8th Student Conference on Conservation Science, Balatonvilágos 2023

SCCS Europe - Connecting Eastern and Western Europe in conservation biology

> Balatonvilágos (Lake Balaton), Hungary 13 – 16 September 2023

ABSTRACTS



Eds: B. Zsinka, A. Báldi, F. Vajna, E. Balogh, B. Palotás, K. Mázsa Centre for Ecological Research https://sccs.ecolres.hu/

Background of the conference

The Student Conference on Conservation Science series started in Cambridge and have expanded with Brisbane, Beijing, Bangalore and New York.

SCCS is the largest international conference in conservation science, where students and early career scientists are welcomed and have the chance to present their research, learn from each other and meet with experts of the field who can offer them guidance in their future careers.

In 2015, Hungary joined this inspiring event and organizes a conference, especially for young scientists from all around Europe to build a network among the presented parts of the continent.

Plenary speakers at the SCCS Europe 2023

Prof. Ante Vujić



Professor Ante Vujić teaches a number of courses in Environment and Conservation Biology at the University of Novi Sad, Dept. of Biology and Ecology. He has developed cooperation network including: University of Aegean, Department of Geography, Greece; University

of Alicante, Spain; University of Helsinki, Finland, Naturalis Biodiversity Center, Leiden, Netherlands.

He is (was) principal investigator from University of Novi Sad at six international (EU) and three national research projects related to pollinators. His main research interests are biodiversity, conservation and taxonomy of hoverlies (Diptera, Syrphidae). He published more than 123 scientific papers and five monographs.

Prof. Mark Brown



Professor Mark Brown is Professor of Evolutionary Ecology & Conservation at Royal Holloway University of London. After being awarded his PhD for studies of the behavioural ecology of seed-eating ants in California, he started working on the interactions between bumblebees and their parasites in the Schmid-Hempel lab in Switzerland. Since then he has held positions at Trinity College Dublin

and, now, Royal Holloway University of London. He works at the interface of evolutionary ecology and conservation, with a focus on bumblebees and other wild bees. Research in his group has examined the interactions between bumblebees and their parasite communities, the potential impact of pathogen spillover on wild bees, the role of agrochemicals in bee declines, and mitigation measures to reverse and prevent these impacts. He led the H2020 PoshBee consortium project, which aimed to support sustainable pollinators and sustainable pollination across Europe.

http://www.markjfbrown.com/

Tamara Mitrofanenko



Tamara Mitrofanenko is working as an expert in the field of regional sustainable development as part of the team of the United Nations Environment Programme, Office in Vienna, Secretariat of the Carpathian Convention and at the University of Natural Resources and life Sciences, Vienna (BOKU), Institute of Landscape Development, Recreation and Conservation Planning (ILEN). Her work has been largely focused on Central and Eastern Europe,

and the Caucasus countries. Her PhD Thesis was focused on "Integrating approaches from the Intergenerational field into protected area management and regional development governance". Since learning about the importance of transdisciplinary approaches for sustainable regional development, she has devoted her efforts to integration of transdisciplinary approaches into academic systems and policy processes as well as science-policy-practice interface in the context of sustainable regional development, as well as Education for Sustainable Development.

https://forschung.boku.ac.at/fis/suchen.person_uebersicht?sprache_in=e n&menue_id_in=101&id_in=145468

Dr. Balázs A. Lukács



Dr Balázs A. Lukács is a senior research fellow at the Institute of Aquatic Ecology, Centre for Ecological Research. He serves as the lead of the Wetland Ecology Research Group, which is actively engaged in ongoing research focused on freshwater-related topics. The group's primary area of interest lies in the field of biological invasion, with a particular emphasis

on exploring the functional ecology and plasticity of invasive alien aquatic plants and the endozoochoric dispersion of plants and microbiomes. In addition to these scientific pursuits, the group also plays a crucial role in freshwater conservation efforts. By addressing pertinent questions relevant to freshwater restoration and socio-economic aspects such as the effect of anglers on freshwaters and the implementation of the Water Framework Directive, their work contributes to the advancement of sustainable water management practices.

Awards SCCS Europe 2023

Best Talk Awards

- Ioannis Kalaitzakis: "Assessment of land-based threats to Atlantic seabirds"
- Kata Pásztor: "How weather and body size affect survival, senescence and detectability in a natural butterfly population"

Best Poster Awards

- Bhraaz Kashyap: "Comparative study of habitats & sutainability of natural & reintroduced populations of greater one-horned rhinoceros"
- Johanna Maribel Soria Aguirre: "Herptérkép citizen science project survey about the experience of the participants"
- Mariann Komlós: "Bark-foraging birds' feeding sings before and after structural enrichment actions in oak-dominated Natura 2000 forests"

The awards comprised of book prizes from Cambridge University Press and personalized support from the Oryx team to the best talk award winners, to help them publish their work.



Conference sponsors



CENTRE FOR ECOLOGICAL RESEARCH



Hungarian Water Science Program



Balaton-felvidéki Nemzeti Park



Society for Conservation Biology

A global community of conservation professionals

Europe Section









Conference Organizers

András Báldi - Head of the committee, Lendület Ecosystem Services Research Group, Centre for Ecological Research

Emese Balogh – University of Veterinary Medicine, Budapest

Katalin Mázsa - Centre for Ecological Research

Brigitta Palotás - Lendület Ecosystem Services Research Group, Centre for Ecological Research

Flóra Vajna - Lendület Ecosystem Services Research Group, Centre for Ecological Research

Nóra Vili - University of Veterinary Medicine, Budapest

Bernadett Zsinka – University of Veterinary Medicine, Budapest

Talks and posters

of the

8th SCCS Europe

Balatonvilágos, Hungary 13 – 16 September

Talks

A geometric morphometric approach to identify snake prey vertebrae from raptor bird nests and pellets

Ádám Tisza¹, Attila Móré², Zoltán Turny², Attila Bereczky³, Zoltán Szentesi³, Zoltán Korsós, Edvárd Mizsei²

1 Department of Systematic Zoology and Ecology, Eötvös Loránd University, Budapest, Hungary

2 Kiskunság National Park Directorate, Kecskemét, Hungary3 Department of Ecology, University of Debrecen, Debrecen, Hungary

The Hungarian meadow viper (Vipera ursinii rakosiensis) is an endangered subspecies of Vipera ursinii, which faces high predation pressure in its habitat. To estimate the degree of pressure, we developed a geometric morphometric approach to identify vertebrae of snake species found in the Hungarian meadow viper habitats from predatory remains. We used linear discriminant analysis with a reference material of vertebrae from identified snake species as training data for the classification. We also tested its efficiency by predicting the identification result of different simulation levels based on vertebra completeness. We practiced this method on vertebrae obtained from nests and pellets of short-toed snake eagles (Circaetus gallicus, n=9), common buzzards (Buteo buteo, n=14) and Montagu's harriers (*Circus pygargus*, n=3). The identification approach proved to be highly accurate. We identified the vertebrae obtained from the samples as bones of N. natrix (n=172, 83.9%), C. austriaca (n=10, 4.9%) and V. u. rakosiensis (n=23, 11.2%). C. gallicus and B. buteo both proved to be preving on V. u. rakosiensis. This approach is implementable to other studies and snake taxa as well, therefore can be a practical tool for classification of snakes from any remains which contain vertebrae.

Nontarget catches of trap with chemical lures reveal bush crickets' (Tettigoniidae) flower visitation, pollination, and feeding

Aletta Ősz¹, Antal Nagy¹, Miklós Tóth², István András Rácz³, Szilvia Kovács⁴, Szabolcs Szanyi¹

 Faculty of Agricultural and Food Sciences and Environmental Management, Institute of Plant Protection, University of Debrecen, Debrecen, Hungary
Centre for Agricultural Research, Plant Protection Institute, ELKH, Hungary
Department of Evolutionary Zoology and Human Biology, University of Debrecen, Debrecen, Hungary
Department of Applied Plant Biology, Faculty of Agricultural and Food Sciences and Environmental Management, Institute of Crop Sciences, University of Debrecen, Debrecen, Hungary

The biology of many temperate zone flower-visiting insects are thoroughly researched, but, the flower visitation of orthopterans, despite their high abundance and wide distribution, remains unexplored. However, while developing volatile traps to capture Lepidoptera pests, a significant number of orthopterans were caught, providing an opportunity to investigate their flower visitation and scent preferences. Data on the attractivity of isoamyl alcohol-based semisynthetic lure for Meconema thalassinum (De Geer), as well as the efficacy of phenylacetaldehyde-based lures on Leptophyes albovittata (Koll.) and Phaneroptera falcata (Poda), have been unveiled for the first time. The analysis of nature photos gathered from online sources, as part of a passive citizen science supported the revealed preferences of these species. The studied orthopterans prefer Asteraceae species, including Tanacetum vulgare (L.), Pulicaria dysenterica (L.), Achillea millefolium (L.), Solidago canadensis (L.), and Centaurea scabiosa (L.). These findings challenge the notion of their polyphagous nature and prompt a reconsideration of their host plant preferences.

Szabolcs Szanyi's research was financed by the National Research Development and Innovation Office (NKFIH, grant PD 138329).

Local and landscape-scale effects of diverse, large-scale wildflower plantings on cavity-nesting hymenopterans

Áron Domonkos Bihaly^{1,2}, Tünde Ilona Kelemen¹, Miklós Sárospataki², András Báldi¹

1 Lendület Ecosystem Services Research Group, Institute of Ecology and Botany, Centre for Ecological Research, Vácrátót, Hungary

2 Department of Zoology and Ecology, Institute of Wildlife Management and Nature Conservation, Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary

The loss of biodiversity is a global problem, partly due to the habitat loss induced by agricultural intensification. To mitigate these negative effects efforts to promote the diversification of agricultural habitats are becoming increasingly widespread. The establishment of wildflower plantings is supported by agri-environmental schemes, since they have a positive impact on beneficial arthropod diversity and abundance, including pollinators (bees) and biocontrol agents (wasps). However, to maximise the efficiency of wildflower plantings to enhance agrobiodiversity, we need to understand the drivers of said efficiency at local and landscape scales. To study the impact of wildflower plantings in the under-studied East-Central European region, we set up a large-scale experiment in Hungary in 2020, using a seed mixture of 32 native plant species to establish large, diverse wildflower parcels among intensive arable field conditions. After the establishment landscape-scale effects on pollinator insects by trapnests were monitored systematically. Our results are currently under evaluation. However, we can already see that the landscape context has a significant effect on the nesting success of cavity-nesting hymenopterans. Hopefully we will be able to present further results soon.

Do drainage canals support Orthoptera assemblages in European lowland region?

Botond Magyar, Anna Nagy, Attila Torma

Department of Ecology, University of Szeged, Szeged, Hungary

Drainage canals have greatly contributed to biodiversity loss by desiccating wetlands. In contrast, they have recently attracted conservation attention due to their potential roles as habitat or corridor for native species in agricultural landscapes. However, their conservation roles are less known in complex landscapes composed of both agricultural fields and untransformed, semi-natural habitats. To reveal how canals contribute the biodiversity of insects in agricultural and semi-natural landscapes, we sampled Orthoptera assemblages along 60 canal sections and in 30 reference grasslands. Altogether, we collected 6000 specimens of 61 species. In general, orthopterans were more species rich and abundant in reference grasslands and canals situated in semi-natural landscapes compared to agricultural canals. However, this pattern was influenced by the soil substrate (i.e., fen, saline, or sandy) and orthopteran group (i.e., Ensifera or Caelifera). Local parameters of canals (plant species richness, reed and bush coverage) have not significant effects on orthopterans, except of ditch size. We concluded that canals can contribute biodiversity conservation, however further analyses are needed to reveal which species or species traits are supported by canals.

Effect of human disturbance on the density of meso and macro mammals in the central Apennines

Chiara Dragonetti¹, Niccolò Ceci¹, Jan Niklas-Trei², Paolo Ciucci¹, Piero Visconti³, Moreno Di Marco¹

Sapienza University of Rome, Rome, Italy
Rewilding Apennines, Italy
International Institute for Applied Systems Analysis, IIASA

The Apennines are home to many endemic species, which are often considered as endangered or critically endangered. Recent studies identified here some corridor areas, that connect 300,000 ha of protected areas (i.e. National Park of Abruzzo, Molise, Lazio, the Majella National Park, the Sirente-Velino Regional Park). These areas are crucial for the flagspecies Ursus arctos marsicanus and for many other species (i.e. Canis lupus, Felis silvestris, Cervus elaphus, Capreolus capreolus). In these areas, part of the land is destinated to human activities, such as agriculture and pasture. Preserve these corridors is essential to promote the connectivity between protected areas and the survival of these species. We quantified the presence of wild species in two corridor areas and relating this to the presence of grazing cattle and anthropic pressure in general. We used camera traps to estimate the occupancy and the density of wild species. We then related these two indices with different variables of anthropic pressure. We found that the forest-cover and the presence of cattle have most of the influence on wild species. This was significant to both increase the limited knowledge that exists in these areas and facilitate the management of these territories at a local level.

Wildlife Burnout: Patterns of stress levels in response to anthropogenic disturbance in reptiles, birds and mammals

Davide Mirante^{,1}, Luca Santini¹, David Costantini², Ana Benítez López³

1 Department of Biology and Biotechnologies "Charles Darwin", Sapienza University of Rome, Rome, Italy

2 Department of Ecological and Biological Sciences, Tuscia University, Viterbo, Italy 3 Departamento de Biogeografía y Cambio Global. Museo Nacional de Ciencias Naturales, Italy

Conservation research has focused on estimating generalizable patterns in behavioural and demographic responses at population level, but lesser effort has been devoted to understanding the generalizability of physiological responses to human disturbance, such as increased glucocorticoid concentrations (GCC, a proxy of stress levels), with mixed results across studies.

Here we used a phylogenetic meta-analysis of 123 studies and 285 estimates to unveil generalizable patterns of the effect of human disturbance on GCC in herptiles (16 spp), birds (52 spp), and mammals (46 spp). We found that mammals elicit similar responses to all anthropogenic disturbances (+30-43% GCC), while birds show increased GCC only for habitat conversion (+22%). Herptiles show no consistent effect. GCC were not modulated by biological traits (home range and longevity). Chronically high GCC could impair immune and reproductive success, and constrain the reactive scope of stressed animals, with negative consequences at population level. GCC may act as early hints of downstream population decline, thus allowing the swift implementation of measures to mitigate human disturbance in vulnerable taxa.

Geomorphological diversity and canopy cover: the effects of canopy gaps on the microclimate and species composition of dolines

Gábor Li, Bonita Ratkai, Kata Frei, Benedek Tóth, Csaba Tölgyesi, Zoltán Bátori

Department of Ecology, University of Szeged, Szeged, Hungary

Species distribution models often rely on regional climate averages, thereby overlooking the microclimatic trends that truly effect individuals, and which are influenced by many environmental factors. Knowledge regarding these factors and their interactions is essential for a more accurate assessment of the effects of global climate change. It has been previously shown that karst depressions (i.e. dolines) may provide special microclimatic conditions markedly different from the surrounding plateaus and that canopy gaps may provide special microclimatic conditions in forests. However, there is limited knowledge on their combined effects on microclimate and vegetation patterns in forested karst landscapes. Therefore, we compared four habitat types: 1) plateaus with closed canopy, 2) plateaus with small canopy gaps, 3) doline bottoms with a closed canopy and 4) doline bottoms with small canopy gaps. We found several climate change-vulnerable species in dolines with a canopy gap, which were absent or rare in the surrounding habitats. Overall, the combined effects of canopy gaps and topographic complexity may significantly influence the biota of karst landscapes through changed microclimatic conditions and therefore, they may change the refugial capacity of doline habitats.

The functional organisation of sandy forest-steppe transition zone in Hungary

Gabriella Süle¹, László Körmöczi², Szilvia Fóti^{3,4}, Dóra Petrás³, János Balogh³

 Lendület Ecosystem Services Research Group, Institute of Ecology and Botany, Centre for Ecological Research, Vácrátót, Hungary
Department of Ecology, University of Szeged, Szeged, Hungary
Department of Plant Physiology and Plant Ecology, Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary
MTA-MATE Agroecology Research Group, Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary

Vegetation transition zones such as the sandy forest-steppe in Hungary are sensitive to changes in environmental parameters. We carried out vegetation surveys and seasonal measurements of ecosystem functions, microclimate and soil variables, and terrain attributes along intersecting transects with different cardinal directions toward the surrounding grasslands with the poplar groves in the middle. The canopy differences and the terrain attributes co-varyingly affected the biotic and abiotic parameters indicating spatial functional diversity between the groves and grasslands with notably different conditions under the groves through high soil respiration, soil water content, and leaf area index; in contrast, on the grasslands soil temperature and vapour pressure deficit showed high values. However, differences in function can also be observed between grassland areas with different cardinal directions. Topography had an effect on the spatial distribution of soil organic carbon content while the contrasting canopy structure had a strong modifying effect through allocation patterns and microclimatic conditions, both affecting soil respiration rates. The species composition of the herb layer also followed the spatio-temporal functional patterns along the transition zone.

Effects of different grassland management regimes on the density of the Hungarian meadow viper (Vipera ursinii rakosiensis)

Gergő Rák¹, Mátyás Budai¹, Bálint Wenner⁵, Barnabás Bancsik⁵, Ádám Tisza¹, Attila Móré², Gergő Kovács⁶, Dávid Radovics³, Márton Szabolcs³, Bálint Üveges⁴, Zoltán Korsós⁵, Edvárd Mizsei²

 Department of Systematic Zoology and Ecology, Faculty of Biology, Eötvös Loránd University, Budapest, Hungary
Kiskunság National Park Directorate, Kecskemét, Hungary
Conservation Ecology Research Group, Department of Tisza Research, Danube Research Institute, Centre for Ecological Research, Debrecen, Hungary
Molecular Ecology and Evolution at Bangor, School of Natural Sciences, Bangor University, Bangor, United Kingdom
Department of Ecology, University of Veterinary Medicine Budapest, Budapest, Hungary

6 Department of Ecology, University of Szeged, Szeged, Hungary

The Hungarian meadow viper lost most of its habitats and the remaining ones are exploited for economic interests. Grazing, mowing and switching between these managements are the three typical grassland utilization methods, however, their effects on the quality of meadow viper habitats were not studied before. Therefore, we first conducted monitoring of vipers in nine 100×100m plots in differently managed habitats in spring and autumn of 2019. We have done a fine-scale monitoring study in 78, 50×50m plots in 2020 and 2021 mostly on grazed habitats, also with measuring the productivity of the pastures and including information about herding style. We estimated viper density using n-mixture modelling. There was a positive effect of grazing management on viper density, while mowing and switched usage had significant negative effects. The second, fine-scale sampling showed that herding style had no significant effect, while grazing pressure -which interacts with grassland productivity- had significant negative effect on viper density. Our results suggest that a change from mowing to grazing is vital for the wellbeing of Hungarian meadow viper habitats, and the reduction of grazing pressure is recommended, since extensive grazing creates more favourable conditions for the species.

Identification of unknown samples of honey bee wings from India using geometric morphometrics

Hardeep Kaur^{,1}, Sajad Ahmad Ganie², Adam Tofilski¹

1 Department of Zoology and Animal Welfare, University of Agriculture in Krakow, Krakow, Poland 2 Faculty of Horticulture, Sher-e-Kashmir University of Agricultural Sciences and Technology of Srinagar, Kashmir, India

The western honey bee (Apis mellifera) has a wide distribution. It consists of more than 20 subspecies categorized into four different evolutionary lineages: A, C, M, and O. The identification of honey bee subspecies is crucial for their conservation and breeding programs. Various molecular and morphological methods exist in the literature for identification, but they can be expensive or labor-intensive. For some markers, including the cytochrome c oxidase subunit, there is a well-established methodology allowing consistent subspecies identification in different laboratories. In the case of morphological markers, identification is hindered by a lack of reference data and a standardized methodology to reuse it. We propose a novel method based on geometric morphometrics that utilizes existing available data in the literature to create an XML file. The information in this file can be easily extracted by other users for the identification of unknown samples. We illustrate this procedure using ten samples from north India. The samples were identified as Apis mellifera belonging to lineage C. Within this lineage the sample from India was most similar to bees from Croatia and Slovenia.

Assessment of land-based threats to Atlantic seabirds

Ioannis Kalaitzakis, Marie-Morgane Rouyer, Ana Rodrigues

Centre d'Ecologie Fonctionnelle et Evolutive, Montpellier, France

Highly mobile seabirds are exposed to numerous threats with varying spatio-temporal range and origins. During their breeding season, they face land-based threats (e.g. invasive alien species, light pollution) which can result in strong population declines. There has been no assessment of the magnitude and the spatialization of these threats across seabird populations in the Atlantic. To understand the spatial exposure to threats and quantify their importance across populations, I built a dataset on the distribution of 18 threats for 49 species (143 populations) across 29 Large Marine Ecosystems (LMEs) in the Atlantic. This dataset combines results from a literature review and a guestionnaire answered by 38 seabird experts. I calculated the impact of each threat as the estimated population loss it caused, highlighting the most impactful threats, impacted species and populations, and impacted LMEs. This helped identifying conservation priorities. I found that invasive alien species account for the greatest population loss among the studied species, while Bermuda and Canary Current are the most impacted LMEs. This study can support seabird conservation efforts, with the spatial, population-specific threat analysis enabling targeted management actions.

Microclimate and soil resource availability may support climate-changesensitive plant species in potential microrefugia

Kata Frei¹, András Vojtkó², Tünde Farkas³, László Erdős⁴, Károly Barta⁵, Anna E-Vojtkó⁶, Csaba Tölgyesi^{1,7}, Zoltán Bátori^{1,7}

Department of Ecology, University of Szeged, Szeged, Hungary
Department of Botany and Plant Physiology, Eszterházy Károly Catholic University,
Eger, Hungary
Aggtelek National Park Directorate, Aggtelek, Hungary
Institute of Ecology and Botany, Centre for Ecological Research, Vácrátót, Hungary
Department of Geoinformatics, Physical and Environmental Geography, University of
Szeged, Szeged, Hungary
Institute of Botany, Czech Academy of Sciences, Prague, Czech Republic
MTA-SZTE 'Lendület' Applied Ecology Research Group, Szeged, Hungary

Contemporary and potential future microrefugia are often located within topographically complex landscapes (i.e. karst landscapes) where they maintain environmental stability for climate-change-sensitive species for a long time. The unique microclimate of these microrefugia is in the focus of most studies concerning the distribution of species, instead of other environmental factors, such as soil moisture and soil nutrients. Furthermore, there is little knowledge about the relationship among topography-related environmental factors and species composition in microrefugia. Karst landscapes cover about 20% of the Earth's terrestrial surface and their most typical landforms are topographic depressions, such as dolines. In this study we investigated the effects of microclimate and soil resource availability on plant species occurrences in 30 large dolines in two distant karst regions. Sampling sites were established in four microhabitats for each doline: south-facing slope, north-facing slope, doline bottom and surrounding plateau. Our results showed that dolines maintain appropriate conditions for many vascular plant species adapted to cooler, moister

and/or nutrient-rich conditions, thus they may act as both climate and resource microrefugia at the same time.

How weather and body size affect survival, senescence and detectability in a natural butterfly population

Kata Pásztor¹, Ádám Kőrösi², Ádám Gór³, János Kis⁴

 Doctoral School of Biological Sciences, Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary
Büro Geyer und Dolek, Wörthsee, Germany
The Doctoral School of Veterinary Science, University of Veterinary Medicine Budapest, Budapest, Hungary
Department of Ecology, University of Veterinary Medicine Budapest, Hungary

To deepen our knowledge on the dynamics of butterfly populations, it is needed to reveal how environmental variables and body sizes are related to survival, senescence and detectability of butterflies.

We aimed to reveal these relationships with mark-recapture in a population of Clouded Apollo (*Parnassius mnemosyne*) butterfly in Hungary, 2014–2019. We measured body mass, thorax width, forewing length in vivo on individually marked butterflies; temperature and relative humidity were measured by loggers. Later, all variables were used in a Cormack-Jolly-Seber model.

In all years, butterfly survival declined with the progress of the flight period or age in both sexes. Generally, at lower temperature, higher relative humidity and with larger body size, individuals had higher survival probabilities. Recapture probability increased with temperature, number of observers, body size and age, and it declined with relative humidity. However, these relationships were significant only in a few years. We found relatively small differences between the sexes, but a high annual variation in the ranking of models. Our results provide a deeper insight into the demography of butterfly populations and may enable us to reveal potential pathways of adaptation to environmental changes.

Leave uncut strips on hay meadows to support arthropods

Kitti Révész^{1,2}, Attila Torma^{1,3}, Márton Szabó³, Drahanovszki Gábor⁴, Lili Korsoveczky, Nikolett Gallé-Szpisjak¹, Péter Batáry¹, Róbert Gallé^{1,5}

 Lendület' Landscape and Conservation Ecology, Institute of Ecology and Botany, Centre for Ecological Research, Vácrátót, Hungary
Doctoral School of Biological Sciences, Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary
Department of Ecology, University of Szeged, Szeged, Hungary
Körös-Maros National Park Directorate, Szarvas, Hungary
MTA-SZTE 'Momentum' Applied Ecology Research Group, Szeged, Hungary

The majority of European grasslands are managed. High management intensity negatively affects the diversity of the whole biota. Preserving refuge areas during mowing may mitigate its negative effect on arthropods. We established uncut refuge strips on hay meadows managed in accordance with Hungarian agri-environmental schemes. We compared the effectiveness of narrow (3m) versus wide (9m) refuge strips and also the low (10%) versus high (25%) ratio of refuge strips in conserving diversity. We collected arthropods with pitfall traps and sweep-netting. Both species richness and abundance were higher in the refuge strips than in the mowed strips for all taxa associated with vegetation (grasshoppers, true bugs, vegetation-dwelling spiders). The width and the ratio of refuge strips affected herbivores: grasshoppers had higher abundance where the ratio of uncut area was 25% instead of 10%; true bugs were denser in refuge strips when they were crowded in the narrow strips or in refuge strips with only 10% ratio in the meadow. Our findings provide evidence that uncut refuge strips are able to harbour diverse and abundant arthropod assemblages. Further, their response to the different amounts and arrangements might vary among taxa.

From global conventions to national actions: mobilizing local expertise to support the Global Biodiversity Framework

Tímea Németh, András Báldi, Kinga Öllerer

Centre for Ecological Research, Vácrátót, Hungary

The accelerated loss of biological diversity is known for decades. To overcome this, a global agreement, the Convention on Biological Diversity (CBD) was signed in 1992. Despite the commitments made, biodiversity loss is ongoing, and not a single out of the 20 Aichi biodiversity targets set for 2020 has been met. As a response, the ambitious Kunming-Montreal Global Biodiversity Framework (GBF) has been adopted in 2022, following a four-year consultation and negotiation process, to reach the global vision of a world living in harmony with nature by 2050. To succeed with this, it calls for the protection of 30% of lands and seas by 2030, and restoration of degraded ecosystems, among other objectives. Several projects were started to get the GBF ball rolling, including the Cooperation for the Convention on Biological Diversity, CO-OP4CBD. This project proposes to enhance coordination within the European Union in advancing the implementation of the CBD by harnessing effectively the knowledge of experts. In Hungary and Romania the pool of biodiversity experts involved in CBD is largely missing - thus, our aims are to systematically search for potential experts, organise training courses at the national and international levels, and support their participation in the CBD processes.

Posters

Comparative study of habitats & sustainability of natural & reintroduced populations of greater one-horned rhinoceros

Bhraaz Kashyap, Gergely Tibor Schally, Sándor Csányi

Institute for Wildlife Management and Nature Conservation, Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary

This study sought to make a comparative assessment of the habitats of Greater One-horned Rhinoceros populations in two protected areas of India- one naturally occurring and the other being a translocated population. The research combines existing data gained from habitat assessments, population surveys and reports to gain insights into the factors influencing the survival and long-term viability of these populations. Results reveal significant differences in habitat suitability, resource availability, and anthropogenic impacts between natural and reintroduced populations. Furthermore, we go over the sustainability factors and trends for both of the populations, highlighting the challenges of the translocated population and its possible solutions.

The findings greatly contribute to the understanding of the ecological requirements and conservation implications not only for the Greater One-Horned Rhinoceros, but other translocated species as well, providing valuable insights for wildlife managers and policymakers.

From Roots to Shoots: The role of meadow ants in restoring grasslands for pollinators

Gabrielle Flinn¹, Elva Robinson¹, Claire Carvell², Carl Hawke³

1 University of York, York, United Kingdom 2 UKCEH UK Centre for Ecology and Hydrology, United Kingdom 3 National Trust, United Kingdom

In Europe, 90% of semi-natural grasslands have been lost in the last 80-100 years partially due to intensified agricultural and commercial forestry. This is a major contributor to the decline in pollinating insects, such as wild bees, which rely on this habitat and the availability of diverse floral resources. The restoration of semi-natural grasslands has become an important focus in the efforts to conserve and recover pollinator populations. To successfully restore these landscapes, it is integral that keystone species - species which have influential roles that impact the functioning of an ecosystem or its community structure - are also recovered. Yellow meadow ants (Lasius flavus) occur abundantly in many semi-natural grassland ecosystems across the UK. Lasius flavus is a keystone grassland species, influencing soil ecology, increasing heterogeneity of the grassland, creating microhabitats and even influencing soil chemistry, with the consequence that their mounds are crucial to the persistence of certain grassland plants and insects. This research will answer novel questions about the ecology of L. flavus and how its presence affects soil microbial communities, plants and pollinators in semi-natural grasslands undergoing restoration.

Variation of Small and Large Wild Bee Communities Under Honeybee Pressure in Highly Diverse Natural Habitats

Imre Demeter¹, Adalbert Balog², Miklós Sárospataki³

 Centre for Ecological Research, Vácrátót, Hungary
Department of Horticulture, Faculty of Technical and Human Science, Sapientia Hungarian University of Transylvania, Cluj-Napoca, Romania
Department of Zoology and Ecology, Institute of Wildlife Management and Nature Conservation, Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary

During the study, the honeybee effects on wild bees were tested and hypothesized that smaller distances from beehives will increase competitions between honeybees and wild bees, while greater distances will have a deleterious effect on competition. The impact on species richness and diversity was tested with distances from beehives, considering that this may differ when large and small wild bee species are considered separately. Altogether 158 species and 13,164 individuals were collected, from which 72% (9,542 individuals) were Apis mellifera. High variation in abundances was detected from one year to another, and the species turnover by sites was 67% in site A, 66% in site V, and 63% in site F. This last one was the site with the previous contact with honeybees. Considering distances from beehives, significant decreases in small bee species diversity were detected from one year to another at each distance except site F, 250 m from hives. The changes in species diversity and community structure of small bee species are detected from one year to another.

Herptérkép citizen science project - survey about the experience of the participants

Johanna Maribel Soria Aguirre¹, Bálint Halpern², Eszter Tormáné Kovács³

1 Environmental Sciences Doctoral School, Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary

2 MME BirdLife Hungary, Budapest, Hungary

3 Department of Nature Conservation and Landscape Management, Institute for Wildlife Management and Nature Conservation, Hungarian University of Agriculture and Life Sciences, Gödöllő, Hungary

In the Herptérkép citizen science (CS) project, people share herpetofauna observations contributing to nature conservation and scientific research. It is crucial that not only scientists but also participants benefit from CS programs. Therefore, in 2023 we carried out an online questionnaire survey among participants focusing on their experience with uploading data, technology use, knowledge gain and changing attitudes and behavior. We received 183 responses. Our preliminary results show that 65% of the respondents preferred the webpage for doing observations. Although approximately half of them (52%) uploaded data only occasionally, 83% reported that by using the Herptérkép website they gained knowledge. While 54% said they had behaved environment-friendly, even prior to participation, 46% indicated that their involvement helped them to be aware of the significance of their contribution. 64% would like to be involved in more phases of the research and 62% would like to know more about how their data is used. We recommend promoting the use of the app to improve effective communication, to provide up-to-date feedback on the data use and to inform about other possibilities of contributing to the Herptérkép. It might assist in increasing observation frequency.

Unveiling the silk secrets: behavioural use of different silk glands in the daddy-longlegs spider Pholcus phalangioides (Araneae: Pholcidae)

Maitry Jani¹, Clemens Schmitt², Milan Řezáč³, Peter Michalik¹, Jonas Wolff¹

1 Zoologisches Institut und Museum, Universität Greifswald, Greifswald, Germany 2 Department of Biomaterials, Max Planck Institute of Colloids and Interfaces, Potsdam, Germany

3 Biodiversity Lab, Crop Research Institute, Ruzyně, Czechia

Our understanding of the behavioral utilization of different silk types and the biological functions of various silk glands in spider lineages is limited, despite recognizing the crucial importance of silk. To address this gap, we investigated the Daddy long-legs spider, Pholcus phalangioides, known for constructing irregular three-dimensional webs. These webs are versatile consist tangle webs and viscous-sticky traps. To understand the diversity of silk types and their properties, we collected silk samples from P. phalangioides webs in a controlled laboratory environment, combined with behavioral experiments and microscopic analysis. Our study revealed three distinct types of silk fibers based on variations in diameter. Four distinct silk glands including two types of glue glands with different adhesive properties were identified. Furthermore, our behavioral observations in the laboratory confirmed the microscopic analysis findings. This study is first investigation that highlights the fascinating utilization of silk glands and their biological functions in the widely distributed P phalangioides spiders, addressing knowledge gaps within the scientific community.

Regeneration success of sessile oak under different gap cuttings in an oak-hornbeam forest in Northern Hungary

Margaret Gathoni Gitau¹, Flora Tinya²

1 Eotvos Lorand University, Budapest, Hungary 2 Centre for Ecological Research, Vácrátót, Hungary

There is a shift in the European region towards a more inclusive forestry management system encompassing ecosystem services while improving the biodiversity status and reversing forest degradation besides timber production. One of the ways forest management authorities are trying to achieve this is nature-based forest management that mimics the natural stand dynamics. Among the temperate nature-based management techniques is the creation of forest openings. Gap creation in forests is advantageous for light-demanding species such as Quercus petraea and results in the regeneration success of saplings established in the gaps. Conducted in northern Hungary, this study investigates the regeneration success of naturally occurring Quercus petraea saplings in artificially created canopy gaps ranging between 0.015 ha to 0.03 ha. The study utilised four canopy opening types (large circular, large elongated, small circular and small elongated gaps) with six replicates. The effect of the treatments was studied on the acorn supply, the height growth, survival and abundance of *Quercus petraea* saplings. The results revealed that gap cuttings significantly affected the acorn supply, the height increment and the abundance of the Quercus petraea saplings.

...

Bark-foraging birds' feeding sings before and after structural enrichment actions in oak-dominated Natura 2000 forests

Mariann Komlós¹, Gábor Ónodi², Zoltán Botta-Dukát¹, Dániel Winkler³ & Réka Aszalós¹

1 Centre for Ecological Research, Institute of Ecology and Botany, Vácrátót, Hungary 2 National Laboratory for Water Science and Water Security, Balaton Limnological Research Institute, Tihany, Hungary 3 University of Sopron, Sopron, Hungary

The primary aim of conservation-oriented forest management of the LIFE4Oak Forests project is the enhancement of structural and compositional complexity. Such management actions included the girdling of trees, bark stripping of tree individuals, felling to create gaps in the canopy, downed woods, and high stumps mimicking natural disturbances. They were implemented on 8 experimental Hungarian oak-dominated hill sites on 16 plots. Visual feeding sign survey of woodpeckers was carried out in the wintertime, before and one year after the management actions on the treated tree individuals (girdled and felled trees) and on control trees, in different depth categories described as a percentage. Our first results before the management actions showed that there were a relatively low amount of signs altogether, and that they were more frequent on trunks of larger diameter and greater heights, and rather occurred on limbs than on trunks of the trees. After the treatments we found substantial increase in the amount of signs mostly on the trunks of treated trees, and also in different distribution among treatment types. Woodpeckers responded very rapidly to complex conservation-oriented management actions, thus they can be seen as early indicators of increased naturalness.

Human-whale interaction in Karwar, India : Narratives on Habit, habitat and harmony

Sahamatha

WCS Wildlife Conservation Society India, India

In order to create successful approaches tailored to the local context for wildlife conservation, it is crucial to understand the various social and cultural factors. Perceptions towards wildlife are mostly influenced by positive or negative interactions, cultural and religious values, social influences and knowledge systems. Often less considered, oral histories and mythologies also significantly contribute to people's perception towards animals. To understand the relationship and interaction between whales and the fishing community at Karwar, India, semi-structured interviews were conducted. In this ethnographic research, the significant potential for conservation efforts by harnessing the knowledge found in oral narratives and rituals has been highlighted. The research also shows that personal and lived experiences in a shared space offer a distinct perspective on a species, fostering a harmonious relationship, promoting coexistence. Furthermore, the diverse linguistic practices in naming whales talk about cultural and linguistic aspects connected to marine animals. This study enhances an understanding of human-marine mammal connections and has the potential to guide conservation initiatives aimed at safeguarding the fragile harmony between humans and the natural world.

Comparison of pollinating insect abundance between semi-natural grasslands and sown wildflower fields in Kiskunság, Hungary

Németh Virág Eszter^{1,2}, Soltész Zoltán², Báldi András²

1 Department of Systematic Zoology and Ecology, Eötvös Loránd University, Budapest, Hungary 2 Lendület Ecosystem Services Research Group, Institute of Ecology and Botany, Centre

for Ecological Research, Vácrátót, Hungary

Nowadays with the intensification of agriculture large amount of land is used for agricultural purposes. It often means that monocultures are established in places of valuable habitats otherwise. This practice leads to the degradation of these habitats and decreases biodiversity. In Kiskunság, Hungary, 8 landscape fragments sized 0.5 ha (fields) and 3x8 smaller fragments (strips, the area of 3 strips sums up to 0.5 ha) were taken from the cultivated land in 2020. These plots were sown with a local seed mixture of insect-pollinated plants. With this treatment, new grassland fragments were introduced to the landscape in the hope that they will stop pollinator diversity from declining. To assess how efficient these plots are compared to the already existing semi-natural grasslands in the landscape, we used Malaise traps to collect flying pollinator insects. The catch consists of different flying insects including pollinators. Lepidoptera, Syrphidae, Bombus, and Apoidae species are all important pollinators that are sampled with this method. After sorting, the abundance of different taxa will be analyzed as a first step. We expect the preliminary results to show that sown wildflower plots have a similar composition and abundance of taxa to grasslands after 3 years of establishment.



https://sccs.ecolres.hu/