

THE IMPORTANCE OF ECOSYSTEM REGULATION FUNCTIONS FOR MANAGEMENT PLANNING: LOOKING BACK AT THE ACTIONS AND OUTPUTS OF THE INTERNATIONAL SEMINAR

Nuno GUIMARÃES¹, Jana ĎUROVÁ², Daniela DOBRÍKOVÁ¹, László SZEMETHY³,
László PATKÓ³, Peter URBAN¹

¹Katedra biológie a ekológie, Univerzita Mateja Bela, 974 01 Banská Bystrica; urbanlutra@gmail.com, nunguimaraes08@gmail.com

²974 11 Banská Bystrica, janadurova@gmail.com

³Szent István University – Institute for Wildlife Conservation – Hungary; laszlo.szemethy@gmail.com

⁴International Council for Game and Wildlife Conservation (CIC) – Hungary; patkolaszlo88@gmail.com

Abstrakt

Dňa 11. októbra 2016 sa uskutočnil medzinárodný seminár v priestoroch zoologickej záhrady Medveotthon (Medvedia farma) vo Verešgyház v Maďarsku. Organizovala ju Katedra biológie a ekológie Fakulty prírodných vied Univerzity Mateja Bela v Banskej Bystrici, Ústav ochrany prírody Univerzity Szent István v Gödöllő v Maďarsku, ZOO Medveotthon a Ligy na ochranu zvierat Biely kríž z Maďarska. Zo širokého spektra krajín sa na seminári zúčastnili vedci, mladí vedeckí pracovníci, študenti, učitelia, pedagógovia, podnikatelia a verejnosť: Maďarsko (10), Slovensko (18), Poľsko (2), Portugalsko (1), USA (1), Belgicko (1), Česká republika (1), Francúzsko (1) a Škótsko (1). Tento inštruktážny seminár prezentoval stav, riadenie a monitorovanie veľkých šeliem a kopytníkov, ich osobitný vplyv a vplyv na regulačné funkcie ekosystémov s využitím zahraničných skúseností. Cieľom tohto článku je uviesť hlavné myšlienky vyjadrené na tomto seminári s krátkym obsahovým popisom všetkých prezentácií.

Kľúčové slová: veľké šelmy, kopytníky, ekosystém.

Abstract

On the 11th of October 2016, an international seminar took place in the premises of Medveotthon ZOO (bear farm) in Verešgyház, Hungary. It was organized by the Faculty of Natural Sciences, Department of Biology and Ecology, from *Matej Bel University*, Banská Bystrica, Slovakia, the Institute for Wildlife Conservation, *Szent István University*, Gödöllő, Hungary, the host *Medveotthon ZOO*, a bear and wolf Sanctuary and the *White Cross Animal Protection League* from Hungary, with which the ZOO have a protocol of cooperation. From a vast variety of countries, researchers, young researchers, students, teachers, educators, entrepreneurs and public, composed the audience of the seminar: Hungary (10), Slovakia (18), Poland (2), Portugal (1), USA (1), Belgium (1), Czech Republic (1), France (1) and Scotland (1).

This instructive seminar presented the status, management and monitoring of large carnivores (LC's) and ungulates, and their particular influence and impacts in ecosystems regulation functions. An update of the actual situation of LC's (wolf, bear and lynx) and prey populations (ungulates) and their importance in their ecosystems in both countries.

This article intends to bring to public the main ideas expressed in this seminar presenting a brief content description of all presentations, together with a short review from researcher's presentations and respective abstracts. It resumes the presentation session, the guided visit and to give a global idea of goals of each action.

Key words: Large carnivores, ungulates, ecosystem regulators.

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Introduction

The mayor of the hosting town Béla Pásztor set off this International seminar welcoming the audience. He then made a short review about the history of Medveotthon Zoo where he explained how the town built the idea and implement the project of the creation of the facilities of the ZOO. Medveotthon opened to the public in 24th of November 1998 being the only bear shelter in Central Europe and works as a shelter for wolves as well. He explained the goals and plans of the town for the future of the facilities, the fundamental role in the education of public from all ages and education background, about so much important animals as wolves and bears and the importance of the realization of events like this seminar on their premises.

Dr. Katona, from Szent István University, started the presentation session, with the results of his research study. He researched a monitoring system, which allow the generation and implementation of an assessment on impacts caused by ungulates on ecosystems, based on ecological indicators. The research analysed big game species behavior and functions, as ecosystem engineers. Ungulates presence in some habitats can have a great influence, positive and negative, in the structure and the conditions of the habitat. The results of this research intended to support conservation and management actions of stakeholders. The research revealed that this monitoring system could allow the decision makers to predict where populations are overabundant and where consequent impacts on the vegetation will occur. The ecosystem assessment using these methods can in the future avoid or diminish impacts from the ungulates in their habitat.

Dr. Szemethy and Ing. Gombkötő, with a shared presentation, brought up the past and current situation of the wolf, lynx and bear in Hungary, in terms of status, distribution and the legal features connected with the three species. They explained how the extirpation of LC's has occurred all over the country in the past and how the process of reestablishment, mainly of the wolf population, is taking place.

The three LC's distribution and status in Hungary, presented by Dr. Szemethy, shows how wolves, bears and lynx are concentrated near the border with Slovakia. He explained how important are these corridors with the neighbour country, which allow the migration of individuals. Although, wolf population recolonization is slow and much sensitive process due to cultural and social reasons, he believes that Slovakian LC's population will have a fundamental role in all this process. Referring to the importance of these species as ecosystem regulators, he described that sustainable balance of local ecosystems can be influenced with some relevance to ungulate population numbers. He reinforce the idea that Hungarian legislation, concerning to these three species, urges to be update as last reformulation in the law was made when these species were total absent from the country. To finalize, he pinpointed that besides there is still the need to harmonize research practices in the areas of presence and increase cooperation with Slovak authorities, the actual monitoring methods for surveying LC's are bringing highly confident estimates.

The zoologist of the Büki National Park (BNP), Péter Gombkötő presented how the LC's population have recovered their space in Hungary and their actual status within their distribution

area of the park. He explained the actual monitoring practices in the NP and revealed the most recent results of their surveys. They are confident on the actual situation and results but they are concerned in the general opinion from stakeholders' about the permanent comeback of LC's. He referred that the recolonization is a result from the dispersion of Slovak animals but their distribution range is restricted to the border region. These facts suggest that natural and anthropogenic factors (human infrastructures and poaching) are directly responsible for this confinement of the wolves, but the climate and habitat characteristics of the region can overcome these restrictions in the future if the problem is tackled. He finished with a particular note about the need for more research, in order to understand deeper these limit factors that affects the natural dispersion of wolves and bears in Hungary.

Szép Ábrahám, CEO of the Kuvasz club in Hungary, followed with an interesting descriptive intervention about the work and aims of the club. They are presently promoting the use of the traditional breed of Hungarian guardian dogs used for protection of livestock. He had a short intervention where he presented his work with these guardian dogs and explained their relevant use in the past in the protection of livestock herds from LC's. He finished by giving some examples of the success of the club and the actual projects to incentive the use of these dogs to prevent and decrease the occurrence of predation for times when LC's will fully establish in Hungary.

Nuno Guimarães, a Portuguese PhD student from the Matej Bell University, reviewed the past, present and future of the wolf population in Slovakia and the need of a continuous monitoring system for the species. He showed how distributed is the wolf home range in the country, occupying at present 40% to 60% of the territory. Also showed factors that determine the wolf in Slovakia as a stable population with an accepted estimation of the number of wolves of approximately 300 individuals. He addressed the management of wolves as a game species and that regulation period is done from the 1st of November until the 15th of January, according to an annual quota determined by the Minister of Agriculture, based on many meetings with various stakeholders. He stressed that quota values are distributed by counties as a response to local damage caused by wolves in livestock and game species but compensation values are not so high as in other European countries. He referred that wolf conservation measures and laws implemented in Slovakia in the late years, as the wolf management plan in 2016, followed European Union initiatives for the sustainable conservation of the LC's' species. The author highlighted the reinforcement of wolf year round protection areas mainly on the border region with Poland, Hungary, and Czech Republic and the full protection of the breeding pairs. Guimarães conclude that an adequate management of the species will play an important role in the sustainability of the wolf's population in ecosystems in Slovakia and in the neighbouring countries.

From Idaho Dept. Of Fish and Game, USA, Gregg Losinski closed the seminar lectures, presenting the situation of carnivores and ungulates in the USA. He specifically explained the North American Model for Wildlife Management in practice by the governmental agencies for more than 100 years. He showed how the process of cooperation and compromise between

stakeholders is one of the main keys for the success of this management model, which contributes to a favourable sustainability of the species, not just carnivores but also ungulates.

To finalize the event, educators and animal handlers István Szilágyi and Dóra Dömötör, from the *White Cross Animal Protection League*, guided the participants on a tour through the park.

ABSTRACTS

Natural disturbances by ungulate species in forest ecosystems

KATONA K., FEHÉR Á. & SZEMETHY L.

Szent István University – Institute for Wildlife Conservation

Ungulate populations in Europe have increased during the last decades. This is a source of different conflicts to biodiversity conservation. Successful conflict management would require deeper understanding of ecological complexity of ungulate-habitat relationships. In Hungary, there are also serious conflicts linked to the “intolerable” impact of “overabundant” red deer and wild boar. The unbalanced definition of the role of ungulates in the ecosystems leads to causal oversimplification focusing only on their excessive negative effects. But red deer and wild boar are native ecosystem engineers, causing various natural disturbances and having regulatory functions in the near-natural ecosystems. They can modify the spatiotemporal vegetation patterns in forest ecosystems resulting in uneven hiding place and food supply distribution both, for other herbivores and carnivores. Neglecting their positive and regulatory effects and low consideration of the joint impact of different factors in the related conservation issues makes the implementation of adequate conservation measures difficult. We elaborate and apply an ungulate impact monitoring system in Hungary supporting conservation and management decisions. Standard and comparable evaluations based on ecological bio-indicators, provide a tool to predict the relative overabundance of ungulate species and the overutilization of vegetation. Field studies were carried out in June 2014 at 2100 sampling points in the 7 SAC area of Mátra Mountains region. Based on our results understory was lacking at more than the half (55%) of the sampling points. Browsing occurred only on the 48% of the remaining sampling points where shoots of woody plants were available. Browsing ratio was the highest on dogwood, wild privet, hornbeam, and ash. Debarked trunks were only found on the 5% of all sampling points, while on 66% of the points no injured trees were registered. Wild boar rooting occurred at 14% of all sampling points. In most cases, the grubbed area of the rooted sampling points was less than 25%. Based on our evaluated data, the general catastrophic ungulate impact in the forests of Mátra Mountains could not be confirmed. Our results reveal that the important ecological role of selective ungulate feeding can be obvious especially in case of close to nature forest management. In those, more diverse areas the less “prioritized” woody species are mainly selected and the total ungulate impact is also at a moderate level. Selectivity patterns, therefore, can provide a useful set of bioindicators of forest naturalness. We urge to apply an ungulate impact monitoring system helping conservation and management decisions in Hungary, which predicts the relative overabundance of ungulate species and the overutilization of forest vegetation based on ecological indicators.

Current problems of large carnivore conservation in Hungary

SZEMETHY L.¹ & GOMBKÖTŐ P.²

¹Szent István University, Institute for Wildlife Conservation

²Bükk National Park Directorate

Wolf, lynx and bear disappeared in XIX-XX century from Hungary. Due to spontaneous recolonization from the Slovakian parts of the Carpathians, increasing number of individuals was observed in North-Hungary and all the three species are strictly protected.

Permanent occurrences and breeding of wolves were detected in Bükk Mountains and Aggtelek region and several sporadic occurrences were observed on other areas. The numbers have increased in the last decade, now it could be 25-30 individuals to a maximum. Lynxes show sporadic occurrences in Northern Mountains, where 5-10 individuals live. The population trend is doubtful. Bears were observed more frequently last decade than earlier, but at low numbers, 1-5 individuals. As the population densities are very low, human-large carnivore's conflicts are rare.

Hungary is in special situation of LC conservation. We are on the edge of the distribution area where spontaneous recolonization is in progress since the eighties, but it still has not resulted in stable populations. Consequently, the main goal of LC conservation in Hungary is to stabilize the occurrence and form breeding populations. The causes of the failure are still not known. The most popular explanation is the illegal killing, but very few cases were proved. The habitats are concerned good and similar to Slovakian ones, but detailed habitat suitability analyses are still lacking. The influences of the management and status of source populations and the permeability of corridors are also not known. To promote the recolonization more intensive transboundary cooperation, synchronisation of different management activities and more focused conservation plans on appropriate space and time scaling are necessary.

The legal and administrative background of LC conservation exists since 1996, when the act on nature conservation was codified. A Life Nature project gave LC conservation a stimulus in 2001-2006. Conservation plans for wolf and lynx (but not for bear) were accepted in 2004, and multilevel countrywide monitoring system was elaborated. The conservation plans must be updated in the next years. The monitoring does not function on whole country nowadays, but NPs along the Slovakian border carry out different ways of monitoring. Methodology has been improved with analysis of genetic markers and automatic cameras in the last years. Countywide monitoring for LCs, unified up-to-date methods and more equipment are needed.

The Grey Wolf (*Canis lupus* L., 1758) in Slovakia: Past, Present and Future

GUIMARAES N., ÁLVARES F. AND URBAN P.

Department of Biology and Ecology, Faculty of Natural Sciences, Matej Bel University Banská Bystrica, Slovakia

Slovakian grey wolf is part of the Carpathian population, one of the largest wolf populations in Europe (3000 individuals). The wolf is a native species in Slovakia and despite the low numbers reached during the 70's they never became extinct in the country. Until then wolves were treated as a pest and were persecuted all over the country, hunted and poisoned. Despite the implemented laws for its protection and conservation, attitudes toward the species struggle to change mainly because of myths and tales that still prevail in various local communities.

Nowadays wolf distribution covers approximately 40 to 60% of Slovakia territory with 200 to 400 wolves estimated to roam through the landscapes of the country. Average pack size is between 4 to 6 individuals and each pack territory varies between 80 to 200 km². In Slovakia, wolf diet composition is mostly on wild ungulates, with their diet composed by: 70% Cervidae, 22% wild boar (*Sus scrofa*), 5% rodents, 1% livestock and 2% other food items.

Wolves are regulated in Slovakia by internal laws (Hunting act and environmental act) and under the EU Habitat Directive (92/43/EEC) Annexes II and V (derogation). The annex V allows the management of protected species and an annual quota is established by the Ministry of Agriculture and Rural Development in Slovakia. The quota determines the possible number of wolves allowed to hunt in the open season (1st of November until 15th of January). Slovak government, following European guidelines on EU legislation, launched some conservation measures. Actually, it is implementing a new management plan for wolf. The creation of protected areas some of them near international borders, are of extreme importance and they were specifically designed for the full year protection of wolves. This might turn in a giant step not just for the wolf conservation but also for a sustainable ecosystem conservation.

The North American Model for Wildlife Management at Work in the Western United States for the Recovery and Management of Large Carnivores

Gregg LOSINSKI

Idaho Department of Fish & Game/Interagency Grizzly Bear Committee, USA,
glosinski@idfg.idaho.gov

The North American Model for Wildlife Management has been utilized by natural resource management agencies in the United States for nearly a century. In the western United States where a majority of the lands are owned and managed by various state and federal agencies the model has not only proven successful for the management of traditional game species, but also the recovery and protection of many sensitive species and their habitats.

Over the past twenty years, the United States Federal Government in cooperation with local and state governments have cooperated together with native tribes and private organizations to recover large carnivore species such as the gray wolf (*Canis lupus*) and grizzly bear (*Ursus arctos horribilis*). The success of the recovery, protection, and management of these species has been due to a cooperative approach of addressing biological and societal concerns.

Visit to bears and wolves premises in the Sanctuary

István Szilágyi and Dóra Dömötör

White Cross Animal Protection League, Hungary

These two much experienced handlers of the Wolves guided a pleasant visit to the park. Participants could learn about the goals of Red Cross association connection with Medveotthon as a rescue centre for LC's. The wolves and bears from the park have been, either donated or confiscated from: Zoo's, private collectors and other exhibitors. Most of the times these animals were kept in poor conditions for living, particularly in terms of space, comfort, safety and quality of the enclosures. Their work allows these rescued animals to have a better life and to become ambassadors of the species. These ambassadors are a so special and fundamental tool to educate the visitors about the species life and behaviour in the wild. At the same time gives an opportunity for common citizens to be in close range contact with these animals, what otherwise with be mostly impossible. Life in the sanctuary is not always easy as the sanctuary struggle with space and financial funds in a way they wold increase the welfare of the animals. Their work is mostly granted and supported by donations made from privates and visitors to the park and is normally in form of money, food and construction material for maintenance of the enclosures. People from all ages and from different parts of the world visit the facilities and learn about LC's. Nevertheless, the biggest aim of Medveotthon is to bring a clarity of the real value of these species and the so misjudged behaviour and to break cultural myths about LC's.

NOTES FROM THE SEMINAR

The actual situation of prey and predator in both countries described during the seminar is clearly different. Population's size, habitat, availability and human pressures on the species (e.g. legal and illegal hunting) are largely different. In Hungary the absence of the LC's for so long time, can justify why population of ungulates increase in numbers (red deer and wild boar). There is at present regulation on hunting ungulates to decrease their numbers, but it seems to be insufficient to control and stop the ungulate population proliferation. According to the models presented in the seminar, ungulates species without an effective natural predator as the wolf can negatively modify forests ecosystems in a spatiotemporal pattern. The natural control of ungulates by wolves can be an answer to minimize these impacts. However, the success of the natural returning of LC's into Hungary is not just dependable on isolated decisions made by Hungarian authorities or good internal management. The cooperation between Hungarian and Slovak authorities is necessary and some readjustment of laws must be implement with consensus of the two sides. When compromise and responsibility is achieve from decision makers, the sustainability of biodiversity can be assure and adequate to allow future generations to contemplate both predator and prey and the habitats they live today.

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Fig. 1: Béla Pásztor, the mayor of the hosting town Veresegyház welcoming the audience.

Obr. 1: Béla Pásztor starosta host'ujúceho mesta Veresegyház.



Fig. 2: Dr. Katona from Szent István University, presenting his project results about ungulate species in forest ecosystems.

Obr. 2: Dr. Katona zo Szent István Univerzity hovorí o kopytníkoch v lesných ekosystémoch.



Fig. 3: Dr. Szemethy, Szent István University, presenting the status of large carnivores' conservation in Hungary.

Obr. 3: Dr. Szemethy hovorí o aktuálnom probléme o ochrane veľkých šeliem v Maďarsku.



Fig. 4: Ing. Péter Gombkötő, the zoologist of the Büki National Park, presenting monitoring practices of large carnivores in the NP.

Obr. 4: Ing. Péter Gombkötő, zoológ z Büki národného parku hovorí o monitorovacích praktikách v NP.



Fig. 5: Szép Ábrahám, CEO of the Kuvasz club in Hungary, with an exemplar of the breed.

Obr. 5: Szép Ábrahám, výkonný riaditeľ Kuvasz klubu v Maďarsku so psom.



Fig. 6: Ing. Nuno Guimarães, Matej Bel University, introducing past, present and future of Grey Wolf in Slovakia.

Obr. 6: Ing. Nuno Guimarães, UMB hovorí o minulosti, prítomnosti a budúcnosti vlka dravého na Slovensku.



Fig.7: Gregg Losinski, Idaho Department of Fish & Game, presenting the situation of carnivores and ungulates in the USA.

Obr. 7: Gregg Losinski z Idaho prezentoval situáciu veľkých šeliem a kopytníkov v USA.



Fig. 8: István Szilágyi and Dóra Dömötör with two wolf cubs, which will work as ambassadors of the species.

Obr. 8: István Szilágyi a Dóra Dömötör s dvomi vlčatami, ktorí budú slúžiť ako ambasádori tohto druhu.



Fig. 9: The poster of the seminar.

Obr. 9: Plagát k semináru.

