SCCS Hungary 2015 Abstracts

Talks

Ex-situ conservation of some endangered plant species in Hungary

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When in-situ conservation of endangered species is not efficient ex-situ propagation can be necessary. Our aims were to develop propagation protocols and establish ex-situ populations for three endangered fabaceous plants of Hungary: *Vicia biennis L., Trifolium vesiculosum Savi.* and *Astragalus contortuplicatus L.* For propagation we used seeds, germination was tested in Petri-dishes and scarification was used to break potential dormancy. We developed efficient propagation methods for all species. However we have a stable ex-situ population for Vicia biennis its reintroduction is sill unsuccessful. Further propagations and monitoring of in-situ populations are in progress for all three species.

Sea otters on the frontlines of the fight against global warming

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Dramatic increase of the Carbon Dioxide since Industrial revolution have been started cause irreversible impact on planet ecosystem.At the moment, rising atmospheric temperature, global warming and ice melting is only few mentioned problems with which we have to cope and try to solve as soon as possible.In this project we will focus on alternative way to decrease CO_2 amount by looking on a role of kelp , as a best plant for sequestrating carbon. Sea otters have a direct positive effect preying on main kelp grazers - sea urchins. The main goal is to explore and investigate dynamics and potential sequences of sea otter distribution and how human being might have effect on that.

The impacts of a glyphosate-based herbicide on some charismatic inhabitants of ephemeral ponds

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Spill-out of pesticides applied in agriculture can have large effects on natural communities. We investigated the impacts of a glyphosate-based herbicide on tadpoles of two anuran species (*Rana dalmatina* and *Bufo bufo*) and on two key predators of temporary wetlands (larval dragonflies *Aeshna cyanea* and adult newts *Lissotriton vulgaris*). Our results indicate that the herbicide may have significant effects on tadpoles, susceptibility of tadpoles to herbicide-exposure may decrease over ontogeny, while the measured effects may largely depend on the experimental venue used. The two predatory species appeared to be resistant to environmentally relevant concentrations of the herbicide.

How to jump ahead if you know nothing? Case studies from the Greek meadow viper (Vipera ursinii graeca) conservation project

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The Greek meadow viper is one of the most threatened and least known vipers in Europe. After six years of intensive research in Albania (distribution mapping, population density estimations, genetics, ethnoconservation), we analyse what have been done, how it should have been done, and how we should do in the future. We compiled and tested a species distribution model, and found seven new populations. We observed high population densities, but low genetic variability. The most common threat was overgrazing. We established grazing exclusion sites and we raised awareness of local shepherds to promote the conservation this rare snake.

Consequences of changes in human attitude: changing nesting habitat site selection by the Spanish Imperial Eagle (Aquila adalberti)

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Spanish Imperial eagle population is an expanding population, changes in human activities against this specie (direct persecution) is changing the habitat selection of Spanish Imperial eagles and expanding the range of dispersion. I work with nest site data, productivity and age of breeding pairs from 2001 to 2014. Also I have information about human activities, paved and unpaved roads in the Andalusia region. During the 20 century human persecution displaced the Spanish Imperial eagle nest selection to sites with high inaccesibility index and away from human activity. Now a change in human attitude allows colonization of areas closer to human activity. During the expanding population process eagles are selecting territories closer to human activity. Conservation measuren have been take in account in these new areas outside protected areas where new management problems have to be resolved.

The Landscape Approach

Fanny Olsthoorn

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In light of climate change and an increasing global population, humanity is faced with the challenge of reversing unsustainable development This is what the newly emerging landscape approach is meant for. It accounts for the holistic management of natural resources on a landscape level, combining mosaic patterns in an integrated governance structure. As the approach has only emerged in the beginning of the XXI century, there is a lack of evaluation on its implementation. The work I will present to you fills this gap: through a theoretical framework I analyzed case-studies making use of landscape governance and created recommendations.

Nest site characteristics of the Great-spotted Woodpecker in a bottomland riparian forest in the presence of the invasive Green Ash and Boxelder Maple

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The invasive Green Ash and Boxelder influence negatively the populations of native riparian tree species in Central-Europe. We studied Great-spotted Woodpecker nest sites in the presence of these invasive species. Trees were recorded in circular plots of 0.05 ha both along a 100 m grid and also around the mapped nest trees. Composition and demography of nest site and grid plots were compared. Most of the recorded trees were invasive. Nest sites had more native trees than grid plots had. Decayed willow trees were used for nesting. Great-spotted Woodpecker (major cavity excavator) studies in such habitats are important for conservation.

Hair-traps as tools for monitoring mammal fauna: is it a magic wand on elusive species?

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Studying carnivore species requires sophisticated methods. Hair collecting is one among many useful non-invasive techniques. We have collected hair samples by rub pads, PVC tubes and modified live traps at two Natura 2000 sites (Kiskunság – lowland, Mátra – mountain). Morphological hair identification was strengthened by blind-test and mtDNA based approaches. We could prove that our method can be used to monitor elusive but common carnivores, such as red fox or badger, but occasionally rare species like the Eurasia lynx can also be sampled. These data can be used to create new Natura 2000 plans on carnivore species.

The role of saline bomb crater ponds in aquatic conservation

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Bomb crater ponds on the Pannonian Plain are secondary habitats without proper evaluation of their biodiversity. We conducted a multi-group study (from algae to reptiles) in a sodic grassland holding more than 100 crater ponds within 1 km2. The habitats displayed a high environmental variation resulting in high gamma diversity in all target groups. The most saline ponds appeared to be less diverse, but they were hosting typical soda water communities. The ponds also served as important habitats for amphibians and reptiles. Despite their anthropogenic origin, bomb crater ponds act as important contributors for aquatic biodiversity.

Human impact on the activity patterns of mammals in Bulgaria

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Using camera traps in two mountains in Bulgaria we aim to determine the changes occurring in the behavior of wild mammals in regions with different levels of disturbance. The results show that the activity patterns of our model species are shifting depending on the presence of humans and stray dogs. The study focuses mainly on widely-distributed and not endangered in Bulgaria species (except for the wild cat *Felis silvestris*), which we used as model species due to the large samples we obtained. This approach can be further applied to assist conservation efforts for species that need protection.

Priorities, patterns and gaps in conservation of Europe's freshwater biodiversity and herpetofauna

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Our aim was to identify priority areas for conservation of Europe's freshwater biodiversity and herpetofauna. We contracted the distribution records of freshwater fishes, molluscs, odonates and plants and respectively amphibians and reptiles into spatial planning units. Records belong to species with threatened IUCN status and endemicity were priority targets, more than common species. In the prioritisation analysis we used Marxan, and visualised the selection frequency of planning units in GIS to see the results. One very important outcome is that we revealed catchments with inefficient coverage by protected areas which can help future conservation effort.

Some like it mild: Positive effects of climate change on hibernation success of common toads (Bufo bufo

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Climate change has been identified as one of the main causes for declines of amphibian populations around the globe, however, the effects of predicted milder, shorter winters on hibernation success of temperate zone Anurans have remained controversial. Here we present a laboratory experiment testing the effects of climate change on hibernating juvenile common toads (*Bufo bufo*). A simulated shorter and/or milder winter had synergistic positive effects on survival and body mass of overwintering individuals. Consequently, negative effects of climate change on temperate zone Anurans may be dampened by shorter and milder winters positively affecting fitness during hibernation.

Environmental and physiological factors constraining reproductive success of amphibians

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Amphibians currently face a global decline. Averting this crisis requires detailed knowledge about their biology and ecological needs. In amphibian populations of the Pilis-Visegrádi Hills, Hungary, we studied breeding habitat use, the mechanisms and the outcome of reproductive interference, and the limits of males' reproductive potential. Our observational studies and experiments revealed complex ecological, social and physiological constraints on the breeding behaviour and reproductive success of amphibians, delivering vital information not only for behavioural and evolutionary ecology, but also for conservation biology.

Cows, forests or both? Reducing the environmental cost of meat production in Mexico.

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Globally, agriculture is the greatest threat to biodiversity and a major contributor to anthropogenic CO_2 emissions. Meat, and particularly beef production is particularly damaging , but consumption is likely to increase over coming decades as populations and per capita consumption increase. How we choose to produce food will, to a large extent, determine the state of biodiversity and the wider environment in the 21st Century. My research examines different potential land-use strategies in Yucatán, Mexico, to identify landscapes, and the policies that can produce these, that conserve biodiversity and maximise carbon storage, whilst meeting current and future food demands.

Long-term dynamics of common cuckoo and great reed warbler populations in Central Hungary: are avian hosts threatened by their brood parasites?

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We studied the dynamics of an obligate avian brood parasite, the common cuckoo (*Cuculus canorus*) and one of its major host species, the great reed warbler (*Acrocephalus arundinaceus*) over several decades. The cuckoo is a long-distance migrant whose populations are declining over a large part of Europe. As compared to historical data from the same study area, the rate of cuckoo parasitism have not changed in the studied population, it remained 52-64% over 70 years. Habitat structure is responsible for the coupled dynamics of host and parasite populations on several accounts. The most important factor determining cuckoo success is the nearness of vantage trees to host nests. Also, the high rate of parasitism and high cuckoo densities are sustained by a high ratio of naive host individuals which, in turn is a result of metapopulation dynamics across a network of well-connected habitat patches. Our research also indicate that timing of habitat management interventions in channel-side reedbeds may seriously reduce the breeding success of parasite and host alike.

Poster Abstracts

Ex-situ conservation of Comarum palustre L. in Hungary

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Comarum palustre L. is a critically endangered plant species in Hungary which inhabits endangered mires. Our aim was to develop an ex-situ propagation protocol, establish an ex-situ population and monitor the natural habitat of the species. Vegetative propagation methods were tested: cutting propagation was more successful (33.33% of the sprouts were survived) than micropropagation (0% survived) because of the high rate of infections in the cultures. Habitat of the in-situ population (in Szőce) was also studied and we found an extremely high interspecific competition which can endanger the in-situ population. Further propagation, reintroduction and habitat restoration are in progress.

Ungulate impact monitoring: a tool for adaptive forest ecosystem management

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Ungulates steer the dynamics of vegetation and the actual ungulate impact is also influenced by the forest habitat characteristics. The pattern of ungulate impact is a bio-indicator to evaluate forest naturalness and recognize regulatory effects. Our aim was to establish an ungulate impact monitoring system. Data collected in various forest types in Mátra. We set up a database and created a decision tree based on “ungulate-forest” relationships to evaluate, separate problems and benefits related to ungulates. This system will help defining operative management aims; data will be used in the management planning of the surveyed SAC sites for management instructions.

Metallic mining hazards to terrestrial wildlife

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The talk is about a review of terrestrial fauna research in polluted environments such as mining sites. Conservation of wildlife inhabiting polluted sites should start with the production of scientific knowledge, which must be later applied. I did a scientific literature review of papers published in international journals regarding metallic mining contamination over terrestrial and semiterrestrial wildlife. I used search engines such as Web of Science and Google scholar. There is a lack of scientific knowledge reflected in a low number of papers regarding this kind of pollution despite the great relevance that mining pollution has over the environment, and it is even lower in active mines and in mining accidents. It points out the lack of scientific knowledge and the relevance of having such basis in order to develop conservation programs of fauna in mining sites, and to move towards a sustainable and safe mining.

Germination of species used for restoration of open sand grasslands

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There is a great need for germination data of sown species used for restoration of semi-natural grasslands. The aim of study is to collect data on the seed weight and germination of sown species and to compare it with seed databases. The seed weight of 17 species was measured and the germination of 400 seeds was tested without and with cold treatment. We have new data on the germination percentage of species. Significant difference was not found between the germination under the two treatments. Our results complete the knowledge on seed germination and can contribute to cost effective restoration planning.

Bat conservation in Cusuco: a place with a particular approach

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Progress towards nature protection in developing countries usually falters due to lack of financial resources, technical capacity or stakeholder collaboration. OpWall has been running its project in Cusuco National Park since 2006 using standardized methods to monitor the effects of anthropological disturbance on cloud forest diversity over time. Key strengths of the approach include the capacity to address local scale ecological patterns, anthropogenic impacts, and management needs. Bat research is dedicated to determine certain trends (such as species richness and composition) extracted from the monitoring data collected during years and constitute further research outputs being published in the peer-reviewed literature.

The effect of herbivores on tree seedling establishment in subarctic peatlands

Fanny Olsthoorn

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Peatlands are known to store about 30% of the global carbon pool. They are very vulnerable to climatic changes: melting of permafrost and increased drought events have caused woody expansion, considered one of the most rapid changes observed in forest-tundra regions. Herbivores could slow down this process by browsing on young tree seedlings. We experimentally assessed the role of herbivore browsing (birds, voles and reindeer) on tree seedling establishment in subarctic peatlands of northern Finland through a cafeteria experiment. Additionally, we performed an explorative study to relate rodent abundance to reindeer presence, permafrost presence, micro-topography and vegetation structure.

Does the human disturbance lead to changes in habitat use? - Responses of roe deer to live brown hare capture

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We examined roe deer's behavioural responses to human disturbance. We analysed the daily home ranges and the movements of radio-collared roe deer (n=5), comparing them between periods of low and high disturbance, e.g. when hunters captured living brown hares nearby. In our study, this short time human activity caused no significant changes in the movements of roe deer. The captures might have caused disturbance only for those individuals that stayed directly in the capture area. On the hare capture days, the individuals usually escaped from the capture area for the time of capture, and shortly after they returned.

Unique microbial flora in soda pans - hidden treasures of the Carpathian Basin

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Pannonic sodic areas are considered as unique, threatened habitats of priority interest within the European Union. This fact gives new tasks and new challenges to science and nature conservation alike. Shallow soda pans – which are intermittent alkaline lakes that frequently dry out entirely by the end of the summer – are protected ('ex lege') in Hungary. These soda pans (wetlands) are very important cross-continental migrating and breeding sites for aquatic birds (Ramsar-sites). Regarding the physical and chemical characteristics, these pans are 'world champions' in many respect: they have extremely high inorganic turbidity (which cause light limitation), high plant nutrient (N, P) and organic matter content, high pH and salinity. As a result, their microbial flora is unique with the dominance of pico-sized (< 3 μm) algae and extremely high abundance of heterotrophic bacteria. Moreover, the distribution of a newly described picoplanktonic green alga (*Chloroparva pannonica*) was restricted to these pans. Their microbial flora has also another special character according to our latest results: the so-called aerobic anoxygenic phototrophic (AAP) bacteria - which use near-infrared radiation to generate metabolic energy – are extremely abundant (~ 100 million cells per milliliter) in these pans. These abundance values are the highest ever found in aquatic environments. The study was sponsored by OTKA PD112449.

Analysis of the impact on the brown hare (Lepus europaeus) population in Hungarian AES

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Intensive agriculture can cause a reduction in animal population densities in case of species living in agricultural areas. Monitoring these programs are essential for both economic and conservation point of view. In a large-scale survey we have investigated hare hunting bags and population densities, while in a small-scale survey we have recorded the parameters of each parcels, as well as hare droppings. It seems that in Hungary, large AKG grasslands can affect brow hare population negatively, while arable lands have no detectable, or weakly positive effect. In small-scale studies we have found higher density hare and hare dropping in AES of arable areas. Our method can present a good protocol for future researches that aim to examine similar agrienvironmental areas.