithous* disappeared, and for the year 2017 we have no mentions for this species.

But, in August 2018, *Leptotes pirithous* appeared again from the littoral area. We observed 15–20 specimens in the same area of Ovidius University Campus where this species was a constant presence in the last 5–6 years. The population included both specimens – especially males - at the end of the flight period and newly hatched specimens. That proved that *Leptotes pirithous* established a new population and we had at least one generation hatched locally. In this case two hypotheses may be advanced. The first hypothesis is that the repopulation was carried out by a recent immigration in this summer. The second one is that somehow, few preimaginal stages survive after the winter of 2016–2017 and restored the population, but in 2017 the number of specimens was low to be observed between other lycenid species.

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Ecology and population dynamics of aphidophagous hoverflies (Diptera: Syrphidae: Syrphini) in Sindh, Pakistan

Kamal Khan ABRO, Nasreen MEMON, Attaullah ANSARI

Zoology Department of the University of Sindh Jamshoro, Sindh, Pakistan, e-mail: kamalgul143@gmail.com

Key words: aphidophagous hoverflies, bio-control agent, Diptera.

Aphidophagous hoverflies are the beautiful group of flying insects which belong to order Diptera (Syrphidae: Syrphini). Due to peculiar character in feeding behavior they become the center of investigation, scientist are working on using them economically as bio-control agent against crop pest aphids. As a result, total specimens of 1 species (*Episyrphus balteatus*) were collected from study sites of Sindh, Pakistan. This species was most abundant all over the regions. Total 636 specimens were trapped from January-March 2018.

New record of *Conicera similis* Haliday (Diptera: Phoridae) in Romania and microbiome characterization

Lavinia IANCU[1], Emily JUNKINS[2], Cristina PURCĂREA[1]

[1]Institute of Biology Bucharest, Romanian Academy, Department of Microbiology, 296 Splaiul Independentei, Bucharest 060031, Romania, e-mails: lavinia.iancu@ibiol.ro; cristina.purcarea@ibiol.ro
[2]University of Oklahoma, Department of Microbiology and Plant Biology, Norman, OK 73019-0390, USA, e-mail: emily.junkins-1@ou.edu

Key words: *Conicera similis*, Phoridae, new record, Romania, buried environment, insect-microbe association.

Phorids represent the most commonly encountered taxa associated with buried remains, found from shallow to deep graves (Amendt et al., 2010). The first studies that dealt with the investigation of soil necrophagous entomofauna began with the research on exhumed cadavers (Mégnin, 1887; Motter, 1898; Rodriguez & Bass, 1985), providing the first insights into insect species presence on buried cadavers. Among these studies, the research of Motter (1898) on 150 exhumations, reported for the first time Phoridae species collected from human remains. Phorids identification has forensic significance for postmortem interval estimation (PMI), when associated with buried human remains.

Compared to the outdoor decomposition environment, the burial environment limits the accessibility of insects by depth and soil type. The present study investigated the decomposition process of buried rat (Rattus norvegicus Berkenhout, 1769) carcasses at 40cm depth, during spring and summer months, 2016 (Bucharest, Romania). During the summer experiment, Conicera similis (Haliday 1833) (Diptera: Phoridae) specimens were collected and identified from the rat carcasses found in active decay stage. The presence and activity period were correlated with the environmental parameters variation, and the colonization behaviour was highlighted during carcasses decomposition. The bacterial diversity from C. similis female adult and larvae specimens was identified by 16S rRNA gene Illumina MiSeq sequencing. The results revealed the dominance of Proteobacteria followed by Firmicutes in both larvae and adult specimens, with an increase of both phyla representatives in the adult specimens. At the order level, Xanthomonadales was constantly present in both larval and adult microbial communities, with a high relative content of Ignatzschineria genus.

This study reports the easternmost geographical location of *C. similis* in Europe (Bucharest, Romania), revealing the colonization behaviour of this taxon in buried conditions in correlation with the environmental variations. Furthermore, the postmortem microbiome insect-associated was characterized, representing a pioneering investigation for this species.

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New data regarding the trophic structure of ichthyofauna in the lower course of Bistriţa River, upstream and downstream Bacău city

Manuela Diana SAMARGIU[1], Alexandra Gabriela DIMA[1], Dorel URECHE[2]

[1]"Ovidius" University, Faculty of Natural Sciences and Agricultural Sciences, 1 University Alley, Corp B, Constanta, Romania , manuelasamargiu@yahoo.com,
[2]Department of Biology, Ecology and Environmental Protection, Faculty of Sciences, "Vasile Alecsandri" University, Bacau 600115, Romania, dureche@ub.ro

Key words: Bistriţa River, fish populations, trophic regime.

The paper presents the results based on the analysis of 1698 of fish individuals and their digestive tubes. The biological material was sampled from Bistriţa River by electrofishing.

The aim of our research study is to contribute, along with other research in the same area (presented at ABIC 6 - conference in Sibiu - 2017), to an overview on the structure of the fish communities, and the food resources availability.

13 sampling sites were investigated, 11 of them being located upstream Bacau city, and 2 of them downstream Bacau city.

A total of 16 fish species were identified, most of them being native species, and one non-native species – *Pseudorasbora parva*.

The fish individuals belong to three orders Cypriniformes, Perciformes, and Esociformes.

Analyzing the diet and stomach content from individuals belonging only to 13 species of the fish surveyed, it is noticeable that they are endowed with a great feeding plasticity. Based on the fish species diet 5 trophic groups were identified: detritivores, phytoplanktonivores / phytoplanktonophagous, zooplanktonivores / zooplanktonophagous, zoobenthivores / zoobenthophagous and predators / piscivores, insectivores.

In most of the sampling sites the detritivores and zoobenthophagous species were dominant.

It is obvious that the nature of the biotope, as well as the biological and abiotic characteristics of the sampling sites, influence the food resource and its quality in the fish populations from a specific zone.

The analysis of the food resources of the river shows that some elements of terrestrial origin (insects or plants phragments) could be encountered in the fish digestive tubes.

This allowed us to consider a significant interaction between aquatic ecosystems and the riparian biotops, and also to highlight the influence of water level variations along the river, depending on the season and on the hydromorphological characteristics.

Study on fish communities in Siret River (Romania), and some of its tributaries (Roman - Bacău section, 2012-2016)

Dorel URECHE[1], Camelia URECHE[1]

[1]"Vasile Alecsandri" University of Bacau, 157 Marasesti Str., 600115 Bacău, Romania, tel: 0234542411 int.150, fax: 0234545753, dureche@ub.ro, urechec@ub.ro

Key words: fish communities, biodiversity, Siret River.

The current study is part of a more comprehensive study in the Siret River basin, and it has been carried out during three years, i.e. 2012, 2015, and 2016.

The section Bacău-Roman of the River Siret is about 50 km long, and it gathers the waters of the small tributaries Tiganca, Ripas, Mora (left tributary), Valea Neagra, Turbata (right tributaries).

The biological material has been sampled in 43 sampling sites (29 in 2012, 5 in 2015, and 9 in 2016), by electrofishing, according to the current environmental Romanian legislation, following the principles of protection for the rare species. Thirty-six of the sampling sites are placed on the main course of the Siret River, and just 7 on some of its tributaries.

The taxonomic analysis revealed the presence of 26 fish species, two of them being non-native: *Psedorasbora parva,* and *Perccottus glenii*.

This study contains data concerning the fish communities from the perspective of the ecological analysis, also taking into account the human pressures in the last decades reflected in the fish communities' structure, both qualitatively and quantitatively.

A special attention has also been paid to quantitative structure of fish communities assessed by determining fish stocks and to biodiversity indices as well.

The study area overlaps the chub river zone, the common fish species being *Squalius cephalus*, *Barbus barbus, Romanogobio kesslerii,* and *Alburnus alburnus.*

Inter-population variation in the spring diet, body condition and sexual status in the European Pilchard, *Sardina pilchardus* (Teleosts: Clupeidae) from the Atlantic Moroccan coast

Abdelaziz MOUNIR, Hayat ELMGHAZLI,
Mohammed ZNARI, Mohamed NAIMI

Laboratory "Biodiversity & Dynamics of Ecosystems", Department of Biology, Faculty of Sciences, Semlalia, Cadi Ayyad University, Marrakech, P.O. Box2390, 40000, Morocco. Tél.: +212 24 43 46 49 (ext: 433 / 184); Fax: +212 24 43 74 12; e-mail; mnraziz1980@gmail.com

Key words: Sardine, body condition, sexual maturity, feeding intensity, diet

Small pelagic fish play an important role in marine food webs because they constitute the primary energy transfer means from plankton to large predators (fish, birds, marine mammals). The study of trophic ecology of these species is then essential to identify the factors controlling their spatial and temporal distributions and their abundance as well as the quality of ingested prey. Moreover, the assessment of body condition and the degree of sexual maturity is of a great interest for estimating their physiological state and fattening level. This study focused on the sardine, *Sardina pilchardus*, the most abundant and economically important small pelagic fish in Morocco. Our objectives were to assess body condition, the degree of sexual maturity and to determine the feeding intensity and dietary composition and overlap of sardines from representative populations of the three stocks (North: Larache, central: Safi and south: Dakhla) of the Moroccan Atlantic in spring period (April 2016). The relative condition factor increased from north to south and varied inversely with gonado- and hepato-somatic ratios. The results showed that the feeding intensity is low in Larache and Dakhla and higher in Safi related to reproductive status. Diet is essentially zooplanktivorous in Larache and phytoplanktivorous and Dakhla Safi (with numerical frequency over 70%). The copepods followed by cnidarians are dominant with respective numerical frequencies of 40% and 30% for sardines of Larache. The three populations exhibited rather a generalist feeding strategy with a wide ecological niche. The indices of Sorensen (C_S) and Pianka (O_{jk}) show a great similarity between the diet of sardines of Dakhla and Safi, areas of high phytoplankton productivity in spring. In contrast, a low similarity in diet between Dakhla and Larache was observed in relation to the low biological productivity of the latter and differences in sexual maturity.

Effect of traffic noise on chorus performance in the Marsh frog, *Pelophylax ridibundus* (Pallas, 1771)

Simeon LUKANOV

Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, Tzar Osvoboditel № 1, 1000 Sofia, Bulgaria
e-mail: simeon_lukanov@abv.bg

Key words: anthropogenic noise, calling activity, environment, impact, mating call.

A playback experiment was conducted at two sites: site 1 was a "quiet" pond with natural background noise levels at 30dB or lower; site 2 was a "noisy" pond, where a nearby industrial installation increased background noise to an average level of 55dB (41-76 ±17.6). An actual recording of traffic noise was used for stimuli preparation and was calibrated to 70dB. Experiments were conducted during breeding season in peak calling hours (19h-23h) and consisted of three 5-minute blocks, during which separate mating calls were counted and chorus noise level registered: pre-stimulus baseline of spontaneous calling, anthropogenic noise and negative control (silent track). Noise levels were measured using a sound level meter with C-weighting and portable X-mini speakers were used for the playback. Pre-stimulus baseline number of mating calls and chorus noise level were 242 (207-280 ± 37) and 52dB (33-69 ± 18.1) for site 1 and 332 (305-361 ± 28) and 71.3dB (57-83 ± 13.2) for site 2, respectively. For the anthropogenic noise block the values were as follows: site 1 – 138 (110-165 ± 28) and 46.7dB (30-67 ± 18.8); site 2 – 257 (220-290 ± 35.2) and 70.1 dB (57-86 ± 14.6). In both sites, there was no significant difference between pre-stimulus and the negative control (t-test, $p>0.05$). There were also no significant differences between pre-stimulus and anthropogenic noise in terms of chorus noise level, and, for site 2 only, for number of calls ($p>0.05$). For site 1 there was a significant difference in the number of calls, with anthropogenic noise suppressing calling activity ($p=0.017$). Results imply that traffic noise has a double negative effect on unaccustomed Marsh frogs – suppressing calling activity (hence lower number of calls) and increasing energy expenditure (i.e., louder calls) in frogs that continue to call (hence no difference in chorus noise level).

Demography of a Spur-thighed tortoise population (*Testudo graeca*) inhabiting a human modified habitat in south-eastern Romania

Sabina OCHIANĂ[1,2], Ruben IOSIF[1,2], Dan COGĂLNICEANU[1,2]

[1]Faculty of Natural and Agricultural Sciences, Ovidius University of Constanta, Aleea Universității no 1, building B, 9000470 Romania;
[2]Asociation Chelonia Romania, Str. Pașcani no 5, 62082, Bucharest, Romania, e-mail: sabina.ochiana@gmail.com

Key words: *Testudo graeca*, demographic parameters, population structure, Romania.

Past archaeological researches at Histria Archaeological Complex, located within the Danube Delta Biosphere Reserve - Romania, have modified and diversified the available habitats for wildlife. In this human modified habitat, a population of Spur-thighed tortoise (*Testudo graeca*) is thriving. Extensive archaeological diggings are offering aestivation sites during extreme summer heats, shelter during pre and post denning cold periods as well as proper hibernation sites.

In 2010, we started a long term monitoring study of this population, following a capture-mark-recapture design. Annual surveys started in early March and ended in October. We aimed to document the demographic parameters (sex ratio, population density, population structure) and dynamics during the 9 years of study.

The number of marked individuals increased from 170 individuals (of which 30% were juveniles and subadults) in the third year of survey to 433 individuals (with 32% juveniles and subadults) in the ninth year of survey. The detectability of new unmarked adults approached the asymptote after the fourth year of survey, with very few unmarked individuals found, but we continue to find subadults and juveniles in high proportions. The estimated population density increased from 5.1 individuals/ha in the third year of survey to 11.7 in the sixth year and 13.5 in the ninth year. Sex ratio evaluated through direct observation for adult individuals was 1:1 after the third year of survery, but after the sixth year is slightly biased towards females (1:1.2). The high proportion of juveniles and subadults indicate a viable population with a high reproductive success inhabiting this human modified habitat.

Observations on the reproductive biology of the Caspian whip snake (*Dolichophis caspius* Gmelin, 1789) in Romania

Tiberiu C. SAHLEAN[1,2], Alexandru STRUGARIU[2,3]

[1]"Grigore Antipa" National Museum of Natural History, 1 Kiseleff Blvd, 011341 Bucharest 2, Romania, e-mail: tiberiu.sahlean@antipa.ro
[2]"Moldavica" Herpetological Group, 20A Carol I Blvd, 700505 Iaşi, Romania.
[3]"Al. I. Cuza" University, Iaşi, 20A Carol I Blvd, 20A, 700505, Romania, e-mail: alex.strugariu@gmail.com

Key words: *Dolichophis caspius*, reproductive biology, clutch size, relative clutch mass

The Caspian whipsnake (*Dolichophis caspius*) is a successful species throughout most of its wide distribution range that covers both Europe and Asia in part but, as with many other snake species, detailed ecological information is absent, including basic data regarding reproductive characteristics.

In the present study we add new information regarding the reproductive biology of the Caspian whipsnake, obtained from the clutches of four gravid females captured in 2012 and 2014. Data collected for the females and from the newborn included snout-vent length (SVL), tail length (TL) and mass (in the case of females pre- and post-partum). For each clutch we noted the deposition date, clutch mass, egg length and egg diameter.

Mean body size of gravid females was 89.65cm and the average total clutch mass was 100.61g. Relative clutch mass ranged between 0.62 and 0.91. Females maintained a body condition index around the value of one both pre- and post-partum. Average clutch size was 12 eggs and each egg had a mass around 7g, the mass being highly dependent on the length of the egg and less so on the diameter. Offspring averaged 21.92cm body length and a mass of 4.86g.

Deliberate tail loss (pseudoautotomy) in a viperid snake

Alexandru STRUGARIU[1,2], Paul C. DINCĂ[1,2*], Ştefan R. ZAMFIRESCU[1,2]

[1]Faculty of Biology, "Alexandru Ioan Cuza" University of Iaşi, Blvd. Carol I No. 20 A, 700505, Iaşi, Romania.
[2]Moldavica Herpetological Group, Carol I Blvd. Nr. 20A, 700505, Iaşi, Romania
[*]Corresponding author, P. C. Dincă, E-mail: paul.cristian.dinca@gmail.com

Key words: pseudoautotomy, *Vipera ammodytes*, tail loss.

Predation is one of the most powerful agents of selection and animals have evolved a broad and diverse array of adaptations for predator deterrence or avoidance. Deliberate tail loss or urotomy is a predator-escape adaptation widely encountered throughout the animal world. In snakes, it has been previously reported in the form of pseudoautotomy (i.e. intervertebral breakage without regeneration), but only in species normally characterized by slender bodies and long tails (Colubridae, Elapidae and Lamprophidae). Here we describe, for the first time, deliberate tail loss, in the form of pseudoautotomy, in a representative of the Viperidae: the European nose-horned viper (*Vipera ammodytes*) using X-ray imagery and, subsequently, by exposing the first two vertebrae from the separation point under a stereo microscope. To the best of our knowledge, our observation represents the first comprehensive description of deliberate tail loss in a viperid snake, in the form of pseudoautotomy. Although the potential adaptive value of caudal luring (rarely observed in European vipers) might result in tail loss being mostly disadvantageous in this group, our observation shows that deliberate tail loss can occur in shorter bodied and shorter tailed snakes, such as vipers, and suggest that other observations of tail breakage in these snakes may also be the result of pseudoautotomy.

Estimating total and specific food consumption in the Moroccan Spiny-tailed lizard (Sauria: Agamidae) using feces calibration and microhistogical analysis methods

Safaa BENDAMI[1,2], Mohammed ZNARI[1,2],
Soumia LOULIDA[1,2] , Mohamed NAIMI[1,2]

[1]Laboratory 'Biodiversity and Ecosystem Dynamics', [BioDEcos], Cadi Ayyad University, Faculty of Science-Semlalia, Department of Biology, P.O. Box: 2390, 40 000 Marrakech, Morocco
[2]The Natural History Museum of Marrakech, Cadi Ayyad University, 40000, Marrakech, Morocco

Keywords: *Uromastyx nigriventris*; microhitological faecal analysis, feces calibration; frequency conversion; food consumption.

The Moroccan Spiny-tailed lizard, *Uromastyx nigriventris*, is an agamid species widespread in Morocco east and south of the Atlas range and in western Algeria, in the Saharan Atlas and in the northwestern, northeastern and southwestern regions of the Great Western Erg. Few studies on its food habits were carried out. But, information regarding the daily food consumption and parts of dietary food items in lizards under natural conditions is lacking. This paper aimed at evaluating the daily food consumption in terms of dry matter intake using calibrated production of faeces collected during 12 days in wild adult fasted lizards upon their capture. The lizards originated from three very distant localities distributed along a Mediterranean-to-Pre-Saharan aridity gradient in Morocco in both spring and autumn. We used microhistological technique to identify plant fragments in faecal pellets using plant epidermal features. Dry weight percentages were derived for each eaten plant species from its corresponding relative density calculated by the frequency conversion techniques using microhistolgical analyses of fresh faecal pellets collected from known individuals upon their capture. The obtained results showed that these lizards are predominantly herbivorous, feeding on a total of 4 to 13 different plant species depending on locality and season, but some insects, namely coleopterans and ants are also consumed. The total production of faeces by studied lizards was significantly related to the daily food consumption. A transformed equation allowed to estimate daily dry matter intake of these lizards from their production of faeces which was allometrically related to body weight. The combination of the two used methods would be very useful in estimating the daily food and parts of various nutriments, minerals and water in this true herbivorous and non-drinking desert species. This would also have important implications for conservation such as captive-breeding programmes and habitat restoration.

A bully or a pretender? The impact of Eurasian coot (*Fulica atra* Linnaeus, 1758) on the avifauna structure at Câmpeneşti wetlands

Valentin Adrian KISS[1], Liviu Răzvan PRIPON[2]

[1]"Babeş-Bolyai" University, *Faculty of Biology and Geology*, 44 Republicii (Gh. Bilaşcu) Str., *Cluj-Napoca*, 400015, Romania, e-mail: kissvalentinadrian@gmail.com
[2]"Babeş-Bolyai" University, *Faculty of History and Philosophy,* 1 Mihail Kogălniceanu Str., *Cluj-*Napoca, 400084, Romania, e-mail: liviu.pripon@gmail.com

Key words: aggressive behaviour, intraspecific and interspecific, species richness.

At Câmpeneşti wetland complex, one of the most abundant bird species is the Eurasian Coot (*Fulica atra*). Coots share habitat with more than 30 waterbird species, observed in our field trips. We often noticed coots attacking other species like Mallard (*Anas plathyrhynchos*), Garganey (*Spatula querquedula*), Red-necked grebe (*Podiceps grisegena*) and Ferruginous duck (*Aythya nyroca*). At the same time, coots attacking their own kind is a common view on ponds where they live. Those observations lead us to the hypothesis that coots can have an impact on the avifauna composition. Our aim is to test this hypothesis by confirming a negative correlation between coots abundance and species richness as well as between coot abundance and total abundance of the other species. Our hypothesis was also sustained by some isolated observations when ponds with many coots present had a low number of species and in contrast ponds with lesser coots had a diverse avifauna. Analyzing the data from 16 counts in the nonbreeding season between 2017-2018 and 15 counts in the breeding season of 2018 we get to a totally opposite result of what we expected. When we tested the correlation between ponds with different coots abundance we found no correlation with species richness nither with other species total abundance. When we did the same analyses for each pond, in particular, the results were similar. The same situation applies for both breeding and nonbreeding seasons. We concluded that our hypothesis is false and even though, coots are very aggressive, they do not drive away species from the habitat they share. So a high number of coots does not necessarily represent a low number of other species. Coots don't have a negative impact on avifauna structure as large population develop where conditions are favourable as well for the other species.

Where do herons prefer to feed when an easy meal is available? Preferences in site selection of the Grey Heron (*Ardea cinerea* Linnaeus 1758) at Câmpenești Fishing Complex (Transylvania, Romania)

Liviu Răzvan PRIPON[1], Valentin Adrian KISS[2]

[1]"Babeş-Bolyai" University, Faculty of History and Philosophy, Mihail Kogălniceanu Street no 1, Cluj-Napoca, 400084, Romania, e-mail: liviu.pripon@gmail.com
[2]"Babeş-Bolyai" University, Faculty of Biology and Geology, Republicii (Gh. Bilașcu) Street no 44, Cluj-Napoca, 400015, Romania, e-mail: kissvalentinadrian@gmail.com

Key words: wild habitats, fishing complex, breeding ponds, wetland management.

One of the most abundant species of herons (Ardeidae family) is the Grey heron (*Ardea cinerea* Linnaeus 1758). It is known that some aquatic species can produce damages on fishing ponds by consuming the fish offspring. In this study, we asked what impact does the grey heron have on Câmpenești Fishing Complex (Romania, Transylvania). To answer this question, we tried to find the ponds prefered by Grey herons. We did 31 counts in the nonbreeding and breeding season between 10.10.2017 and 30.08.2018. We noticed the highest number of individuals on pond 0, in both seasons. The same thing applies to the frequency of individuals. In the case of the breeding ponds, the abundance and the frequency of grey herons was much lower, both in the non-breeding and breeding season, compared with the previous situation. An interesting case was pond 5 in which the abundance increased considerably in the second half of the breeding season marking two distinct situations concerning reproductive phenology. Though, when present on pond 5, herons were observed resting in the reedbed and not feeding. Related to the situation on the breeding pond we found a similar frequency and a slightly higher number of herons, both in the breeding and nonbreeding season present on the hills near pond 0. This could mean that grey herons use those areas for feeding almost as much as the breeding ponds. Therefore, grey herons through the consumption of animals (rodents) that can produce damages to crops compensate the possible damage made to the fisheries. We can conclude that grey herons prefer wild habitats in favour of those with fish offspring. For more favourable management, the presence of more natural areas may enable the grey herons to coexist with people in the fishing complexes without having a negative impact on the fishermen.

Collared dove (*Streptopelia decaocto*) – survival strategies

Gabriel BĂNICĂ

S. C. BIOSYS GROUP S.R.L., Str. Crinului nr. 33/B, 900 338 – Constanța, România, gabibiosys@yahoo.com

Key words: *Streptopelia decaocto,*Collared Dove, Survival Strategies, Constanța

On the 24th of October 2015, I found a Collard dove in a nest in honey locusts (*Gleditsia triacanthos*) located in a block of flats district in Constanta (Dobrogea County, Romania). The nest was at about 6-7 m height of from the ground, at the clogging of some branches. There was an egg in the nest, and the pair was nearby. Last time I saw the bird in the nest on the 31st of October 2015.

Modest in appearance, it can easily be found in most of the localities of Romania. It is a South Asian species that expanded its range naturally, entering the Romanian territory (Calafat) in 1877 (Ciochia, V. 1992).

We point out that the species succeeded in expanding its range in a very short time almost all over Europe (Hengeveld, R. 1997), including in the northern countries with a much cooler climate compared to its places of origin. It was not satisfied with only the conquest of Europe, and managed to reach North Africa - Morocco and Algeria (Moali, A., Isenmann, P. 2007) and even North America - in the United States in 1980 (Fielder, J. Et all. 2012).

This fantastic success of the species is certainly due to several factors. These are: it lives in localities where the number of natural predators is much lower, food is found throughout the year, small losses of eggs and juveniles, the increasing of the breeding season period, respectively a large number of annual egg layers. While most of the bird species in the Palearctic region have one egg layers or two per year, the collared dove can reach four or even five egg layers per year (Radu, D. 1988).

The biology of this species remains interesting, especially from the point of view of its survival strategies.

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Preliminary data regarding spatial distribution and nesting of the White-tailed Eagle (Aves: *Haliaeetus albicilla* Linnaeus 1758) in the Danube Delta Biosphere Reserve and its surroundings in 2018 (Romania)

Vasile ALEXE[1,2], Alexandru Cătălin DOROŞENCU[1], Mihai MARINOV[1], Janos Botond KISS[1], Lucian-Eugen BOLBOACĂ[1], Attila David SÁNDOR[3], Dumitru MURARIU[4]

[1]Danube Delta National Institute for Research and Development, Street Babadag 165, Tulcea 820112, Romania, e-mail: vasile.alexe@ddni.ro, alexandru.dorosencu@ddni.ro, mihai.marinov@ddni.ro, jbkiss03@yahoo.com, lucian.bolboaca@ddni.ro
[2]Faculty of Biology, Bucharest University, 91-95, Splaiul Independenţei, 050095 Bucharest, Romania, e-mail: alexe_vasile@yahoo.com
[3]Department of Taxonomy and Ecology, Babeş-Bolyai University, Street Clinicilor 5-7, Cluj-Napoca, Romania, e-mail: adsandor@gmail.com
[4]Department of Ecology, Taxonomy and Environment Protection, Romanian Academy's Institute for Biology, 060031 Bucharest, Romania, e-mail: dmurariu@antipa.ro

Key words: *Haliaeetus albicilla,* nesting, chicks number White-tailed Eagle, Danube Delta Biosphere Reserve.

In this work we present some of the data about the nesting ecology of the White-tailed Eagle (*Haliaeetus albicilla*) collected during 2018 in the Danube Delta Biosphere Reserve and its surroundings.

During the research a total of 67 different nests (ocuppied or not) were recorded. 49 of these were actively used for nesting. We also recorded 7 breeding pairs (territories) whose nests could not be identified. The preferred tree species for nesting were *Salix alba* with 61% of all identified nests. 21% were in *Populus alba*, 12% in *Populus x canadensis hybrid*, 3% in *Alnus glutinosa*, 2% in *Tilia tomentosa* and 1% in *Quercus robur.* The nests were located in the tallest trees available on the site and were placed at heights between 5 and 24 meters. 55% of these were above 13 m of the ground, while 45% below. The White-tailed Eagle nest site selection may be a response both to tree availability in the foraging habitat as well as food supply.

We registered a total of 63 juveniles, of 49 breeding pairs with identified nests, so the mean was calculated to be 1.36 juveniles /nest, a value that fits within the limits cited by literature.

Regarding the population of White-tailed Eagle, we recorded a positive trend, with an increase of 11 pairs compared to 2017 and 15 pairs from 2016.

Observations on the first known colony of *Myotis bechsteinii* (Mammalia: Chiroptera) of the Region Veneto (N.E. Italy)

Edoardo VERNIER[1], Bronisław W. WOŁOSZYN[2]

[1]Museo di Zoologia, Università di Padova (ext.coll.); Private Office: via delle Palme 20/1, 35137 Padova, Italy; e-mail: e.vernier@libero.it
[2]Chiropterological Information Center; Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, 31-016 Krakow, Slawkowska p.17, Poland; e-mail: woloszbr@isez.pan.krakow.pl

Key words: Bats, Bat Ecology, Vespertilionidae, *Myotis bechsteinii*, Veneto.

Myotis bechsteinii (Kuhl, 1817) is one of the rarest bat species of Italy (also unfrequent or rare in all Europe). In the region Veneto, this bat was recorded in few localities, mostly with single specimens in cave habitats. In the region Veneto, this bat species was recorded up to 1500 m altitude. The known distribution was localized, probably depending on the presence of its preferred habitats. This species is closely related to mature forest, with presence of old trees (with hollows). In winter, it occurs in caves and cellars; in summer it is found mostly in tree hollows, sometimes also inside wooden bat-boxes.

The only known colony of *Myotis bechsteinii* of the region Veneto was localized inside a wooden bat-box placed in a stone wall of an inhabited house, in the municipality of Tarzo (locality: Prapian; province: Treviso) at elevation of 200 m a.s.l. The bat-box was placed on the house wall in the spring of 2009 and it was used by bats in the summer season, every year. The bat-box was monitored and checked with no disturbance, only observing pellet deposits and emerging bats at dusk, and with collection/observation of few dead or injured bats. The colony of the bat-box is a maternity colony of *Myotis bechsteinii.* This recorded colony represents an unusual site fidelity (10 years) for a bat species that tends to change the roost several times during summer (sometimes a single roost may be used for few days only).

The site of the bat-box is placed in an inhabited area, near a relict forest with some very old trees, and near to extensive vineyard cultivations (especially with grapes of the famous wine Prosecco) which utilize some chemicals (also glyphosate) but also biological cultivation methods (with no chemicals used). Extensive vineyard cultivations apparently don't create problems to the bat colony, that grew along years, so recently a second bat-box was placed near the first one.

Places of pre-hibernation foraging activity of *Nyctalus noctula* (Vespertilionidae, Chiroptera) in Eastern Ukraine

Kseniia KRAVCHENKO[1,2] Viktor KOVALOV[1,3], Olha TIMOFIEIEVA[1,3], Olena RODENKO[4], Anton VLASCHENKO[1]

[1]Ukrainian Independent Ecology Institute, 40 Plehanivska St., Kharkiv, Ukraine
[2]Leibniz Institute for Zoo and Wildlife Research, Alfred-Kowalke-Straße 17, 10315 Berlin, Germany
[3]Jagiellonian University, ul. Golebia 24, 31-007, Krakow, Poland
[4]Department of Biology and Environmental Protection, University of Silesia in Katowice, str. Jagiellonska 28, 40-032 Katowice, Poland

Key words: chiroptera, hibernation, feeding ecology

During the last 20 years, several species of European bats have significantly expanded their range northeastwards. A vivid example of such changes is a Noctule bat (*Nyctalus noctula*), species hibernating in Eastern Europe within its breeding range, 500-700 km farther north from its previous winter range border.

Annual bat monitoring in Kharkiv city (KhC) (northeast Ukraine) since 1998 reveals the way *N. noctula* uses the urban environment. *N. noctula* arrives in KhC in August and disappears from the city in the middle of September, indicating the beginning of "autumn silence", to come back later at the end of October to their hibernation places. In addition, recaptures of the individuals in November, ringed in August, show the individual weight increase. We hypothesize that bats forage in woodlands outside of the city in the period of autumn silence.

In order to check this hypothesis, we established 4 routes (30-60 km length) from the city center towards the cardinal directions. Each route had up to 11 recording points with the 15 minutes record duration. We drove each transect twice: in September and in October. The weather conditions and the lighting level were noted for each recording point. We also recorded bats at different points across the KhC. Totally, we made 70 recording sessions. For each recorded call, we identified a species and looked for only feeding buzzes of *N. noctula*.

As a result, our acoustic survey showed that *N. noctula* indeed is feeding on places out of the city during an autumn silence. There are 11 sites where we recorded feeding buzzes of *N. noctula*. These preliminary results could show places of further study of autumn feeding behaviour of *N. noctula*.

Behavior of *Apodemus flavicollis* and *Apodemus sylvaticus* from urban ecosystems of Chișinău city, Republic of Moldova

Natalia CARAMAN, Victoria NISTREANU

Institute of Zoology, 1 Academiei Str., Chișinău, MD-2028, Republic of Moldova, CNatusea@yahoo.com

Key words: behavior, *Apodemus flavicollis*, *A. sylvaticus*, urban ecosystems, Chisinau city

Recently many studies have described the effects of urbanization on species behavior and adaptation. The behavior of *Apodemus flavicollis* and *A. sylvaticus* was studied in a 15-minute open field test. A total of 8 behavioral events were recorded for both species. Both species were captured with live traps in urban ecosystems of Chișinău city.

Each animal was individually tested for 15 min (5 series of 3 minutes intervals each) in the open filed experiment. The open field is made of organic glass (42×42) cm, divided into 25 squares. In the open field the following indices were set: latency period, horizontal activity (no. of visited squares), vertical activity (no of vertical stands), climbing, duration of grooming, emotionality (defecation and urination), freezing, null activity.

The latency period of *Apodemus flavicollis* constituted more than 10 min for all individuals and for *A. sylvaticus* the mean constituted 3.22 min. The mean value of total horizontal activity (ambulation) was 504.6 visited square for *A.flavicollis* and 426.2 visited square for *A. sylvaticus* during 15 min. The mean value of vertical activity constituted for *A.flavicollis* – 136.6 and *A. sylvaticus* – 123.8 during 15 min. The mean value of climbing was 37 for *A.flavicollis* and 6.4 for *A. sylvaticus*. The mean value of emotionality for *A.flavicollis* was 3.2 and for *A. sylvaticus* – 4.4. The freezing constituted 5.2 seconds for *A.flavicollis* and 3.4 seconds for *A. sylvaticus*. The grooming activity in both species is lower at the beginning and increases towards the middle of the experiment, while in the last minutes practically disappear, being replaced by jumping. Grooming in *A.flavicollis* constituted 10.8 min in *A. sylvaticus* – 12.81 min. Null activity usually follows after the grooming and constituted for *A.flavicollis* – 51.8 sec and for *A. sylvaticus* – 40.8 sec. Thus, the species *A. sylvaticus* proved to be more curious and less stressed by the new environment.

The studies were performed within the project 15.187.0211F.

Some aspects of *Apodemus sylvaticus* (Linnaeus, 1758) behavior in the ecotonic community of mouse-like rodents of Moldova

Nelli CEMÎRTAN, Andrei MUNTEANU, Victoria NISTREANU

Institute of Zoology, Republic of Moldova, Chişinău, e-mail: *cemirtannelli@mail.ru*

Key words: ecotone, mouse-like rodents, estimated research and competitive behavior

Despite the significant role and enormous prevalence of ecotones in nature, they are not well studied. The aim of our research was to study the orientational-exploratory behavior and intraspecific relationships of sexually mature males of one of the species of mouse-like rodents of the ecotonic community (*Mus musculus, Mus spicilegus, Apodemus uralensis, Apodemus sylvaticus*, *Apodemus flavicollis* and *Clethrionomys glariolus*), inhabiting a narrow space between the wheat field and forest planting – *Apodemus sylvaticus*. Orientational and exploratory behavior was studied using the "open field" method, and intraspecific interactions were studied using the pair-wise pairing method. In these experiments, all males of *Apodemus sylvaticus* independently entered the "open field", and the latent period of exit from the "home cage" into the "open field" was 131,71 ±11,78 sec. There is a strong positive correlation between horizontal and vertical activities (r = 0,85), vertical activity and grooming (r = 0,95), horizontal activity and grooming (r = 0,89), low negative correlations of the duration of the latent period with indicators of the horizontal (r = - 0,56) and vertical activities (r = -0,34), low rates of emotional reaction to novelty. In the study of intraspecific relationships of forest mice, complexes of introductory, aggressive, protective, conflicting, and comfortable behavior were identified, with the most clearly exploring complex, and the least aggressive. In general, the behavior of *Apodemus sylvaticus* is species specific and is characterized by a low level of aggressiveness of intraspecific contacts. All the listed characteristics of representatives of *Apodemus sylvaticus* allow us to conclude that this species has high adaptive abilities, great potential and resistance to overcome the negative conditions of "tension" that occurs in the ecotone community.

Preliminary data on the diet of Romanian hamster *Mesocricetus newtoni* (Rodentia: Cricetidae)

Viorel Dumitru GAVRIL[1,2], Roxana Georgiana NICOARĂ[1], Gabriel Bogdan CHIȘAMERA[3], Ioana COBZARU[1], Tiberiu C. SAHLEAN[3], Dumitru MURARIU[1]

[1]Institute of Biology Bucharest, Romanian Academy, 296 Splaiul Independenței, Bucharest, Romania, e-mails: viorel.gavril@ibiol.ro, ioana.cobzaru@ibiol.ro; roxanaion85@gmail.com; dmurariu.ibiol.ro@gmail.com
[2]University of Bucharest, Faculty of Biology, 91-93 Splaiul Independenței, Bucharest, Romania
[3]"Grigore Antipa" National Museum of Natural History, 1 Kiseleff Blvd, 011341 Bucharest 2, Romania, e-mail: gabriel_chisamera@antipa.ro, tiberiu.sahlean@antipa.ro

Key words: *Mesocricetus newtoni*, Dobruja, mammals, diet, vegetation.

The Romanian hamster - *Mesocricetus newtoni* (Nehring, 1989) is endemic to south-eastern Romania and north-eastern Bulgaria (Wilson & Reeder, 2005; Vohralík, 1999). Due to its restricted range, small population size and cryptic behavior the ecology of this species is poorly known. Few studies address the diet and type of vegetation preferred by the Romanian hamster. A number of 22 plants are known to be part of its diet (Marcheș, 1964), and other authors mention that in addition to various cereals, herbs, beets, fruits and roots, the species forages for large insects, snails and even mice and small birds (Dombrowski, 1907; Murariu & Popescu, 2001).

This study brings additional notes on the various plants that make up the diet of *M. newtoni* in Romania.

Vegetation survey was performed during the peak season, in May, in the natural environment of the species. Direct observations were made in order to identify the plant species consumed by the species, supplemented with video and photo records that were analysed prior to the events.

The habitat in the study area is characterized by ruderal communities situated in the proximity of arable fields. During our observations, a number of 37 plant taxa were identified in the study area. 16 plant species were identified as part of the diet of the Romanian hamster, mostly herbaceous within the Brassicaceae family. *Erodium cicutarium* (Geraniaceae) and *Papaver rhoeas* (Papaveraceae) were consumed most frequently, followed by *Descurainia sofia* (Brassicaceae), *Sisymbrium orientale* (Brassicaceae), *Medicago minima* (Fabaceae) and *Buglossoides arvense* (Boraginaceae). Out of the 16 taxa ideintified in the diet of *M. newtoni*, 2 of them, *Vicia lathyrois* and *Medicago sp.,* were also mentioned in Marcheș's study.

The results provide new data into the diet preferences for this endemic species.

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Road mortality on *Muscardinus avellanarius*

Ionela SLEJIUC[1,2], Ioan-Alexandru RĂDAC[3], Eliana SEVIANU[4]

[1]National Museum of Banat, Department of Natural Science, 4 Martin Luther Str, Timișoara, Timiș, 300054, România; e-mail: ionela.slejiuc93@e-uvt.ro
[2]West University of Timisoara, Faculty of Chemistry, Biology, Geography, 6A, Pestalozzi Str, Timișoara, Timiș, 300115, România;
[3]Babes-Bolyai University, Faculty of Biology and Geology, 5-7 Clinicilor Str, Cluj Napoca, Cluj, 400084, Romania, e-mail: radac.alexandru@yahoo.ro
[4]Babeș-Bolyai University, Faculty of Environmental Science and Engineering, Department of Environmental Science, 30 Fantanele Str, Cluj-Napoca, Cluj, 400294, Romania, e-mail: eliana.sevianu@ubbcluj.ro

Key words: protected species, small mammal, road ecology.

The hazel dormouse is an arboreal, nocturnal mammal, usually regarded as highly reluctant to cross open habitats, therefore roads are considered a major barrier for movement and dispersal, and cause for habitat loss and fragmentation. Recent studies in Germany and England show that dormice inhabit roadside habitats along motorways, highways and also traffic islands, proving that safe road crossing occurs quite often. Although there is an inherent risk of road-kill, no evidence of road mortality has been documented so far. In our study we investigate the occurrence of road crossings and road kills in hazel dormouse, using direct observation, by surveying a 35 km road transect (national and local roads) in Timiş County, Romania. The transect passes through forests, pastures, cultivated land and small villages and was surveyed by car (speed 25-30 km/h) every fortnight, after the sunset, from April to September 2018. We encountered hazel dormice in 14 instances, adults and juveniles, on 3 out of the 13 surveys. In 50% of the cases, single individuals were spotted safely crossing the road, and in another 50% of the instances, road kills were documented, involving both adults and juveniles. Three individuals (2 safe crossings and a fatality) were pushed to cross the road by a fire affecting one side of the roadside vegetation. Our study shows that road crossing is a cause of death in hazel dormouse, despite the species highly arboreal nature, but the relevance of this threat to the adjacent populations is not yet clear.

New data on the abundance and distribution of the Black Sea dolphins and porpoises (Cetaceea: Delphinidae; Phocoenidae) from the Romanian territorial waters

Romulus-Marian PAIU[1,2], Mihaela MIREA CÂNDEA[1], Angelica PAIU[1], Anca-Maria GHEORGHE[1]

[1]Mare Nostrum NGO, 16 Bogdan Vodă, 900613, Constanta, Romania, e-mail: marian_paiu@marenostrum.ro; romulus.marian@gmail.com
[2]Scientific Committee of ACCOBAMS, Agreement on the Conservation of Cetaceans in the Black Sea, Mediterranean Sea and Contiguous Atlantic Area

Key words: new records, Black Sea cetaceans, line transect sampling, vessel survey, Distance 7, abundance

The studies made along 2017 on the cetaceans inhabiting the Black Sea, along the territorial waters of Romania are presented. The surveys were performed in the spring and summer of 2017, between Constanța and Vama Veche localities. Distance sampling method and Distance 7 software (Thomas, 2010) were used for designing the survey plan and data analysis.

8 transects were established in the survey plan, from east to west, perpendicular on the shore line, at a distance of 5 km one another. A total of 211.95 Km of transects line were resulting in an area of 1063 km^2 (coverage of 0.396%).

There were recorded 275 sightings, of all the three species of cetaceans known for the Black Sea, *Delphinus delphis ssp. ponticus*, *Tursiops truncatus ssp. ponticus* and *Phocoena phocoena ssp. relicta,* with a very low frequency of common dolphins (*Delphinus delphis ponticus*).

The European Union (EU) Habitats Directive requires Member States to monitor and maintain at favorable conservation status for those species identified to be in need of protection, including all cetaceans (Birkun, 2014). This being another reason why the studies related to the Black Sea cetaceans are of great importance, keeping in mind the important role of cetaceans in the marine ecosystem.

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Classification of the inland water bodies in Bulgaria based on the risk of invasion by *Dreissena polymorpha*, using GIS

Teodora TRICHKOVA[1], Ivan BOTEV[1],
Dimitar KOZUHAROV[2], Zdravko HUBENOV[3]

[1]Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 1 Tsar Osvoboditel Blvd., 1000 Sofia, Bulgaria; E-mail: trichkova@gmail.com
[2]Biological Faculty, Sofia University 'St. Kliment Ohridski', 8 Dragan Tsankov Blvd., 1164 Sofia, Bulgaria
[3]National Museum of Natural History – Sofia, Bulgarian Academy of Sciences, 1 Tsar Osvoboditel Blvd., 1000 Sofia, Bulgaria

Key words: zebra mussel, translocated species, risk criteria and categories, the Danube River, Black Sea and Aegean Sea drainage basins.

The zebra mussels *Dreissena polymorpha* are among the most aggressive aquatic invaders, which have great potential to cause ecological and economic damages. Since the late 1990s the species has been translocated to numerous inland water bodies in Bulgaria. The aim of our study was to classify the inland water bodies at national level according to the risk of invasion by *D. polymorpha*, using GIS.

The study was based on data from 2006-2012. Seven classification criteria were develeped based on our previous studies and on literature. *Dreissena* risk categories/ threat conditions for Bulgaria were delineated and they included three levels: low, moderate, and high threat levels. The factors that contribute to the increased risk of water bodies to *Dreissena* invasion were determined as follows: an altitude in the range 0–700 m a.s.l., affiliation to the Danube River or the Black Sea drainage basins, direct connection or proximity to other infested water bodies, surface area above 50 ha, conductivity in the range of 200–500 μS/cm, moderate calcium concentration (25–50 mg/l), and accessibility by numerous human users.

The inland water bodies in Bulgaria were classified at national level, using three of the developed criteria (altitude, drainage basin, proximity to a water body with presence of *D. polymorpha*). Out of 344 water bodies studied, 102 water bodies, belonging to the Danube River and the Black Sea drainage basins, as well as to the Tundzha River basin, were classified as high risk of *D. polymorpha* invasion, 156 water bodies, belonging to the basins of the rivers Iskar, Struma, and Maritsa, were classified as moderate risk, and 86 water bodies from the basins of the rivers Mesta and Arda were classified as low risk.

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Helmintological investigations on phytonematode complexes formatory of cysts (*Heterodera schachtii*, Schmidt 1871) in sugar beet culture in the conditions of the Republic of Moldova

Ion TODERAŞ[1], Elena IURCU-STRĂISTARU[1,2], Ştefan RUSU[1], Alexei BIVOL[1], Maria MELNIC[1], Olesea GLICA[1], Ion GOLOGAN[1]

[1]Institute of Zoology MECR, Chişinău, Republic of Moldova
[2]State University of Tiraspol, Chişinău, Republic of Moldova

Key words: sugar beet, *Heterodera schachtii*, monitoring, biological control, disease

At present, the sugar beet culture in the Republic of Moldova represents 14% of the total area of the phytotechnical agrocenoses, on productive lands and a harvest of sweet rhizocarp with an average of 36-40 tons per hectare.

The sensitivity of sugar beet is significantly pronounced during the vegetation period to the phytoparasitic impact of various harmful organisms, which fall into the category of pests and complexes of dangerous phytoparasitic nematodes, cyst forming from genus *Heterodera*, species *Heterodera schachtii* Schmidt, 1871

Samples were analyzed visually in the field during the vegetation period of 2017-2018 and in the laboratory by extraction-decantation method, fixed in 4% formalin and mounted in order to identify the taxonomy and establish the number.

The results of the helminthological evidences noted an increase in the nematode number in the rhizocarp formation stage in the 2nd and 3rd decade of June, with the active hatching of the invasive larvae from the soil cysts and the evolution of the biological cycle, conditioned by the environmental factors, which contributed to the active triggering of the phytoparasitic impact on microrhisocarps. The result of laboratory analyzes of soil and plant samples revealed various adult forms of male and female cysts in larvae hatching phases of *Heterodera schachtii*, with average values from 150-1200 ind. /100 cm^3 in all investigated samples, including the detection of heteroderosis simtoms in the phase of leaf rosette and rhizocarp formation in the soil, with a degree of affection from 15% to 20% on productive sectors and up to 30-40% on sectors where crop rotation was not carried out, unfertilized and accompanied with massive gools. At the same time, other phytoparasitic complexes of the genera *Pratylenchus, Tylenchus, Filenchus, Helicotilenchus, Rotylenchus, Paratylenchus,* which form specialized associations and severely damage the sugar beet culture, have also been found in the sugar beet culture.

The results found of parasite phytonematode complexes in the sugar beet culture of Moldova agrocenoses allows to intervene in the adaptation of an integrated protection system.

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New data on *Corythucha* species in Romania

Marius SKOLKA[1], Daniyar MEMEDEMIN[1]

[1]Natural Sciences Department, Ovidius University of Constanţa, 1 Aleea Universităţii, Corp B, 900470, Constanța, Romania, e-mail: mskolka@gmail.com

Key words: *Corythucha ciliata, Corythucha arcuata*, Transsylvania, Dobrogea.

The two species of *Corythucha* genus – the Sycamore lace bug *Corythucha ciliata* (Say, 1832) and the Oak lace bug *Corythucha arcuata* (Say, 1832) are two of the most widespread invasive species of Tingidae family in Romania. The Sycamore lace bug has an American origin and was introduced in Europe in early 1960 and in Romania was mentioned for the first time in 1990 in south-western part and in 2010 in the center of the country (Tatu, Tăușan, 2011; Don et al, 2016). In 2015, mass populations were mentioned in Bucharest and since then, it became a very visible presence. We find this species in the center of Romania, in Blaj city (Alba County), in September 2018.

The Oak lace bug had a most rapid expansion; mentioned in 2013 for the first time in south-east Europe (Dobreva et al, 2013). Five years later, the small tingid was present in the whole Bulgaria (Simov et al, 2018). In 2017 it was mentioned for the first time in Romania (Chireceanu et al, 2017), in Bucharest city area. One year later, we find this species in south eastern part of Romania (Ialomița and Constanța counties). In northern Dobrogea (Tulcea County) we found so far no evidence of the presence of this species. However, in the southern part, the species is present not only in Constanta city (mentioned this year by Buhaciuc) but also in the protected Natura 2000 areas (Canaraua Fetii Area and Fântânița – Murfatlar). A possible scenario is that the Oak lace bug entered in the southern part of Dobrogea from the west. Even if the Oak lace bug was not mentioned from the vicinity of Bulgarian – Romanian border in Dobrogea, another intrusion from the south should not be excluded.

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Sceliphron caementarium in Dobrogea

Marius SKOLKA[1]

[1]Natural Sciences Department, Ovidius University of Constanţa, 1 Aleea Universităţii, Corp B, 900470, Constanța, Romania, e-mail: mskolka@gmail.com

Key words: invertebrate marine species, Red Book.

The North American mud dauber wasp *Sceliphron caementarium* (Dury 1773) is easily recognizable by the black petiole and the yellow propodeum. By instance, the European species *Sceliphron destillatorium* has a yellow petiole and entire black abdomen. *Sceliphron caementarium* belongs to a series of sphecid wasps introduced all over the world. From the same category there are species like *Chalybion zimmermannii* and *Isodontia mexicana* (both with North American origin) or *Sceliphron curvatum* (an Asian species), who invaded southern part of Europe in the last decades of the 20th Century.

Having at least several introduction events in Europe, *Sceliphron caementarium* was mentioned for the first time from Romania in 2012, from the north-western part of the country (Gagiu, 2012) and later from Bucharest area (Popescu, 2014; Levarda, Matache 2016).

In Dobrogea, we found this species since 2016, in Constanța city. Adult females and nests were collected in 2016, 2017 and 2018, and we could conclude that at least in the central part of the littoral area this species is a constant presence.

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Holocacista rivillei (Stainton, 1855) (Lepidoptera: Heliozelidae) is expanding its distribution area

Camelia URECHE[1], Dorel URECHE[1]

[1]"Vasile Alecsandri" University of Bacau, 157 Marasesti Street, 600115 Bacau, Romania, tel : 0234542411 int.150, fax : 0234545753, dureche@ub.ro, urechec@ub.ro

Key words: alien invasive species, moth, *Vitis vinifera*.

In the last few decades, as a result of increasing traveling, air transports, and trade activities, the spreading of the alien invasive species has increased, too.

This study aims to highlight the spread of an alien invasive species in Romania, i.e. *Holocacista rivillei*.

Holocacista rivillei is a leafminer moth belonging to Heliozelidae family, which has been reported in Romania for the first time in 2014 from Southern Romania, near Bucharest respectively.

Holocacista rivillei is a Palearctic species, originating from Malta, and it is one of the most important pests in vineyards. Being monophagous, its larvae feed on *Vitis vinifera* leaves. Even if until now it was considered a minor pest, we think that special attention should be paid for studying and monitoring this species.

Our study revealed the presence of this species in a private household in Buzău County and in some vineyards in Vrancea County, in August 2018.

The biological material i.e. damaged leaves containing living larvae and also leaves with attached larval cases were reared in laboratory in order to obtain adults. The obtained adults have been identified based on morphological features. For species identification we also used the mine appearance.

Holocacista rivillei is the second leafminer species damaging vine (*Vitis vinifera*), together with *Phyllocnistis vitegenella*, recorded in Romania in the last few years.

Biological characteristics of sexually mature females of Bighead goby *Neogobius kessleri* (Gunter, 1861) from the Lower Dniester

Nina FULGA, Ion TODERAŞ

Institute of Zoology, 1 Academiei Str., Chişinău, MD-2028, Fulganina@yahoo.com

Key words: oocyte, ovary, reproduction, gonadosomatic index (GSI), resorption.

Neogobius kessleri is a relict species that inhabits the estuaries and lower reaches of the rivers in the northwestern part of the Black Sea. Currently, it is widespread in the lower parts of the Dniester, Bug and Dnieper rivers, as well as in the lower Danube of the Romanian part. Along with the increasing areas favorable to the habitat of this species, a significant factor contributing to their spreading is the weak pressure from predators and the depleted composition of ichthyocenoses. Its increasing abundance and distribution is facilitated by a wide range of adaptations related to reproduction, a variety of spawning temperature ranges -10-24°C, nest building and protection of clutches by a male. The age composition of the *Neogobius kessleri* in the lower Dniester is represented by five age groups. A significant part of the catches is made up of mature individuals. The sex structure of the population is dominated by females, their ratio being of 64.86%. They become sexually mature at the age of two (1 +), when they reach the length of 9.0 cm and weight 12.46 g. Like other fish species with short life cycle, this species grows most rapidly in the 1st and the 2nd years of life. The greatest weight gain is observed at four and five years old. The presence of representatives of different age groups in the catches suggests that *Neogobius kessleri* has adapted to the conditions of the lower Dniester and is successfully reproducing. Females are characterized by an asynchronous type of egg development and multi-portion spawning. During the spawning season, which lasts from April to June, the females lay aside three portions of eggs. From the beginning to the end of spawning there is a decrease in the relative mass of the gonads and hence the gonadosomatic index (GSI). As the water temperature in the lower Dniester rises from 11 to 24 ° C, the period of formation of the next generation of oocytes decreases. The development of oocytes of the first generation occurs within 7 months, the second - 1month and the third – 16 days. In the absence of males ready for spawning in sexually mature females the resorption of the yolk oocytes is observed.

Helminths found in the gastrointestinal tract of waterfowls from Latvia

Angel-Gabriel IRIMIA

"Grigore Antipa" National Museum of Natural History, Patrimony Research Department, Sos. Kiseleff no. 1, 011341, Bucharest, Romania, e-mail: angel.irimia@antipa.ro

Key words: Latvia, *Anas*, *Cestoda*, *Notocotylus*, *Amidostomum*, *Filicolis*.

The gastrointestinal tracts of eight water birds (three *Anas platyrhynchos*, three *Anas crecca*, one *Anas strepera* and one *Fulica atra*) were examined for endoparasites. All the birds were collected during a hunting campaign in august 2018 on Lake Engure and Lake Babīte in Latvia.

The parasites found belong to the phyla: Platyhelminthes, Nematoda and Acanthocephala and were studied using light microscopy and scanning electron microscopy. The most numerous groups of parasites species (4 species) belong to Cestoda (Platyhelminthes). Two of them were identified to species level: *Dicranotaenia coronula* (Dujardin, 1845) found in *A. platyrhynchos* and *Cloacotaenia megalops* (Nitzsch in Creplin, 1829) in *A. platyrhynchos* and *F. atra*. One cestode, not identified to species level, belonging to genus *Diorchis* Clerc, 1903 (Hymenolepididae), was present in *A. platyrhynchos* and *A. crecca*. The fourth cestode species, found only in *A. platyrhynchos,* could not be identified. Only one species of fluke (Trematoda) was observed and identified to the genus level: *Notocotylus* Diesing, 1839 (Notocotylidae), and was found in *A. platyrhynchos* and *F. atra*. The nematodes were represented by *Amidostomum* cf. *acutum* (Lundahl, 1848), which was found in *A. platyrhynchos.* Also, the acanthocephalans were represented only by one species: *Filicolis anatis* (Schrank, 1788) Lùhe, 1911, in *A. platyrhynchos*.

The Cretaceous Swamp just gets bigger: new data on the faunal composition of the Pui Swamp microvertebrate bonebed, Maastrichtian of the Haţeg Basin

Sabrina Mihaela VOICU, Ştefan VASILE, Zoltán CSIKI-SAVA

University of Bucharest, Faculty of Geology and Geophysics, Department of Geology, 1 N. Bălcescu Bd., 010041 Bucharest 1, Romania, e-mails: sabrinamihaelavoicu@gmail.com; yokozuna_uz@yahoo.com; zoltan.csiki@g.unibuc.ro

Key words: Maastrichtian, microvertebrates, Pui site, Haţeg Basin.

Fossil assemblages recovered from microvertebrate bonebeds (MvBB; i.e., attritional accumulations of isolated and small-sized skeletal remains, derived mainly from small, < 10 kg body size vertebrates) are among the most important contributors to our understanding of past diversity and abundance in different palaeoecosystems (e.g., Brinkmann, 2008). This is also the case of the latest Cretaceous (Maastrichtian) Haţeg palaeoecosystem that inhabited a tropical island within the northern Tethyan realm about 71 to 67 millions of years ago (Csiki-Sava et al., 2015), where MvBBs are among the richest and most diverse sources of different vertebrate taxa, especially those of small size and often not otherwise preserved (e.g., Vasile & Csiki, 2010). One of the relatively recently discovered MvBBs is the Pui Swamp locality from along the Bărbat River near Pui, in the Haţeg Basin.

The fossiliferous bed (represented by a dark gray silty mudstone situated in the lower quarter of the local outcropping succession) was first identified in 2011, due to recent erosion to the riverbed. Presence of microvertebrates was reported as soon as 2012 (Vasile & Panaitescu, 2012, respectively Codrea & Solomon, 2012), and the most recent update on the fossil content of this MvBB is given by Csiki-Sava et al. (2016). According to previously published data, the Pui Swamp locality contains remains of anurans, albanerpetontids, indeterminate lizards, diverse crocodyliforms, and less common dinosaurs. Continuing screenwashing at the locality has increased the diversity on record, with the most important additions being represented by more diagnostic lizard dentaries, various eggshell fragments, and – most importantly – the first remains of multituberculate mammals. Based on the stratigraphic position of the locality, the multituberculates recorded at Pui Swamp mark the geologically oldest occurence of the group for the entire stratigraphic succession cropping out at Pui.

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Early Pleistocene amphibians from Copăceni (Dacian Basin, southern Romania)

Ştefan VASILE[1, 2], Marton VENCZEL[3], Alexandru PETCULESCU[4]

[1]University of Bucharest, Faculty of Geology and Geophysics, Department of Geology, 1 N. Bălcescu Ave., 010041 Bucharest 1, Romania, e-mail: yokozuna_uz@yahoo.com
[2]University of Bucharest, Faculty of Geology and Geophysics, Research Centre for the Geology of Coal Deposits and Environment Protection, 1 N. Bălcescu Ave., 010041 Bucharest 1, Romania
[3]Ţării Crişurilor Museum, 1/A Armatei Române St., 410087 Oradea, Romania, mvenczel@gmail.com
[4]Romanian Academy, "Emil Racoviţă" Institute of Speleology, Department of Geospeleology and Paleontology, 13-15 Calea 13 Septembrie, 050711 Bucharest, Romania, alexpet@gmail.com

Key words: Pleistocene, microvertebrates, anurans, urodeles, Dacian Basin.

Cropping out along the banks of Argeş River, 20 km south of Bucharest, the lower Pleistocene „Copăceni Beds", a stratigraphic unit of uncertain status (Andreescu et al., 2011, 2013), yielded a fairly diverse lage mammal assemblage, including proboscideans (*Mammuthus meridionalis*) (Vasile et al., 2013), rhinocerotids (*Stephanorhinus etruscus*), bovids (*Leptobos vallisarni*), cervids (*Praemegaceros pliotarandoides*), and carnivore (hyaenid?) coprolites (Ştiucă et al., 2012). Alongside the large mammals, small mammals (*Allactaga* sp., *Mimomys savini*, *Lagurodon arankae*, *Allophaiomys pliocaenicus*) helped date the assemblage to the late early Pleistocene, around 1.1–1 Ma (Vasile et al., 2015).

The presence of fine-grained beds, such as silty mudstones (a rather rare occurrence for the lower Pleistocene formations of the Dacian Basin, Andreescu et al., 2011, 2013), indicative of low-energy depositional episodes, suggested a higher probability for preservation of small fossil vertebrates. Indeed, preliminary screenwashing of the silty mudstones yielded not only small mammals, but also ectothermic vertebrates, including fishes, amphibians, and reptiles (Vasile et al., 2015). Further investigations revealed that the amphibians are one of the most diverse groups of ectothermic small vertebrates found at Copăceni, including both anurans (*Rana* sp., *Bufo* sp., *Pelobates* sp., *Pelophylax* sp.) and urodeles (*Lissotriton* sp., *Triturus* sp.). Although the fragmentary material does not allow a more precise taxonomical assessement, the genera found at Copăceni are the only ones known so far from the Dacian Basin, adding important information regarding the palaeobiogeographic distribution of Pleistocene amphibian taxa in the region.

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Theropod dental diversity in the Maastrichtian of the Haţeg Basin, Romania

Maria-Raluca VĂCĂRESCU[1], Zoltán CSIKI-SAVA[2], Mădălina BUCUR[2], Alexandra ROMAN[2], Ştefan VASILE[2]

[1]1 University of Bucharest, Faculty of Biology, Doctoral School of Biology, 91-95 Splaiul Independenţei, Bucharest 050095, Romania, e-mail: vacarescu.raluca@gmail.com
[2]University of Bucharest, Faculty of Geology and Geophysics, Department of Geology, 1 Nicolae Bălcescu Avenue, 010041 Bucharest, Romania, e-mails: zoltan.csiki@g.unibuc.ro, bucurmaria94@yahoo.com, rr.alexa@yahoo.com, yokozuna_uz@yahoo.com

Key words: latest Cretaceous, Principal Component Analysis, Theropoda, teeth morphotypes.

The Maastrichtian continental deposits of the Haţeg Basin have yielded a diverse and unique assemblage of vertebrates, including fish, amphibians, turtles, lizards, snakes, crocodyliforms, pterosaurs, various types of dinosaurs, birds and multituberculates (Grigorescu, 2010; Csiki-Sava et al., 2015). Although herbivorous dinosaur remains are abundant, theropod fossils are rare and consist mainly of isolated teeth. Nevertheless, the diverse morphologies that can be recognized within the available theropod tooth sample suggest a relatively high taxonomic diversity within this group despite their low abundance.

In total, 64 theropod teeth from Haţeg were studied both morphologically and morphometrically, the resulting data being plotted against the global dataset compiled by Hendrickx et al. (2015), and analyzed using Principal Component Analysis in PAST 3.17 (Hammer et al., 2001). The resulting morphospace plots suggest the existence of three different theropod clades: Dromaeosauridae, *Richardoestesia* as well as a *Euronychodon*, the later represented by a novel, not previously defined morphospace.

The composition and especially relative abundances of the Haţeg theropod assemblage are distinct from those reported in other European fossil-bearing uppermost Cretaceous continental deposits, suggesting a high degree of faunal heterogeneity, driven by differential local evolutionary processes. Such differences are yet another reflection of the high-level faunal provinciality that characterizes the latest Cretaceous continental faunas of the Late Cretaceous European Archipelago (Csiki-Sava et al., 2015).

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The restoration of a fossil woolly rhino skull

Maria Iulia SASU[1], Radu Ștefan PANĂ[2]

[1]Brukenthal National Museum, The Restoration-Conservation Laboratory, 4-5 Piața Mare, 550163 Sibiu, Romania, e-mail: mariasasu2016@gmail.com
[2]"Grigore Antipa" National Museum of Natural History, Records, Conservation and Restoration of the Heritage Department, 1 Kiseleff Blvd, 011341, Bucharest 2, Romania, e-mail: raduspana@yahoo.com

Key words: palaeontology, natural history, collection, degradation, *Coelodonta*, preservation.

The Palaeontological Collection of the Natural History Museum from Sibiu preserves a significant number of specimens with documentary-scientific and historical value. The bases of museum collections are established before 1895, when a group of collectors, passionate nature researchers, organised the Society of Natural Sciences of Sibiu (Siebenburghisen Verein für Naturwissenschaften zu Hermannstadt). The Society collections are gradually increased during the time. Some of the specimens were studied, and the various scientific communications were published in periodicals. These studies are important for restoration having a role in establishing the history and conservation status of the specimens, at that time.

This presentation discusses the restoration of a fragment of fossil rhino skull which was collected at the beginning of the 19th century from Transylvania, Romania. The species *Coelodonta antiquitatis* was an herbivore animal that lived in Quaternary in Eurasia (Codrea, 2005; Rădulescu & Samson 1985). The specimen was evaluated according to the conservation status and measurements were made and correlated with historical data from the literature. The specimen was partially restored probably at the beginning of the 20th century (Phleps, 1926). Some chosen techniques were not adequate, therefore some deteriorations occurred: deformation of bone fragments, cracks and fragility caused by lack of consolidation. The materials used from the previous restoration had to be removed (old adhesive, corroded wires, wooden pieces).

Several interventions have been carried out to bring the specimen to a state of conservation suitable for public exhibition. Correcting the deformations, assembling the fragments, completing the missing parts and chromatic integration are just some of the operations performed. Finally, storage and exposure recommendations were provided in order to avoid future degradations and to protect the specimen.

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Rare and threatened animal species from Landscape Reserve Dobruşa, Republic of Moldova

Galina BUŞMACHIU, Victoria NISTREANU, Vladimir ŢURCAN

Institute of Zoology, 1 Academiei Str., Chişinău, MD-2028, e-mails: bushmakiu@yahoo.com, vicnistreanu@gmail.com

Key words: rare species , invertebrates, vertebrates, protected area.

The Dobruşa Landscape Reserve is located in the Şoldaneşti District, between the villages Dobruşa and Olişcani and occupies an area of 2,634.0 ha. The main natural ecosystems are the oak forest mixed with lime and ash. Near the forest there are several lakes and ponds.

The study of the invertebrate species diversity was conducted on the basis of personal collection of Dr. Turcan gathered for a long time and the material collected in August and November 2017. The terrestrial vertebrates have been investigated over several years.

Among the rare Collembolan species revealed in reserve can be mentioned *Thaumanura carolii* (Stach, 1920) and *Superodontella lamellifera* (Axelson, 1903). Another silvicolous collembolan species present there was *Ceratophyslla silvatica* Rusek, 1964, reported so far only in the forest of the Rudi locality (Buşmachiu & Weiner, 2017). All species have a wide distribution in Europe, preferring forest ecosystems and decomposed wood.

Rare and threatened insect species detected in reserve are: *Cerambyx cerdo* Linnaeus, 1758, *Oryctes nasicornis* (Linnaeus, 1758), *Lucanus cervus* (Linnaeus, 1758), *Morimus funereus* Mulsant, 1863, *Saturnia pyri* Denis & Schiffermüller, 1775, *Callimorpha quadripunctaria* (Poda, 1761) and *Megascolia maculata* (Drury, 1773). All these insects were listed in the Red Book of Moldova (2015).

Rare vertebrate species included in the Red Book of Moldova, registered in the reserve, are represented by 8 amphibian species, 3 reptile species, 4 species of birds, 10 mammalian species. The presence of rare species in the area, such as *Pelobates fuscus* (Laurenti, 1768), *Coronella austriaca* (Laurenti, 1768), *Hieraaetus pennatus* (Gmelin, 1788), *Felis silvestris* Schreber, 1777, *Martes martes* (Linnaeus, 1758), was also reported in previous studies (Andreev et al., 2012).

Negative factors such as excessive grazing, poaching and degradation of natural ecosystems lead to the diminishing of faunal diversity.

The studies were carried out within the projects 11.817.08.13F and 15.187.0211F.

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Natura 2000 insect species of the Băgău Protected Area (ROSCI0004) in Alba County (Transylvania, Romania)

Mădălin POPESCU[1], Sergiu-Cornel TÖRÖK[2], Ioan TĂUȘAN[1]

[1]"Lucian Blaga" University of Sibiu, Faculty of Sciences, Applied Ecology Research Center, Sibiu, 5-7 Dr. Ion Rațiu Str., Sibiu, 550012, Romania, e-mails: maddaliyn@yahoo.com, itausan@gmail.com
[2]Mediaș Municipal Museum, 46 Mihai Viteazul Str., 551034, Mediaș, Romania, e-mail: ser.torok@yahoo.com

Key words: Lepidoptera, Coleoptera, Orthoptera, meadows, deciduous forests.

The ROSCI0004 Băgău is located in the North-Eastern part of Alba County, within the Aiud, Ocna Mureș, Hopârta and Lopadea Nouă, administrative teritories. The total surface of the sites is 3.129 ha and comprises mainly of deciduous forest cover (70%) and grasslands (most of them pastures). The ROSCI0004 Băgău site was designated based, beside other taxa, on the occurrence of three insect species: *Lucanus cervus* (Linnaeus, 1758), *Carabus* (*Morphocarabus*) *hampei* Kuster, 1846 and *Odontopodisma rubripes* (Ramme, 1931).

During field campaings carried out between March - September 2018, we investigated the Natura 2000 insect species of the ROSCI0004 Băgău. Pitfall trapping and transect methods were applied to estimate the population size of the three species. In addition, we identified other Natura 2000 species, during our entomological survey. Threee Lepidoptera species were recorded, namely: *Lycaena dispar* (Haworth, 1802), *Euphydryas maturna* (Linnaeus, 1758)*, Euplagia quadripunctaria* (Poda, 1761). Also, we encountered *Isophya stysi* Cejchan, 1957, belonging to the Orthoptera order. For all insect species habitat requirments and protection status are disscused. Further research in the area may increase the knowledge on the number of protected species.

The research was carried out in the project MySMIS 102369 "Elaborarea a 3 planuri de management pentru situri Natura 2000 din județul Alba", supported by Biounivers NGO, Alba-Iulia.

Premiminary data on the genetic variability in populations of *Pholidoptera transsylvanica* in a protected area from Romania

Elena Iulia IORGU, Oana Paula POPA,
Luis Ovidiu POPA, Ionuț Ștefan IORGU

"Grigore Antipa" National Museum of Natural History, Kiseleff street, no. 1, 011341 Bucharest 1, Romania, e-mails: elenap@antipa.ro; oppopa@natipa.ro; popaluis@antipa.ro; ionut.iorgu@antipa.ro;

Key words: *Pholidoptera transsylvanica*, genetic variation, microsatellites, COI, conservation strategy

Pholidoptera transsylvanica or the Transsylvanian dark bushcricket (Orthoptera: Tettigonidae) is a mesophilous species, with a broad ecological spectrum found mainly in alpine and subalpine meadows, or in ecotonal areas at the edge of the forests, endemic to the Carpathians and the Carpathian basin. It is included in Annex II of the Habitat Directive. It is protected by designating Special Areas of Conservation, where current populations are assessed to determine their health status and to establish the necessary conservation measures. The species is threatened by habitat fragmentation, overuse of insecticides and overgrazing. The purpose of this study is to analyze the genetic diversity of *P. transsylvanica* populations in ROSCI 0083 Frumoasa, a protected area from the central part of Romania.

We have collected samples from 135 individuals grouped in six populations of *P. transsylvanica* from Frumoasa protected area. The individuals from the six populations were genotyped using eleven microsatellite markers to estimate their genetic variability and structure. The individuals were also sequenced for a fragment of the mitochondrial COI gene in order to establish haplotype diversity.

We found that the genetic variation is relatively high in all six populations, with a high number of alelles per locus (8.5 – 17.67) and small to moderate population differentiation (F_{ST} = 0.074) also, two of the populations proved to have distinct genetic profiles. Frumoasa protected area was under a traditional seasonal sheep grazing management for hundreds of years but in the last period the threats on this species increased through intensive grazing, deforestations, reforestations and constructions. Management measures should take into account the genetic structure of *P. transsylvanica* populations, in order to prepare the best conservation strategy for this species.

New data about genetic diversity of *Lucanus cervus* in Europe

Alexandra Florina POPA[1,2], Elena Iulia IORGU[1], Ana-Maria KRAPAL[1], Andreea-Maria BREZEANU[1,2], Andrei ŞTEFAN[1], Ana Alexandra STRATAN[1,3], Mara DINU[1,4], Tudor COTEȚ[1,3], Marieta COSTACHE[2], Luis Ovidiu POPA[1]

[1]"Grigore Antipa" National Museum of Natural History, 1 Kiseleff Blvd, 011341 Bucharest, Romania, e-mails: alexandra.levarda@antipa.ro
[2]Faculty of Biology, University of Bucharest, 91-95 Splaiul Independenței, 050095 Bucharest, Romania.
[3]Saint Sava National College, 23 General H. M. Berthelot Str., 010164 Bucharest, Romania.
[4]International Computer High School of Bucharest, 9 Balta Albina Str., 032622 Bucharest, Romania.

Key words: population genetics, genetic diversity, *Lucanus cervus*, COI, subspecies.

The stag beetle *Lucanus cervus* is one of the most well known and representative species of the *Lucanus* genus due to its charismatic appearance and large palearctic distribution. Emblematic for conservation of saproxylic fauna (Thomaes, 2008), the species is considered an umbrella species, being protected under national and European legislation (European Habitats Directive – Annex II). The number of subspecies of *L. cervus* is still under question, until now being proposed various numbers (between 2 and 7) of recognized taxa in the "*Lucanus cervus* complex" (Cox et al., 2013, Bartollozi et al., 2016).

For efficient conservation measures, the study of genetic diversity becomes mandatory in the case of *L. cervus*, a species with a long life cycle (3-5 years) and endangered by loss and fragmentation of habitat.

In the present study we investigate the genetic structure of 13 European populations of *L. cervus*, using a fragment of cytochrome c oxidase subunit I mitochondrial gene (COI). We analysed a total of 316 sequences, 89 from different subspecies of *L. cervus* available in GenBank and 227 obtained from individuals of *L. cervus cervus* collected from 85 sampling points in Romania.

We identified 118 haplotypes, with a haplotype diversity (h) of 0.7517 and 146 parsimony informative sites out of 190 variable sites. Genetic distances between some subspecies (*L. c. cervus* and *L. c. judaicus* or *L. c. cervus* and *L. c. akbesianus*) were relatively high. The cluster analysis (PCoA - Principal Coordinates Analysis) revealed a clear genetic structure between analysed haplotypes. The median-joining haplotype network resulted in a star-like topology that could be the result of a potential bottleneck in recent evolutionary history of the species, followed by an expantion of the populations.

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Experience of cultivation of three-year-old Grass Carps in a polyculture for combating plant overgrowth in water bodies

Piotr ARICOV, Galina CURCUBET, Tamara GREC

Research Center for Genetic Aquatic Resources "AQUAGENRESURS" Branch of the State Enterprise "Republican Center for Animal Breeding and Reproduction", Str. Constantin Tănase no. 6, 2005 MD mun. Chisinau, Republic of Moldova, e-mail: scsp59@mail.ru

Key words: selection, resistance to infectious diseases, carp, viability, bioassay.

This paper describes the research into using three-year old Grass Carps as a way of lowering excessive aquatic plant growth in water bodies.

A pond of 20ha with more than 25% of plant filling was used to cultivate Grass Carps in a polyculture with the mean density of two-year-olds' plantings of 120 pieces per hectare and an average weight of 295 grams.

Planting density achieved at the Sarata Noua reservoir (750ha) was at 90 pieces per hectare and average weight of 245 grams with the use of a continuous planting method. Taraclia reservoir (100ha) has been planted at 50 pieces per hectare and an average weight of 295 grams.

Three-year-old Grass Carps, being grown in polyculture along with Silver Carps and Bighead Carps in ponds and multi-purpose reservoirs with the use of a continuous cultivation method, have exhibited a high rate of growth throughout the vegetation period, evidently due to the use of optimal planting densities. Fish productivity of 113 kg/ha have been achieved in the pond.

Two multi-purpose reservoirs have shown that in catches of 10-70 kg about 1-5% of three-year-old Grass Carps has an average mass spanning from 1186 to 1258 grams. Seasonal overgrowth of ponds that hosted three-year-old Grass Carps has decreased 15%, and reaching 13-25% in multi-purpose reservoirs.

The planting densities developed and used in this study are close to being optimal and can be recommended for use as a means of cultivating commercial Grass Carps in an effort to reduce the overgrowth of plants in water bodies.

The development and implementation of the genetic methods for the carp's infectious diseases prevention in Moldova

Galina CURCUBET, Vasili DOMANCIUC

Research Center for Genetic Aquatic Resources "AQUAGENRESURS" Branch of the State Enterprise "Republican Center for Animal Breeding and Reproduction", 6 Constantin Tănase Str., 2005 MD, Chișinău, Republic of Moldova, e-mails: scsp59@mail.ru, domanciucv@mail.ru

Key words: selection, resistance to infectious diseases, carp, viability, bioassay.

There are presented the results of long-term studies (1981-2017) on the implementation of the breeding program with the objective function – to increase resistance of created species toward infectious diseases: Carp Teleneshtskiy scaly (Ts) and Carp Teleneshtskiy frame (Tf), within the framework of which it was foreseen to identify variability in this feature at the first stages and use of high-intensity selections in the least resistant selectable groups.

In the 1st generation mass selection was carried out twice: in the first year of cultivation - for resistance to aeromonas with a higher total strength - 32.0%, especially among less resistant frame carps - 12.8%; by mass and exterior - with a lower intensity - 64.6% (Curcubet et al., 2005).

The methods of family selection were used to improve the effect of selection (Ehlinger, 1977).

The families of the 2nd and the 3rd generation of Tf were tested on the first and second year of cultivation: by viability; resistance to bacterial agent *Aeromonas sobria 77-18* and viral agent *Rhabdovirus carpio HC-22* in bioassay; susceptibility to infectious diseases in the field conditions. The total strength of family selection in the 2nd generation was 54.9%. To increase the pressing of bacterial microflora in the 3rd generation the sick fishes were populated into ponds. The selection strength in autumn was 18-40%, in spring 6 families were presented by fully healthy individuals. The bioassay revealed the best families in terms of resistance to aeromonas and their inconsistency with those grown in ponds, which indicates different mechanisms of infection and multi-directional selection in experimental and field conditions.

The next tasks in the selection of resistant breeds were the stabilizing selections by body weight and exterior (IV-th and V-th generation of selection).

As a result of selection two breeds of carp with increased resistance toward the infectious diseases were created that didn't have a negative impact on their productive characteristics.

The method for selecting breeding-valuable genotypes for increasing resistance to infectious diseases has been developed.

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Creating of a new line of Moldovan mirror carp

Vasili DOMANCIUC, Galina CURCUBET

Research Center for Genetic Aquatic Resources "AQUAGENRESURS" Branch of the State Enterprise "Republican Center for Animal Breeding and Reproduction", Str. Constantin Tănase no. 6, 2005 MD mun.Chisinau, Republic of Moldova, e-mails: scsp59@mail.ru, domanciucv@mail.ru

Key words: carp, heterosis effect, breed, survival, body mass accumulation, fish productivity.

The basic researches were the evaluation of the combinational ability of four Moldovan carp breeds: Carp Teleneshtskiy scaly (Tc5), Carp Teleneshtskiy frame fifth generation (Tf5), Carp Kuboltskiy scaly (Ks7) and Carp Myndykskiy scattered scales seventh generation (Ms7) (Domanciuc & Curcubet, 2016).

The combination of crossing the female of Tf5 with the male of Ms7 turned out to be one of the most perspective. The heterosis effect at the stages of young fish was: in the survival rate - 21.2%; by mass accumulation - 37,1%, by fish productivity - 63,0%; at the stage of underyearlings - 8.9%; 29.4%, 29.8%, respectively. This cross was used to form a new low-scaly carp breed and preserve the heterosis effect in subsequent generations during the breeding process.

The most characteristic indices of the females of Tf5: index of body height (l/H) - 2.31; the index of head proportion (C/hC) - 1.40; the proportions of the caudal peduncle (pl/h) - 1.14 indicate to the shape with high body depth. Tf5 has the recessive genotype of the scaly covering *ssnn* (Curcubet, Domanciuc, 2008).

The males of the Ms7 have a rugged body shape: 2.78; C/hC -1.15 and pl/h - 1.30 with the genotype *ssnn*.

The underyearlings of a new line exceeded the thoroughbred offspring: by body weight - by 16,0-22,6%, on survival rate - by 7.0%, by fish productivity - by 31.0% and the significant coefficient of fatness and physical development - 4.0.

New line occupies an intermediate position on the basis of exterior indicators: l/H - 2.56, C/hC - 1,25; pl/h -1,24.

By the nature of exterior indicator manifestation, the influence of matroclinous effect that was shown in a shift toward decreasing of the length of caudal peduncle, and increasing of back width and girth index, is clearly observed.

The formation of a new genetic structure carp will continue by using the methods of the synthetic selection.

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The ornitofauna of "Magurile Baitei" Natural Reserve, Deva, Romania. Threats and trends.

Elena BUHACIUC-IONIȚĂ[1], Marin IONIȚĂ[1], Mihaela CAPLAN[1], Alexandru CORNEL[2]

[1]"NATURA-Z" Research and education society for biodiversity conservation, Str. Dorului no. 123, 900374, Constanța, Romania, e-mail: scecbnaturaz@gmail.com
[2]"Bio Eco Genuri" Asociation, no. 214 Băița, Hunedoara, Romania

Key words: ornithofauna, raptors, *Ptyonoprogne rupestris*, breeding colonies, conservation status

The majority of the scientific studies conducted in the "Magurile Baitei" Natural Reserve focused their main objectives on impact assessment and ecological rehabilitation, especially on flora and bats. The aim of this study is to present for the first time a comprehensive list of bird species, their local distribution and activity within the "Magurile Baitei" Reserve, along with threats and future conservation measures.

The field work was carried out during 2017-2018 period and the study methods varied seasonally. We have identified a total number of 73 bird species, from which: 9 day raptors, 5 night raptors, 59 other species. Of this, one species is winter guests, 24 summer guests, 30 sedentary, one is a migratory species and 17 partially migratory. 18 bird species are listed in Annex 3 from OUG 57/2007, 13 on Annex 4B and 6 on Annex 5C. At international level, their conservation status is LC according to IUCN Red List. 19 species are listed in Annex 1 from 2009/147/CE Birds Directive and 8 species on Annex 2. An important finding is represented by *Tachymarptis melba* and *Ptyonoprogne rupestris* breeding colonies. We also found two breeding pairs of *Falco peregrinus*, three breeding pairs of *Corvus corax*, four breeding pairs of *Buteo rufinus* and *Buteo buteo*, one breeding pair of *Falco tinnunculus*, one breeding pair of *Strix aluco*. We have observed one individual of *Strix urlanesis* and several individuals of *Buteo buteo vulpinus*.

The most pressing threat identified in the area is represented by habitat loss, due to industrial activities, occurring at the natural reserve borders. Therefore, the protected area has an important role in bird conservation as it represents an important breeding hot spot for protected species. Under the current conditions the local conservation status of identified species has a favorable trend.

Influence of wind turbines on the bird fauna from two wind farms in south-eastern Romania

Răzvan ZAHARIA[1], Cătălin Răzvan STANCIU[1], Tiberiu C. SAHLEAN[2]

[1]Oceanographic Research and Marine Environment Protection Society "Oceanic-Club", 41 Decebal Str., Constanța RO900674, Romania, e-mail: razvan.zaharia@oceanic.ro, stanciucatalinbio@gmail.com
[2]"Grigore Antipa" National Museum of Natural History, 1 Kiseleff Blvd., 011341 Bucharest 2, Romania, e-mail: tiberiu.sahlean@gmail.com

Key words: *Dobruja, wind turbine, bird, mortality, diversity, abundance, population*

The number of wind turbines in south-eastern Romania has grown exponentially in the last 20 years, mostly fueled by governmental programs aimed to increase the production of green energy in Romania. Due to favorable wind conditions, the majority of the turbines have been installed in south-eastern Romania, in the region of Dobruja. This situation has made the need for studies assessing the influence of wind turbines on bird fauna in this area imperative.

Our study was conducted over a one year period in two wind farms: Crucea North and Chirnogeni, both located in Dobruja. We aimed to assess the influence of wind turbines on bird fauna from three perspectives: diversity, abundance and mortality.

In order to assess the species diversity, we collected presence data from vantage points and random observations, which were used to make a list of the species present in our study area. To assess abundance, we collected data on 1 km transects, which were then used as input in Distance 6.2 to calculate population densities and sizes. Mortality was estimated using the "carcass" module in R 3.3.1 with raw mortality data obtained by actively searching bird carcasses with specially trained dogs.

Following 29 field trips we recorded 46 bird species for Chirnogeni Wind Farm and 32 for Crucea North Wind Farm. The data obtained from transects allowed us to estimate population size and density for four species in Crucea North Wind Farm and 5 in Chirnogeni Wind Farm. For *Alauda arvensis* we observed a 50% decrease in density and for *Melanocorypha calandra* we registered a 50% increase in density. Observed mortality consisted of 14 carcasses for each of the two wind farms and we estimated a mean value of 59 carcasses over a one year time span for Crucea North Wind Farm and 43 carcasses for Chirnogeni Wind Farm, numbers which do not affect in any way the bird populations.

Colonial nesting of Ardeidae and Threskiornithidae (Pelecaniformes) species in Eastern Romania

Lucian FASOLĂ-MĂTĂSARU[1], Constantin ION[1]

[1]"Al. I. Cuza" University, Iaşi, 20A Carol I Blvd, 700505, Romania, e-mail: lucian.fasola@gmail.com

Key words: Ardeidae, Threskiornithidae, nesting colonies, Eastern Romania, wetlands

In the present study we aimed to identify nesting colonies for herons, ibises and spoonbills in Eastern Romania, between Prut and Siret rivers. This region is covered by a mosaic of natural and artificial habitats. The highest coverage is given by arable land (33.77%), while wetlands have the smallest coverage with a total of 2.18%.

A total number of 28 potentially favorable areas were surveyed during the nesting season between 2016-2018. Three sets of observations/season were made in each nesting colonies. The used method was mainly remote counting of occupied nests using scope or binoculars and in one case we also use a drone.

In 9 of the investigated areas, we were able to confirm the colonial nesting of some species of herons, ibises and spoonbills. All these colonies were located in or near protected aquatic areas, Natura 2000 sites. Most nesting species in a mixed colony were 8 and a single colony was monospecific. Three of the colonies counted over 150 pairs, and the Black-crowned night heron (*Nycticorax nycticorax*) was present in 88.88% (8/9) colonies identified. Great egret (*Ardea alba*) counted the most nesting pairs in a single colony with an estimated 80 pairs and the Cattle egret (*Bubulcus ibis*) was the only species of Romanian avifauna that we could not identify as nesting species in the researched area.

During the surveys it was possible to reconfirm the nesting of the studied species in some areas already known and the disappearance of some colonies mentioned in the specialized literature. Also, new nesting colonies were identified.

Wetlands are true oases of biodiversity. Herons, ibises and spoonbills are species dependent on the functions of wetlands, which is why the presence and status of their population can serve as a biological indicator for the condition of this habitat.

The chiropterofauna of the Natura 2000 site ROSCI0074 Făgetul Clujului - Valea Morii (Romania)

Flaviu BODEA[1], Szilárd-Lehel BÜCS[1]

[1]Centre for Bat Research and Conservation, 14 Aleea Peana, ap. 3, Cluj-Napoca, Romania, e-mail: contact@lilieci.ro

Key words: Chiroptera, Făgetul Clujului, Natura 2000, anthropic pressure, conservation

The Natura 2000 site ROSCI0074 Făgetul Clujului - Valea Morii, located in Transylvania, is a protected area with a remarkable biodiversity. Covering just over 16 km^2, it is characterized by extensive deciduous forests, small streams and marches. At the same time, it is also a highly frequented recreational area of Cluj-Napoca, a city with over 400.000 inhabitants. Faced with such anthropic presence, the Natura 2000 site is threatened by the development of new residential buildings, pollution, deforestation, habitat fragmentation and uncontrolled tourism. Starting from 2014, basic ultrasound surveys were conducted, resulting in the proven presence of at least four bat species: *Eptesicus serotinus, Nyctalus noctula, Pipistrellus pipistrellus* and *P. pygmaeus*. In 2016, in order to counter the effects of forest loss, we placed 12 bat boxes in key kocations across Făgetul Clujului. Already in the first year we observed the presence of *Plecotus auritus*, a bat species with affinity towards healthy forests, and also detected the ultrasound of *Myotis emarginatus* (with proven presence also in Cluj-Napoca city). Building on this bat box success, and in order to determine the real chiropteran diversity of the area, we started, from 2017, a more detailed bat survey, involving several methods: (1) ultrasound recordings in fixed points, (2) ultrasound recordings on transects, (3) regular bat box checks, (4) searching for hollow trees and natural roosts, (5) mist-netting in key locations. Based on preliminary results, we can add at least two species to the bat fauna of Făgetul Clujului, *M. nattereri* and *Barbastella barbastellus* (both mist-netted). The presence of *B. barbastellus* is especially encouraging, given that it is an indicator species for high-value forests. The continuous protection of this Natura 2000 site, especially of old-grown hollow trees and habitat structure are key requirements for the future of the chiropteran fauna of Făgetul Clujului.

Replacement of soybean meal with lupine in the Barbarins lamb diet: effect on intake, digestion, blood metabolites and growth

Abidi SOUROUR[1], Arfaoui HAYFA[2], Mezni MEJID[1], Ben Salem HICHEM[1]

[1]Laboratoire des Productions Animale et Fourragère, Institut National de la Recherche Agronomique de Tunisie (INRAT), Université de Carthage, rue Hédi Karray, 1004, EL-Manzah, Tunisia.
[2]Institut National Agronomique de Tunis, Université de Carthage, 43, Avenue Charles Nicolle, 1082, Tunis, Cité Mahrajene, Tunisia

Key words: Soybean meal, lupine, lambs, intakes, digestibility, average daily gain

The aim of this study was to evaluate the effect of using white lupine seeds in the diets of lambs as a substitute for soybean meal. For this purpose, twenty-four 6 and a half month-old Barbarine lambs (average initial weight 23 kg), were used. Three types of concentrates, the first two of which were iso-nitrogenous, were formulated as follows: CC1 containing 75% barley, 22.5% soybean meal and 2.5% CMV; CC2 containing lupine as a substitute for soybeans; and CC3 containing only barley and CMV (This is the concentrated 1 devoid of soybean meal). In addition to the hay that was distributed *at libitum*, some animals received daily 500 g of concentrate 1 (group 1) or concentrate 2 (group 2). Others (group 3) received intermittently concentrate 2 and concentrate 3. The animals have undergone a growth period (80 days) followed by a digestible period. Diet had no significant effect on total dry matter and water intakes, average daily gain, diet digestibility and microbial synthesis ($P > 0.05$). For the nitrogen balance, the animals showed different retained level ($P < 0.05$). The fermentation parameters were not affected by supplement. However, only the number of protozoa was influenced by the day of fluid collection ($P < 0.05$). Blood profiles indicated that diet had no effect ($P > 0.05$) on plasma total protein, glucose, cholesterol and urea concentrations, but total protein and urea concentrations were higher during the 2nd day than during the 1st day ($P < 0.05$).

It can be concluded that lupine grains can substitute safely soybean meal in diets of Barbarine lambs.

AUTHOR'S INDEX

ABELS, Hemmo: 78
ABRO, Kamal Khan: 122
ADAM, Costică: 47
AFANASYEV, Sergey: 69
AHMAD-HOSSEINI, Mohammad: 65
ALÇIÇEK, Hülya: 78
ALÇIÇEK, M. Cihat: 78
ALEXA, Andreea: 76
ALEXE, Vasile: 137
ANDREI, Gabriela: 89
ANSARI, Attaullah: 122
ARABULI, Lela: 77
ARICOV, Piotr: 163
ATTARI, Reza: 99
BABAN, Elena: 105
BABA, Ştefan Cătălin: 63, 101
BACAL, Svetlana: 105
BAKHTADZE, George: 94
BAKHTADZE, Nana: 94, 108
BĂLĂȘOIU, Dragoș: 117
BĂNĂDUC, Doru: 69
BĂNCILĂ, Raluca Ioana: 63, 66
BĂNICĂ, Gabriel: 135
BEGUN, Tatiana: 80
BELOIU, Mirela: 118
BENAISSA, Hassan: 70
BENDAMI, Safaa: 132
BENEDEK, Ana Maria: 64
BENNETT, Joanne M.: 118
BERGER, Elisabeth: 70
BIRO, Inge-Beatrice: 118
BIVOL, Alexei: 146
BLUEMEL, Simon: 118
BOCIOACĂ, Andreea: 109
BODEA, Flaviu: 169
BOGDAN, Ana: 118
BOGUTSKAYA, Nina: 33
BOLBOACĂ, Lucian-Eugen: 137
BORISSOV, Simeon: 49
BOROWSKI, Zbigniew: 74
BOTEV, Ivan: 145
BOULBES, Nicolas: 78
BRACKEN-GRISSOM, Heather: 48
BREZEANU, Andreea-Maria: 161
BRISCHOUX, Francois: 72
BÜCS, Szilárd-Lehel: 169
BUCUR, Cecilia: 95
BUCUR, Mădălina: 156
BUDA, Octavian: 35
BUHACIUC-IONIȚĂ, Elena: 75, 166
BUȘMACHIU, Galina: 158
BÜYÜKMERIÇ, Yeşim: 78
CALESTRU, Livia: 105
CAPLAN, Mihaela: 166
CARAMAN, Natalia: 139
CEMÎRTAN, Nelli: 140
ÇETINTÜRK, Derya: 62
CHAKVETADZE, Nino: 94
CHARBONIER, Sylvain: 78
CHIMIȘLIU, Cornelia: 107
CHIȘAMERA, Gabriel Bogdan: 141
CHOBANOV, Dragan: 49, 51
CIOBOTĂ, Andreea: 85
CIOBOTĂ, Mihaela: 85

ĆIROVIĆ, Duško: 62
COBZARU, Ioana: 47, 102, 141
COGĂLNICEANU, Dan: 68, 117, 129
COLAK, Ercüment: 62
CONSTANTINESCU, Ioana Cristina: 47
CORNEL, Alexandru: 166
COSTACHE, Marieta: 161
COSTACHE, Mioara: 95
COTEȚ, Tudor: 161
COZARI, Tudor: 112
CSIKI-SAVA, Zoltán: 152, 156
CURCUBET, Galina: 163, 164, 165
CURTEAN-BĂNĂDUC, Angela: 69
CUZEPAN-BEBEȘELEA, Gabriela: 107
DAVID, Dragomir-Cosmin: 120
DEAK, Georgiana: 38
DIMA, Alexandra Gabriela: 125
DINCĂ, Paul C.: 131
DINU, Mara: 161
DIRIPASKO, Oleg A.: 33
DOLEK, Matthias: 82
DOMANCIUC, Vasili: 164, 165
DOROȘENCU, Alexandru Cătălin: 137
DRĂGHICI, Andreea-Cătălina: 107
DRĂGUȚ, Lucian: 48
DUMITRACHE, Cristina Alina: 83
EGHBALIAN, Amir Hossein: 99
ELMGHAZLI, Hayat: 127
FASOLĂ-MĂTĂSARU, Lucian: 168
FAYAZ, Bahman ASALI: 100
FELDMANN, Reinart: 118
FILIP, Milena: 118
FRITZ, Uwe: 50
FULGA, Nina: 150
GABROSHVILI, Nino: 108
GÁL, Blanka: 48
GAVRIL, Viorel Dumitru: 141
GHAMIZI, Mohamed: 70
GHEOCA, Voichița: 64
GHEORGHE, Anca-Maria: 144
GHEORGHE, Iuliana Florentina: 83
GHERASIM, Elena: 112
GHERGHEL, Iulian: 58, 72, 113
GHERMAN, Călin Mircea: 38
GIURGINCA, Andrei: 63, 101, 115
GLICA, Olesea: 146
GOIA, Irina: 118
GOLOGAN, Ion: 146
GOSTIN, Irina Neta: 54
GRANDCOLAS, Philippe: 36
GREC, Tamara: 163
HAJDT, Andżelika: 74
HAYFA, Arfaoui: 170
HICHEM, Ben Salem: 170
HUBENOV, Zdravko: 145
IACOB, Geanina Magdalena: 120
IANCU, Lavinia: 123
IBRAM, Orhan: 68
ION, Constanța Mihaela: 102
ION, Constantin: 168
IONICĂ, Angela Monica: 38, 120
IONIȚĂ, Marin: 75, 166
IORGU, Elena Iulia: 51, 104, 160, 161
IORGU, Ionuț Ștefan: 51, 104, 160
IOSIF, Ruben: 129
IRIMIA, Angel-Gabriel: 151
IURCU-STRĂISTARU, Elena: 57, 146
JELIĆ, Dusan: 33

JONES, John Iwan: 76
JOY, Michael: 69
JUNKINS, Emily: 123
KALISCH, Denisa-Paula: 114, 118
KASTAL, Ágnes: 82
KHALIN, Alexei: 110
KHANJANI, Mohammad: 65, 100
KISS, Janos Botond: 137
KISS, Valentin Adrian: 133, 134
KLIMOV, Pavel B.: 39
KNIGHT, Tiffany M.: 118
KOVALOV, Viktor: 138
KOZUHAROV, Dimitar: 145
KRAPAL, Ana-Maria: 161
KRAVCHENKO, Kseniia: 138
LAPOȘI, Alexandru: 114
LÁSZLÓ, Zoltán: 37
LELE, Sandra-Florina: 76
LOOS, Jacqueline: 82
LOULIDA, Soumia: 50, 70, 132
LUKANOV, Simeon: 128
LUPU, Gabriel: 68
MADAJ, Anna-Maria: 118
MAICAN, Sanda: 92
MANCI, Cosmin-Ovidiu: 52, 107
MANU, Minodora: 66
MARINOV, Mihai: 137
MARKÓ, Balint: 56
MARKOVA, Evgenia: 73
MARKOV, Georgi: 62
MARTIN, Alina: 118
MARTIN, Ryan Andrew: 58, 71
MÁRTON, Mihály: 62
MASOUDIAN, Farshad: 100
MAYDA, Serdar: 78
MEJID, Mezni: 170
MELENCIUC, Raluca: 113
MELNIC, Maria: 146
MEMEDEMIN, Daniyar: 147
MEMON, Nasreen: 122
MIHĂILESCU, Simona: 83
MIHALCA, Andrei Daniel: 38
MIREA CÂNDEA, Mihaela: 144
MIRONOV, Sergey V.: 39
MOIGNE, Anne-Marie: 78
MOL, Dick: 41
MOLDOVAN, Anna: 57
MOTOC, Rozalia Magda: 47
MOUNIR, Abdelaziz: 127
MUKHIM, D. Khlur B.: 47
MUNTEANU, Andrei: 140
MUNTEANU-MOLOTIEVSKIY, Natalia: 57
MURARIU, Dumitru: 60, 85, 101, 102, 137, 141
MUREȘAN, Mihaela: 80
NAE, Augustin: 63
NAE, Ioana: 63
NAIMI, Mohamed: 50, 70, 127, 132
NECULIȘEANU, Zaharia: 67
NICOARĂ, Roxana Georgiana: 141
NISTREANU, Victoria: 86, 139, 140, 158
OCHIANĂ, Sabina: 129
OCONNOR, Barry M.: 39
OLOSUTEAN, Horea: 69
ONETE, Marilena: 66
PACIOGLU, Octavian: 76
PAIU, Angelica: 144
PAIU, Romulus-Marian: 144
PANAIOTU, Cristian: 48

PANĂ, Radu Ștefan: 157
PAPES, Monica: 72
PÂRVULESCU, Lucian: 48, 76
PASSONNEAU, Sarah: 118
PÉREZ-MORENO, Jorge L.: 48
PETCULESCU, Alexandru: 154
PETRESCU, Ana-Maria: 90
PETRESCU, Angela: 89
PETRESCU, Iorgu: 90
PETROVICI, Milca: 111
PINTILIOAIE, Alexandru-Mihai: 106
PÎRVU, Mălina: 76
PLĂIAȘU, Rodica: 63
PLOP, Larisa: 59
POPA, Alexandra Florina: 53, 161
POPA, Luis Ovidiu: 47, 98, 160, 161
POPA, Oana Paula: 47, 98, 160
POPA, Ștefan: 111
POPESCU, Irinel Eugen: 53, 54
POPESCU, Mădălin: 109, 159
POPOVICI, George: 103
POPOVICI, Ioana-Diana: 48
PRIPON, Liviu Răzvan: 133, 134
PURCĂREA, Cristina: 123
RĂDAC, Ioan-Alexandru: 52, 106, 143
RĂDULESCU, Andreea: 116
RAKOSY, Demetra: 118
RÁKOSY, László: 82, 120
RAUSCH, Lea: 78
RIDICHE, Mirela Sabina: 93
RISTEA, Mădălina-Elena: 95
RÎUREAN, Ioana Patricia: 96
RODENKO, Olena: 138
ROMAN, Alexandra: 156
RUICĂNESCU, Adrian: 107
RUSU, Ștefan: 146
SAHLEAN, Tiberiu C.: 104, 130, 141, 167
SAMARGIU, Manuela Diana: 116, 125
SAMOILĂ, Corina: 76
SÁNDOR, Attila David: 137
SANDU, Cristina: 83
SASANELLI, Nicola: 57
SASU, Maria Iulia: 157
SAVA, Daciana: 116
SCHERER, Gwydion: 118
SCHNEIDER, Erika: 64
SCHRIMPF, Anne: 48, 76
SCHUBART, Christoph D.: 48
SCHULZ, Ralf: 76
SERAFIM, Rodica: 92
ȘERBAN, Robert: 117
SEVIANU, Eliana: 143
SIBIRYAKOV, Petr: 73
SÎRBU, Ovidiu-Ioan: 76
SITAR, Cristian: 120
SÎTNIC, Victor: 97
SKOLKA, Marius: 80, 81, 121, 147, 148
SLEJIUC, Ionela: 111, 143
SOUROUR, Abidi: 170
STAICU, Cristina-Andrea: 85
STANCIU, Cătălin Răzvan: 167
STAN, Melanya: 91
ȘTEFAN, Andrei: 98, 161
STEFANOV, Tihomir: 33
ȘTEFAN, Valentin: 118
STERMIN, Alexandru Nicolae: 114
STOICA, Marius: 78
STRATAN, Ana Alexandra: 103, 161

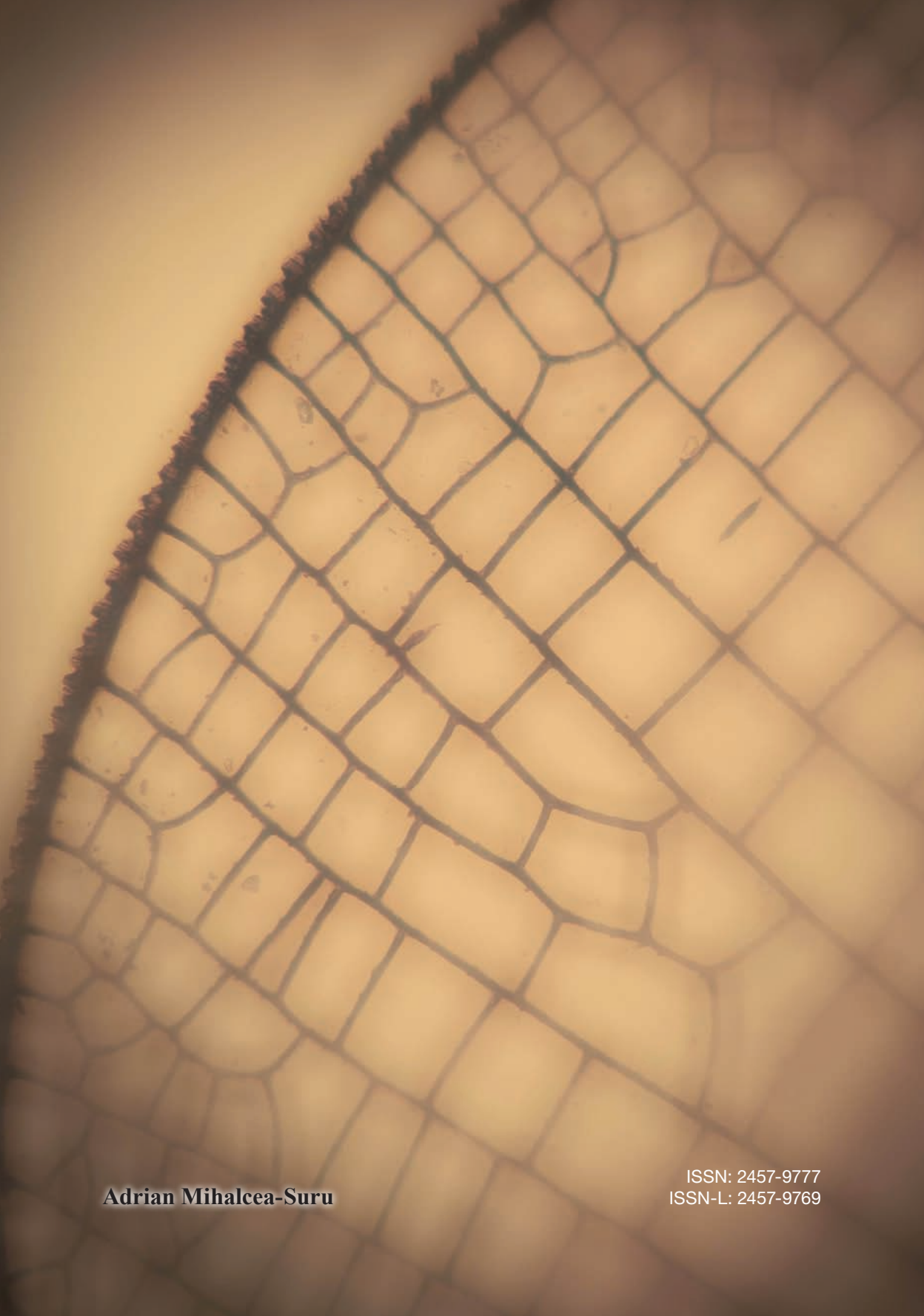
STRUGARIU, Alexandru: 71, 113, 130, 131
ŞULEŞCO, Tatiana: 110
SURUGIU, Victor: 80, 98
SVAVARSSON, Jörundur: 42
TAKI, Soufiane: 70
TĂUŞAN, Ioan: 56, 109, 159
TEACA, Adrian: 80
TELEA, Alexandra: 84, 117
TESAKOV, Alexey S.: 78
THEISSINGER, Kathrin: 76
THOMPSON, Amibeth: 118
TIMOFIEIEVA, Olha: 138
TIMOFTE, Costin: 84
TITOV, Vadim V.: 78
TODERAŞ, Ion: 57, 110, 146, 150
TOPLICEANU, Theodor-Sebastian: 117
TÖRÖK, Sergiu-Cornel: 109, 159
TRICHKOVA, Teodora: 145
TSKHADAIA, Edisher: 94
TUDOR, Marian: 84
ŢURCAN, Vladimir: 158
URECHE, Camelia: 126, 149
URECHE, Dorel: 125, 126, 149
UTEVSKY, Serge: 43
VĂCĂRESCU, Maria-Raluca: 156
VARVARA, Mircea: 67
VASILE, Ştefan: 152, 154, 156
VELO-ANTON, Guillermo: 50
VENCZEL, Marton: 154
VERNIER, Edoardo: 137 bis
VIALET, Amelie: 78
VIZAUER, Tibor-Csaba: 82
VLASCHENKO, Anton: 138
VOICU, Sabrina Mihaela: 152
WEIPERTH, András: 48
WESSELINGH, Frank P.: 78
WÓJCICKI, Adam: 74
WOŁOSZYN, Bronisław W.: 60, 137 bis
YALKOVSKAYA, Lidia E.: 73, 74
YIĞIT, Nuri: 62
ZAHARIA, Claudia: 48
ZAHARIA, Răzvan: 167
ZAMFIRESCU, Ştefan R.: 113, 131
ZĂRNESCU, Otilia: 95, 96
ZNARI, Mohammed: 50, 70, 127, 132
ZUBROD, Jochen P.: 76
ZYKOV, Sergey: 73

NOTES

NOTES

NOTES

NOTES



Adrian Mihalcea-Suru

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