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Alfred Toepfer Natural Heritage Scholarships

Study tour report

Grassland Management in Protected Areas. A Study on the Implementation of the EU Biodiversity Strategy in Certain Post-Communist Countries

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The Alfred Toepfer Natural Heritage Scholarships offered me a unique opportunity to expand my experience in the field of protected area management and to establish possibilities for international cooperation and network in what concerns my scientific and professional career.

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Summary

The EU Biodiversity Strategy 2020 proposed to halt the biodiversity loss and the degradation of ecosystem services in order to fulfill the objectives of the CBD. However, no significant overall progress has been achieved in the EU since 2011. The policy implementation is a slow process and its success depends from one member state to another. The objective of the study was to gain an overview on the implementation of the EU Biodiversity Strategy with emphasis on grassland management in different protected areas from Hungary, Slovakia and the Czech Republic. The scholarship consisted in (i) the visit of six protected area headquarters and field trips on grassland areas; (ii) presentation on the implementation of EU Biodiversity Strategy, data collection and (iii) interviews/discussions on public administration structure, administration of the protected area, management plans, monitoring of grassland habitats/species, rewarding systems and collaboration with stakeholders. The targeted countries face similar challenges when implementing and harmonizing the agricultural and conservation policies nationally, rising from the history of political systems, changes in property rights and land use after the communism and the similar amount of time within the EU.

1. Introduction of authors' curriculum, motivations and expectations

I was born in Romania on 24th of November 1986. I have studied environmental and agricultural engineering in Cluj-Napoca. Short time after, I have worked for the Environmental Protection Agency Cluj, dealing with nature conservation policy implementation and protected area administration. Being inspired by my public servant experience, I chose for my PhD theme the conservation of grassland habitats in the Apuseni Nature Park (Romania) following in details the conservation of nature and the implementation of agricultural policy. During a DBU scholarship program I focused mainly on the same subject in the Southern Black Forest where I have performed a comparative case study between Romania and Germany (Baden-Württemberg). Currently I am a researcher at the Sapientia Hungarian University of Transilvania in Cluj-Napoca, Romania (<https://ecosystemservice.wordpress.com/>).

The topic and experience offered by the fellowship from EUROPARC fits very well with my background and overall subject of interest, therefore I chose the Theme B - Implementation of the EU Biodiversity Strategy in the European protected areas.

I applied for this scholarship because it was a great opportunity (i) to gain more international experience as a young scientist in the field of nature conservation and policy's implementation in the post-communist countries; (ii) to acknowledge different cases in order to compare the findings with the Romanian situation.

My expectations from this scholarship were to (i) acquire a better understanding and comparison of the everyday situation and particular experiences of the experts from other post-communist countries on the implementation of EU Biodiversity Strategy; (ii) establish a network for internationally and interdisciplinary collaboration in order to improve the links among the academic and administrative knowledge domains and contribute to the problem-oriented knowledge in the case of grassland habitats; (iii) to contribute to the improvement of implementation of EU Biodiversity Strategy in protected areas in Romania in the future.

By the Alfred Toepfer scholarship, I deepened my practical experience by visiting protected areas in different countries and discussing the problems with key persons actively involved in the field of nature conservation. I gained a various experience and got in contact with very skilled nature conservationists from the visited countries, making me feel that I've earned more than I was expecting.

2. General introduction to the topic

The new EU Biodiversity Strategy proposed to halt the biodiversity loss and the degradation of ecosystem services by 2020. It is an integral part of the Europe 2020 strategy 6 and the 7th Environmental Action Programme and implements EU commitments under the Convention on Biological Diversity. However, it seems to be an ambitious proposal, built around six targets, each supported by a set of actions. For this topic the most important targets were followed, namely Target 1 (Habitats and Birds Directives) and Target 3A (Common Agricultural Policies). These are the meeting points where conflicting policy implementation must be harmonized especially in the case of semi-natural grasslands.

The targeted countries face similar problems when implementing and harmonizing the agricultural and conservation policies at nationally, based on similar history of political systems, changes in property rights and land use after the communism and the similar amount of time within the EU.

The lack of and the weaknesses in the collaboration between the responsible authorities for agriculture and nature conservation are creating a series of difficulties in the implementation process at different levels of public administration. The integration of the Natura 2000 network within the management of IUCN categories of protected areas and the implementation of the EU's nature conservation policy is still a challenge for the authorities. The lack of knowledge transfer enlarges the gap between the scientific knowledge and public administration and also between domains (agriculture vs. nature conservation).

Linking my experience in public administration with my scientific experience, I have become interested in how this gap could be bridged in the case of grassland habitats. Comparing that situation with the one in Romania, I observed that the problems' backgrounds are very complex and mainly having to do with the strength of the public administration and economic issues.

The objective of the study visit

The aim of the study consisted in visiting protected areas within some post-communist countries of Europe, in order to gain a better understanding on the implementation of the EU nature conservation policy and agricultural policy. The objective of the study was the *comparison on the implementation of the EU Biodiversity Strategy with emphasis on grassland management in different protected areas in Hungary, Slovakia and the Czech Republic.*

Activities:

- visit of the area headquarters and field trips on grassland areas;
- presentation about the implementation of EU Biodiversity Strategy on grassland habitats, data collection;
- Interviews/discussions with experts on five core aspects: administration of the protected area, management plans, monitoring of grassland habitats/species, rewarding systems and collaboration with the stakeholders.

3. Short description of the visited protected areas

3.1. Hungary

List of detailed activities in Hungary

Pictures

Hortobágy National Park (HNP)

The HNP located in the Great Hungarian Plain in the eastern part of Hungary and represents an outstanding example of a harmonious interaction between nature and people (e.g. pasturing). The landscape is shaped by specific land-use practices such as free grazing on alkaline pastures, steppes, meadows and wetlands. During the communism this area was subject of important land-use changes (afforestation, draining of wetlands, plugging, etc.) in order to become practicable for agricultural purposes. Luckily, in 1973 the HNP was designated and since then it became the most important national park of Hungary being as well UNESCO Biosphere Reserve.

The HNP Directorate is responsible fully for the administrated territory (which mainly is a national property) and it is owner in a proportion 24% of the land.

Bükk National Park (BNP)

The BNP is the largest national park, designated in 1977, for its mountainous and forested areas of the Bükk Mountains. The most important geological features include various karst formations, particularly caves, swallow-holes, and ravines. Forests cover 95% percent of the national park and only 2.90% is represented by grasslands. It was founded in 1976 as the third national park in the country.

The BNP Directorate is responsible for only 2.5% of the national property management. The national property represents almost 98% of the territory and it's administrated by two important forest corporations. The animal husbandry has declined in the area in the period of 1960-1970.

3.2. Czech Republic

List of detailed activities in the Czech Republic

Pictures

White Carpathians Protected Landscape Area (WCPLA)

The WCPLA was established in 1979, copying the border between Slovakia and the Czech Republic approximately 80 km long. White Carpathians are located in the southwest end of the Carpathian Mountain range, which includes the highlands and mountainous areas from Moravia.

Its importance is given by the landscape of large meadows with scattered fields, orchards and pastures, which have been managed in coexistence by man and nature. This territory is characterized by a high diversity of orchids in Central Europe and it is a UNESCO Biosphere Reserve (e.g. the best known nature reserves for floristic compositions are Certoryje, Zahrady pod Hájem and Javorina).

The Administration of Bílé Karpaty is responsible for the management and administration, representing a regional branch of the Agency of Nature Conservation and Landscape Protection of the Czech Republic.

Krkonoše Mountains National Park (KMNP)

The KMNP was founded in 1963 as the first national park in the Czech Republic. The Krkonoše Mountains are located northeast of Bohemia, spreading all over to Poland. Consequently, this area represents a mighty and natural barrier on the perimeter of large open plains in Germany and Poland. Among the treasures of this area are included the unique northern tundra on the mountain range and its representative flora and fauna. Therefore, Krkonoše Mountains are a truly important area for geo-biodiversity in Central Europe. The area was declared as UNESCO Biosphere Reserve.

The KNMP Directorate in collaboration with the Polish part are responsible for assuring the wildlife and landscape conservation in the Krkonoše Mountains and the management of the national park.

3.3. Slovakia

List of detailed activities in Slovakia

Pictures

Nízke Tatry National Park - Low Tatras National Park (LTNP)

The LTNP is situated in Central Slovakia, between the Váh River and the Hron River valleys. First attempts of the protection process started within 1918-1921 and right after the World War II, but the official designation was accomplished only in 1978.

The Low Tatras Mountains are the most remarkable geographical and relatively highly ecologically stable territory of Slovakia just after the High Tatras. The area represents a huge mountainous arch heading from east to west in 100 km. The flora of the LTNP includes mainly mountainous species but also alpine plant species.

The authority responsible for the management is part of the State Nature Protection of the Slovak Republic.

Velka Fatra National Park - Great Fatra National Park (GFNP)

The GFNP is mostly situated in the southern part of the Žilina Region and a small part in the northern part of Banská Bystrica Region. The national park was declared in 2002 as an upgrade of the Protected Landscape Area with the same name, established in 1971. The area is important for the protection of a mountain range with a high percentage of well-preserved Carpathian forests. Beside the forests, the main characteristic features of this park are represented by its wide meadows.

The authority responsible for the management is part of the State Nature Protection of the Slovak Republic.

No.	Visited protected area	Country	Contact persons
1	Hortobágy National Park web: www.hnp.hu	Hungary	Dávid Bogyó , biologist/project co-ordinator Hortobagy National Park Directorate e-mail: bogyodavid@hnp.hu
2	Bükk National Park web: www.bnpi.hu	Hungary	Schmotzer András research adviser Bükk National Park Directorate e-mail: schmotzera@bnpi.hu
3	National Park Nízke Tatry (Low Tatras) web: www.napant.sk	Slovakia	Ján Kadlečík - State Nature Conservancy, Head of the environmental education and international cooperation jan.kadlecik@sopsr.sk Libor Ulrych - State Nature Conservancy, botanist libor.ulrych@sopsr.sk
4	National Park Velka Fatra (Great Fatra) web: www.sopsr.sk/velkafatraweb/en	Slovakia	
5	Krkonoše Mountains National Park web: www.krnap.cz	Czech Republic	Michael Hošek - EUROPARC Council member and Vice President hosek.michael@gmail.com Jakup Kašpar - Deputy director and Head of section of external relations jkaspar@krnap.cz
6	White Carpathians Protected Landscape Area web: www.vis.bilekarpaty.cz	Czech Republic	Ivana Jongepierova president of ZO ČSOP Bílé Karpaty Association ivana.jongepierova@nature.cz

4. Main outcomes

4.1. Overview on the last century

Understanding the actual challenges in nature conservation and the effects of land administration on that, it is necessary to take a look on the historical context of the last century.

If changes in a decade of time-laps are considered, it becomes obvious that dramatic political changes have taken place in the CEECs including several land reforms, two shortly upcoming world wars, establishment and collapse of the communist regime and the accession to the market economy of Europe (Bogaerts et al., 2002). All the changes have generated shifts in the boundaries of different countries and large transmigration of people (Germans from Czechoslovakia and Sachsen from Romania), meaning the disconnection of cultural component from several landscapes (Dijk, 2007). The actual management and conservation of grassland can be better understood if the socio-economic changes of the last century are also considered (Hartel et al., 2016).

The land reforms and land management of the 20th century have the highest relevance for nature conservation and protected area management. The abolition of the small-scale farm systems due to collectivization has generated a series of changes in the structure and functions of rural landscapes in Slovakia (Spulerov et al., 2015), Czech Republic (Bičík et al., 2001) Hungary (Burger, 2006) and Romania (Fischer et al. 2012).

The period after the soviet era could be mainly described by the trend of rural-urban migration in the vision of higher living standards. The massive structural changes in the agriculture and land use level, split up the communist cooperatives. The need to develop new market network appropriate for new farming structure urgently overwhelmed the newly formed countries.

While the CEECs were struggling to maintain in the economic competition with well developed countries, important restructuring took place in agriculture in the last 20 years. The privatization of productive agricultural areas happened quickly, while the unproductive ones suffered from the disinterest of investments, bad infrastructure and a restricted production. The most important change, which had repercussions on the grassland management, in general, was the decrease of the livestock.

EU membership not necessary meant only better chances for free market, production and prices, but changes in institutional structures and regulations. An overview on the challenges faced by the visited countries is available in Liebert et al., 2013. The EU Environmental aquis had to be

harmonized with the remnants of the totalitarian communist systems. The most significant period of the accession was and still is the establishment of Natura 2000 network (Hochkirch et al., 2013). The most important EU regulations related to grassland conservation and management are the Habitats and Birds Directives and the Common Agricultural Policy with special focus on the second pillar (rural development) and agri-environmental schemes. The implementation is a slow process and needs in many cases further institutional flexibility in order to achieve the targets of the Biodiversity Strategy.

4.2. The management of protected areas in a changing socio-economic context

The wave of designation of protected areas of national interest arrived in the CEECs in the late 1960s, early 1970s and was focusing on the most valuable zones of the countries. Protected areas were established during the communist era with a top-down approach and with minimal public discussion (Švajda & Fenichel, 2011). Large areas were formally declared with inadequate management resources for their administration (Iojă et al., 2010). Other barriers were the continuously changing social contexts and economic paradigms of the last century. The management and governance of protected areas became significantly more complex when power and landownership were decentralized.

The collapse of the communist system had negative socio-economic consequences, especially in the countryside. The disconnection of generations from their land, changes in traditional practices (e.g. paradigm changes toward production oriented agriculture) was the most significant losses of the century from the nature conservation point of view.

After the communist era and before EU accession the CEECs nature conservation was struggling with complex and multilevel challenges. On political level, despite the fact that the CEECs ratified most of the international nature conservation agreements (even in communist period) the nature conservation and protected area network development was lacking for the political will and support. On economic level the pressure on protected areas was represented by agricultural encroachment, commercial overharvesting of natural resources, chaotic infrastructure development. On social level, despite the raising awareness of people on natural values and ecosystem services, nature conservation was still facing insufficient outreach and partnerships, lack of community support and lack of enforcement (Stringerc& Paavola, 2013).

Despite the negatives, nature conservation initiatives have been starting to occupy a niche and have become an important discussion partner and decision maker for development plans and

projects. For example, some directorates of the national parks in Hungary (e.g. Hortobágy) become landowners on significant amount of the protected area or are responsible to administrate the state property. In the White Carpathians significant grassland areas were bought by nature conservation and restored to their initial status (hay-meadow), being transformed in arable land during the collectivization.

The EU accession included a set of new regulations and institutional changes for the new member states. Fulfilling the requirements of the Habitats and Birds Directives quickly overshadowed the ongoing conservation initiatives for national ecological network. Harmonizing of the Natura 2000 areas management with the national categories is the most difficult aspect. Definitely, several meaningful possibilities become available with EU membership for the CEECs like professional network, transboundary management and EU funds for conservation (Krenova & Kindlmann, 2015).

Unilateral focus on policy implementation failed to deliver the expected results (e.g. unfavourable conservation status, lack of success of the invested money through different programs). Overall the lack of a complex and holistic understanding of the conservation problems in their social-ecological systems context (e.g traditional cultural landscapes) makes the positive outcomes of the conservation policies harder.

4.3. The gap between policy and practice

The mid-term report in 2015 on the Biodiversity Strategy 2020 concluded that overall, no significant progress has been achieved since 2011 (European Commission, 2015). The policy translation into concrete national, regional and local level actions is a slow process; its success depends from one member state to another.

Taking in account the history of political changes and the structure of public administration, the former communist countries face a series of other challenges than the old member states (e.g. property right shifts, institutional changes, political instability). However, the EU indicators show increasing tendency in the conservation status of the habitats and species (Target 1), the most emergent actions will remain the efficient management of Natura 2000 network and its finance support.

When achieving the objectives of Target 1, the visited countries accomplished different progress. The national strategies can be consulted here: *Czech Republic*, *Slovakia*, *Hungary* and *Romania*. The Czech strategy seems to be the most pragmatic with the actual context of nature

conservation in developing societies. In other strategies still a significant attention is given to Natura 2000 network nourishment and management even after more than 10 years of designation in all of the countries.

The conservation of habitats which depends on agricultural practices (e.g. grasslands, wetlands) is a complex approach even from a political point of view (Target 3A). However, the Pillar II of the CAP target (cover) as well Natura 2000 sites, its effectiveness in protecting biodiversity is disputed, especially in landscapes with a history of intensive farming management. The agri-environmental schemes require major improvement in the CEECs (e.g. to develop result-oriented schemes, specified requirement for different zones, simplified accession) and real harmonization with nature conservation. Weak institutional collaboration exists between nature conservation and agriculture authorities in the visited countries.

The main challenge for the post-communist countries lies in their capacity to (i) harmonize institutional elements at multiple levels; (ii) to create an efficient institutional structure, to be able to efficiently implement EU regulations for the benefit of conservation status and communities which are managing them, and (iii) to address regional, often local issues, raised around the implementation. In addition, the conservation is also underfinanced; the development and implementation of projects needs administrative capacity as well. Obviously, the system itself cannot guarantee a favourable conservation status of the habitats and species, fact demonstrated by the developed countries with more established institutional system and financial power.

Within the EU, grasslands and wetlands have the highest proportion of habitats in an 'unfavorable — bad' or 'deteriorating' status. Their conservation strongly depends on the continuity of an extensive management (e.g. mowing, grazing or mixed use) (Halada et al., 2011). Unfortunately the socio-economic changes of the last century led even in the Czech Republic, Slovakia and Hungary to the deterioration of social-ecological systems (Bogaerts et al., 2002). Disconnection of people from their land was much more impregnated there, than it was in Romania. Therefore, the need for a holistic approach, as well as the re-establishment of social-ecological systems and resilience based perspectives are necessary even in Romania (Plieninger & Bieling, 2013).

Despite its weaknesses in public administration, Romania has an advantage. The land users still maintain the natural functions of the species-rich grasslands using local traditions and knowledge (Babai & Molnár, 2013; Loos et al., 2015). As long as they have a participatory role in the nature

conservation actions, public institutions can profit from the viability of these social-ecological systems (biocultural refugia, sensu Barthel et al., 2013). An ineffective implementation of the conservation and agricultural policy could lead to negative consequences even on the entire cultural landscapes level.

Maintaining land-use and land management practices within the cultural landscape is not an active and conscious choice of the farmers. The land users are more connected with these semi-natural systems than institutions and they have been creating an informal framework of unwritten conservation rules, which have been respected for centuries. This situation is much more a result of local circumstances (either subsistence or semi-subsistence conditions) (Hartel et al., 2014), which makes the traditional systems highly vulnerable to the new trends in globalization. The knowledge from such informal structures must be integrated within these formal institutional systems.

Organizational changes in the structure of ministries at a central and regional level might be necessary in order to balance the disparities between their responsibilities. Knowledge transfer could also help bridging this gap developing proper solutions and a more flexible and solution oriented governance.

4.4. Comparative analyses between home and visited countries

Governance and management of protected areas in CEECs (Stanciu & Ionita, 2014)

Governance by government type: one central authority keeps the most important role in decision making. There are distinct subtypes available. Hungary has a *centralized governance system*, where most protected areas are managed by the National Park Directorates, subordinated to the ministry.

This situation is partially true, applicable for national parks, in the Czech Republic, where other protected areas (e.g. Protected Landscape Areas) are governed by the Nature Conservation and Landscape Protection Agency of the Czech Republic, being classified into the category of *state governance by national agency*.

The same sub-type is accorded to Slovakia, where the State Nature Conservation of the Slovak Republic is in charge with the coordination of protected area management bodies (Slovak Nature Conservancy), where the decision making belongs to the Ministry of Environment.

Romania's small-scale protected areas can be classified even in *state/governmental governance by regional/local agency or authority* sub-type (central authority can devolve decision-making to local branches of environmental protection agencies), even in *delegated management* sub-type. The delegated management is overall available for all the categories of protected area managers (e.g. public institutions, NGOs), based on a contract of custody (5 years), or a contract of administration (10 years) with the Ministry of Environment.



Fig. 1 Salt steppe vegetation in May (Hortobágy)

Lessons learned in the Hortobagy National Park

- Advantageous situation where the HNP Directorate owns land, or administrative state property; the directorate fulfills administrative functions covering larger areas than the HNP (under protection and not protected). The administrative role is more difficult in Natura 2000 sites due to the variety of property rights and different agricultural activities. Some elements under protection (e.g. kurgans) on agricultural land are still difficult to be practically conserved, even if their protection is well regulated in official documents.
- The HNP Directorate has just a consultative role in the decision making environmental regulation processes, which belongs to the Environment and Nature Protection Inspectorates.
- More governmental support would grant a better support for more competitive capacity of the NP from economic and personnel point of view.
- Actual challenges in grassland habitat management and conservation:
 - pasturing regulation (*who?*, *when?*, *where?* and *which kind of animals?*); to guaranty the optimal SLU/ha in the field in different weather conditions; to adapt pasturing to local and vegetation conditions; pasturing rules are compulsory for the land managers; special attention is given to maintain the traditional land use practices and landscape structure, especially common grazing with local animal breeds (grey cattle, racka sheep) and wild horses;
 - moving regulation (*when?*, *where?* and *how?*); to establish a simple (electronic) mowing registration and monitoring procedure for land managers and rangers; to maintain mosaic moving from a conservational point of view; to adapt mowing in certain species conditions (isolated cases); several research projects and local observations (by rangers) are focusing on increasing the success of policy implementation;
 - several landscape rehabilitation projects have been implemented or are still in progress: elimination of linear establishments (e.g. canals, dikes), replacing open wire lines with underground cable, restoring wetlands, establishment of best grazing practices from a conservation point of view;
 - considerable effort is given to combat the invasive plant species and re-establish the natural herbaceous vegetation;
- Practice-based or experimental research should have a very positive contribution answering the actual questions of grassland management and conservation. Thus, collaboration with the scientific area could be better developed in the future.



Fig. 2 Dry grasslands in May (Bükk)

Lessons learned in the Bükk National Park

- The BNP Directorate has a minimal property right, but plays an administrative role even on areas situated over the limits of the national park. The national state property is administrated by forest corporations; a special focus is given to the management of forest ecosystems; grassland habitats play an unimportant role and are mostly under the regulation of forest management plans.
- The HNP Directorate has just a consultative role in the decision making environmental regulation processes, which belongs to the Environment and Nature Protection Inspectorates.
- More governmental support would grant a better support for a more competitive capacity of the NP from an economical and personnel point of view.
- The conservation of cultural landscapes values plays an important role within the objectives and preoccupation of the national park.
- The BNP Directorate faces difficulties in the active management of grasslands (unfavorable conservation); to re-establish animal husbandry, hay making and pasturing, due to the actual unfavorable economic conditions for farmers (e.g. property rights, conflicting objectives with forestry and unfavorable subsidies for extensive farming). Moving activities and animal husbandry has been abandoned mostly in the 1960s-1970s.
- On Natura 2000 areas there are different difficulties (e.g. harmonization of the conservation measures with pasturing or mowing, several property rights forms), but more grassland areas are available.
- Natura 2000 management guidelines should focus more on the description and delineation of permitted activities instead of the presentation of prohibited actions.
- Considerable effort is given for combating the invasive woody species and re-establishing the open landscapes, but the following abandonment of agricultural practices makes the rehabilitation impossible on long term.
- Several landscape rehabilitation projects have been implemented or are still in progress.
- Experiment-based projects to develop the best pasturing practices on the Del-Heves area, connected to bird species conservation as well.



Fig. 3 Mosaic mowing of species-rich hay meadows; the remnant plots are refuges for insects and plant species which will be mowed in the following year (White Carpathians)

Lessons learned in the White Carpathians Landscape Protected Area

- The WCPLA is administrated by regional nature conservation authorities; significant NGO support strengthens the meadows conservation in the area, namely by the work of the *ZO ČSOP Bílé Karpaty* (Czech Union on Nature Conservation) and *Vzdělávací a informační středisko Bílé Karpaty* (Education and Information Centre of the White Carpathians).
- Several research projects were implemented or are developing in the area, focusing on mowing and grassland restoration. Monitoring plots and experimental fields were established in order to find practical solution for a conservation oriented grassland management. Important arable land areas were successfully restored using regional seed mixtures.
- The secret of efficient conservation of species-rich grasslands is based on the principles of landscape approach. Instead of static conservation of habitats/species, grasslands are considered as a functional part of the landscape in conservation strategies, developed by active human-nature connectedness during the centuries.
- The most important preoccupation is to focus on farmers needs beside conservation. Therefore, mosaic mowing represented a fruitful compromise for mechanisation and nature conservation. Unfortunately abandonment and plant succession still represents a risk for practical conservation. An applicable solution was land acquisition in protected sites and then ensuring funding for conservation measures.
- Agri-environmental schemes were successfully influenced in the area; therefore just regional seed mixtures are permitted for over seeding. However, the specialized agri-environmental measures are not always fulfilled their purpose when applied on relevant sites. For existing farmer's the conservation oriented grassland management is unusual, obscure and rather demanding. In the course of agri-environment commitment it is impossible to change or adapt the relevant subsidy measure according to the needs of particular species and site conditions.
- Despite the problems, there are significant changes and positive trends, with open minded protected area authorities and managers and pro-active stakeholders taking the lead in changing very centralized protected area government systems into more open and transparent participative systems.



Fig. 4 Traditional agricultural activities were abandoned after World War II; no active grassland management (use) was re-established

Lessons learned in the Krkonoše Mountains National Park

- Positive example of the national park administration. Forests are owned by the state, administrated by the KMNP Directorate. The budget of the national park is 1/3 is given by the Ministry of Environment, 2/3 generated by the national park (e.g. selling timber, projects, museums, education).
- Approved management plan in acceptance of the local communities for 2010-2020. The new plan proposed changes in the initial zonation, which generates a series of debate, but were successfully approved.
- Several research and educational projects were implemented and are in development related to the ecological reconstruction of the grassland habitats, their practical management or about the values of their biodiversity.
- Ecological education has a very important role in the objectives of the national park. The new education centre and educational departments works on very creative and proactive manner in order to inform, involve the local community, tourist in the values of the national park.
- The tourist and tourism management is a real change to the national park (is the most visited national park). The local towns in the proximity of the national park are the most important recreation centres. They were not agreeing with many of the objectives of the national park. Being situated in the buffer zone these communities are the most affected zones by the decisions of the national park and they are the most important stakeholders in decision making.
- Grassland habitats are important from the conservation point of view, but from an agricultural point of view they face similar problems as in mountain areas in many countries.
- Several grassland areas are in the property of the national park (could be rented) or are in private property. The conservation measures and grassland management rules are described in the management plan. The conservation needs often negotiation with local farmers and compromises for agreement.
- Landscape approach plays an important role in the conservation strategies, instead of static habitat and species conservation. Due to the disinterest of locals for agricultural activities, abandonment and natural succession are threatening the grassland habitats in the upper areas.
- The migration of German communities after World War II from the mountain area meant the abolition of traditional farming practices and changes in the farming landscape functions in the area.



Fig. 5 Animal husbandry was mostly abandoned at higher elevations; in some areas grazing is restricted (e.g. stop erosional processes, vegetation protection). Other areas, like on the picture, are not regularly mowed or grazed. Old cooperative farms were restructured in the valleys and are functioning mostly for milk, cheese production.

Lessons learned in the Low Tatra National Park and Great Fatra National Park*

- The LTNP and GFNP are administrated by the Slovak Nature Conservancy. The last 10 years were unfavorable for nature conservation, where the restructurations of the agency downgraded the protected area administrations, reducing the number of professional rangers as well. The number of the employee of the national parks is low.
- The administrations have no property rights in the area. Therefore, influencing human activities in the parks it is quite difficult.
- The conservation activities are focused on the management of the most important habitats and species.
- Abandonment followed by successional stages of reforestation is a threat for the grassland habitats. Many of the grasslands are not managed because the land owners have no interest even since the cooperatives time. The current status of livestock is not sufficient for grazing of existing grasslands; therefore, secondary succession is causing their degradation.
- The management is not too intensive; the area is managed by cooperatives, which were reestablished with new property rights after the communist era. The cooperatives have no interest to manage the hardly accessible grasslands. Because of land restructuration important changes took place in the traditional farming landscapes (e.g. abandonment of small cottages in the mountains, small plots and property borders were eliminated).
- Actual grassland management is much more shaped by the agri-environmental schemes, on which farmers are dependent, but there is not much interest especially for the upper areas.
- The schemes are generally established for the whole county, thus even in successful application the schemes not always fulfill the conservation requirements as well. In the elaboration of agri-environmental schemes the national parks are not directly involved.

*These national parks are situated beside each other and administrated by the same authority. Even if there are small differences in their administration/employee structure, the core messages for my experience are quite similar.

Table 1 Comparison/ Analysis on the most important features

Analyzed aspects	Czech Republic	Slovakia	Hungary	Romania
establishment of national protected area network	<p>1933 - 1938 period of declaration of small scale protected areas.</p> <p>1955 - Establishment of first landscape protection area.</p> <p>1963 - Designation of the first national park (Krkonos National Park).</p> <p>1960s designation of other significant protected areas.</p> <p>Early 1970s quite inadequate nature protection.</p> <p>1992 - Landscape protection initiatives; establishment of the Terrestrial System of Ecological stability.</p> <p>2003 - Present, an active approach to improve the efficiency of protection.</p>	<p>Nature conservation initiatives were common with the Czech Republic during Czechoslovakia.</p> <p>1949 - Designation of the first national park (Tatra National Park).</p> <p>1955 - Slovak nature conservation act.</p> <p>1964 - 1967 Designation of the national protected area network.</p> <p>1993 - Restructuration in nature conservation, due to the separation from the Czech Republic.</p> <p>2002 - New landscape protection and nature conservation initiatives.</p> <p>2004- present initiatives to participate actively in international nature conservation initiatives.</p>	<p>1935 - First nature conservation act and the protection of the most important natural values.</p> <p>1970s - Designation of the first four national parks.</p> <p>From 1977 - Designation of landscape protected areas.</p> <p>1990 - 1997 - Designation of other five national parks.</p> <p>2008 - Significantly important areas are under the Hungarian state's property right and administration of national parks.</p> <p>Present – initiatives to obtain more interest for nature conservation in the actual political strategies and developmental plans.</p>	<p>1935 - Designation of first national park (Retezat National Park)</p> <p>1973-1990 More nature conservation initiatives; protected areas were declared in documents, low budget allocated.</p> <p>1999 - 2000 Foundation of the first three national parks administrations.</p> <p>2000 - Comprehensive list of protected areas of national interest.</p> <p>2004 - Management contracts between the Ministry of Environment and protected area administrators.</p> <p>Present - Initiatives to re-establish the National Agency of Protected areas.</p>
governance and management of protected areas	Delegated to nature conservation authorities at regional level and national park administrations.	Delegated to state nature conservation authority.	Centralized; covered and coordinated by the national parks directorates, based on their operational area.	Delegated to administrators (10 year contract) or custodians (5 year contract).

<p>management plans and conservation measures</p>	<p>Good overall situation of the management plans at national level; public consultation – a long and hard process; every category of protected area has its own management plan, in case of overlapping different protection categories are harmonized together; buffer zones are outside of the limits of the national park.</p>	<p>Weak overall situation of the management plans; slow process because of the complexity of the management categories which often overlaps; buffer zones are outside of the limits of the national park.</p>	<p>Medium overall situation of the management plans for national interest protected areas with compulsory conservation measures; distinct plans - nature conservation guidelines - for Natura 2000 areas with recommended conservation measures; buffer zones are part of the limits of the national parks.</p>	<p>Medium overall situation, debatable quality in some of the cases (first plan); integrated management plans for Natura 2000 and national protected area categories; compulsory conservation measures; buffer zones are inside the limit of the national park.</p>
<p>restitution of land ownership after the collectivization in protected areas</p>	<p>Difficult land restitution procedure, excluding those who left the former territory of Czechoslovakia during the communism; the areas now are mostly abandoned by agricultural activities.</p>	<p>Restituting the property rights but keeping the cooperatives in some of the areas; properties are very fragmented; disinterest of land owners for agriculture; abandonment of less productive areas.</p>	<p>Land bought by protected area directorates/ remained state property; privatization for large farmers; back to old landowners; disinterest for agriculture.</p>	<p>Restitution of property rights to old landowners; 2.8 million holdings (71%) are under 1 ha in size; these are functionally, but not economically, viable small-scale farms, producing mostly for self-consumption; they are not eligible rural development programs.</p>
<p>actual nature conservation priorities for grassland habitats</p>	<p>restoration of species-richness in former arable land; continuity of (traditional) farming practices.</p>	<p>establishment of active management; involvement of stakeholders in conservation</p>	<p>raising the interest for farmers to rent land and keep animals in national parks property.</p>	<p>survival of traditional farming practices and small scale farms; connection of people with their land and nature</p>

5. Potential gaps with objectives and expectations

The objectives of this scholarship were achieved properly, thanks to the openness and collaboration of the contacted persons from the visited protected areas.

My knowledge was substantially improved on historical backgrounds, socio-economical aspects and international environmental policy agreements. Therefore my expectations were fulfilled.

The participation at daily works with rangers in Hungary, botanists in the Czech Republic and representatives of public institutions in Slovakia and the Czech Republic was the most valuable part for my professional and practical experience.

A significant amount of time was given for documentation and literature review in order to answer my raising questions that emerged after the visits.

The allocated time for visits (6 weeks in two phases) was enough just for an overview considering the complexity of nature conservation and administrative framework in the visited countries. It would be nice to allocate relevant time in the future for specific subjects in different countries.

6. Difficulties, limits

I encountered some difficulties at the beginning when I have tried to establish contact with some of the persons, but fortunately, this was successfully solved with the support of the Europarc Federation representatives.

The initial visit plan was easily established and accomplished and I received all the support from the contact persons and directorates of protected areas.

The scholarship coordinating personal from the federation was prompt and helpful in all of the cases. I received the scholarship in proper time to cover all the travel and accommodation expenditures before the trips started.

Conclusions

The political, social, economic and environmental context of the last century has generated complex and synergic challenges for the actual nature conservation of the CEECs. Livestock

changes have the most significant impact on the management and conservation of semi-natural grasslands.

The global environmental preoccupation and signals achieved that the designation of protected area became normality in the late 20th century. The top-down governance type and centralized administrative power favored people disconnection from their land in almost two generation. Therefore the first steps in nature conservation already have created (i) a gap between local communities and authorities and (ii) a formal protection of sites lacking financial support for management, personnel capacity and technical equipment. These gaps were not bridged in all of the cases.

The gaps between public administration, managers of protected areas and stakeholders must be bridged within integrated multilevel governance (e.g. nature conservation *and* agriculture) instead of a domain oriented approach (e.g. nature conservation *or* agriculture). Successful sustainable agricultural practices must be developed and adopted to local conditions in order to respond to the reality's context. In this interaction protected area managers and nature conservation institutions, along with agriculture have a very important role. The continuous knowledge transfer from research to public administration and between institutions could be a huge advantage making the public administration respond more realistically and flexible to the social-ecological systems.

The lessons learned from different protected areas have their own specific importance in every country. Successful conservation of nature is not always depending on circumstances, but on the willingness of passionate professionals to harmonize their objectives. The active involvement of stakeholders in the governance of protected areas could lead to local initiatives which are stronger than global political framework and offer a more practical support to achieve or maintain the favourable conservation status of the grassland habitats. The reconnection of farmers/landowners with their cultural and natural heritage by raising their awareness of the global value of those social-ecological systems could lead to a complex approach and multilevel solutions.

Further comparative case studies might lead to a deeper understanding upon the complexity of the current situation of countries in transition, focusing on the history of political systems, changes in property rights and land use after the communism.

How this study will be used by the author and her employer

This report will be available under my profile of our working group of the Sapientia Hungarian University of Transylvania (<https://ecosystemservice.wordpress.com/agnes-balazsi-phd/>) and other professional network profiles (Researchgate, LinkedIn).

Taking in consideration that this scholarship was a great opportunity to enlarge my experience in the subject of international policy and public administration, this knowledge could be used for insights on the *STACCATO project*¹ in which I am currently employed.

The study results will be published in scientific papers, respecting the ethical requirements. The support of the Europarc Federation, Alfred Toepfer Foundation and person's contribution will be openly acknowledged.

My experience will be shared on courses, presentations or workshops in protected area management and grassland conservation.

Recommendations for protected areas and EUROPARC

I would recommend the following for the Europarc Federation:

- development of a freely accessible platform (database) with details of contact persons from different protected areas in Europe;
- facilitation of joint meetings between managers of protected areas and different sectors (economic, low, administrative);
- collaboration with universities, advertisement for the scholarship between the master students;
- lobby for the European nature conservation policy in order to integrate better the local traditional agricultural knowledge in conservation measures;
- participation in research project which focus more on the practical consequences of policies and the development of flexible political strategies at different levels, which respond better to the social-ecological realities.

¹ STACCATO - Sustaining Agricultural Change Through Ecological Engineering and Optimal Use of Natural Resources

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Recommended documents and websites

22. EU Biodiversity Strategy 2020
<http://ec.europa.eu/environment/nature/info/pubs/docs/brochures/2020%20Biod%20brochure%20final%20lowres.pdf>
23. Carpathian Integrated Biodiversity Information System
<http://www.ccibis.org/carpathian-values/100-nature-protection-and-protected-area-legislation>
24. Czech Nature Conservation and Landscape Protection
http://www.cittadella.cz/europarc/index.php?p=historie_ochrany&site=zakladni_udaje_en
25. Ecosystem Service Laboratory of the Sapientia University
<https://ecosystemservice.wordpress.com/>

26. Family Farming in Romania
http://ec.europa.eu/agriculture/sites/agriculture/files/consultations/family-farming/contributions/adept_en.pdf
27. Hungarian Nature Conservation Authority
http://www.termeszetvedelem.hu/index.php?pg=menu_1729
28. Hungarian Nature Conservation Information System
http://geo.kvvm.hu/tir_en/
29. Protected areas of Romania
http://www.propark.ro/images/uploads/file/manual%20arii%20protejate_net.pdf

Biodiversity strategies

30. Hungarian Biodiversity Strategy 2015-2020
http://www.termeszetvedelem.hu/_user/browser/File/Stragegia/MK15083_NBS.pdf
31. Czech Biodiversity Strategy 2016-2025
<https://www.cbd.int/doc/world/cz/cz-nbsap-v2-en.pdf>
32. Slovak Biodiversity Strategy 2020
<https://www.cbd.int/doc/world/sk/sk-nbsap-v3-en.pdf>
33. Romanian Biodiversity Strategy 2014-2020
<https://www.cbd.int/doc/world/ro/ro-nbsap-v3-ro.pdf>

Webpages of visited protected areas

34. Hortobágy National Park Directorate Webpage: <http://www.hnp.hu>
35. Bükk National Park Directorate Webpage: www.bnpi.hu
36. National Park Nízke Tatry (Low Tatras) Webpage: <http://www.napant.sk/>
37. National Park Velka Fatra Webpage: <http://www.sopsr.sk/velkafatraweb/en>
38. Krkonoše Mountains National Park: www.krnap.cz
39. White Carpathians Protected Landscape Area Webpage: <http://vis.bilekarpaty.cz>

Annex 1 Description of the field visits

Hungary

Activities	Hortobágy National Park (HNP)	Bükk National Park (BNP)
Period of visit	09.05.2016 - 14.05.2016	17.05.2016 - 19.05.2016
1 st day	Field visit with Valkó Orsolya and Deák Balázs - members of MTA-DE Biodiversity and Ecosystem Services Research Group and their students at a Life Project site (<u><i>Grassland restoration and marsh protection in Egyek-Pusztakócs</i></u>).	<p>Visit of the protected area headquarters, data collection about the BNP.</p> <p>Interview with Schmotzer András about the BNP Directorate, management plans, protection of grassland habitats.</p> <p>Field visit to Tard, Bála-völgy, with Schmotzer András and the local ranger Kleszó András. The area was cleared from invasive scrubs and woody vegetation.</p> <p>Interview with Bernártné Szabó Gabriella about the land use and management in the BNP and the regulations for the hay meadow management and agri-environmental payments system in Hungary.</p>
2 nd day	<p>Visit of the protected area headquarters. Presentations about the HNP Directorate, collection of data, documentation with Bogyó Dávid.</p> <p>Participation at the rangers' monthly meeting, discussing problems on hay meadow moving time and intern reporting system and mowing approval for farmers.</p> <p>Discussions with the rangers on their duties, generally related to grasslands (Monoki Ákos, Szilágyi Attila).</p>	<p>Participation at rangers' field visit to Tard in Dél-Heves region with Tóth László.</p> <p>Visit to the Life project area (Conservation of <i>Falco vespertinus</i> in the Pannonian Region) to see the new cattle herd and the pasturing experimental plots with different management type.</p> <p>Visit to Pély to some valuable salt grassland areas.</p>

3 rd day	<p>Field visit with Bessenyei László Bence, including the most conserved natural grasslands in the HNP, used as pastures (Máta, Pente-zug). Discussions about the grassland management, conservation challenges, animal husbandry, grassland restoration, conservation, wildness.</p> <p>Field visit with Tihanyi Gábor - deputy head of rangers' service. Visited grasslands: (1) ecologically restored hay meadows from arable land (Kungyörgyi-szántók); (2) natural wet grasslands (<i>Lolio-Alopecuretum pratensis</i>, Bodrogeközy, 1962) in the flood basin of the Tisza river (Ároktő); and (3) restricted areas for visiting (Kecskés). Discussions about the importance of grasslands management (mowing, pasturing, mixed use); challenges with the invasive shrubs and the abandonment; rangers' service in HNP.</p>	<p>Biodiversity day, organized for local schools, participating more than 300 persons.</p> <p>Participation with András Schmotzer at the botany stand.</p> <p>Short visit in the area.</p>
4 th day	<p>Field visit in the Life project area in Zám and surroundings (<u><i>Large Scale Grazing Management of Steppe Lakes in the Hortobágy</i></u>) with Balla Dániel.</p> <p>Discussions about the importance of bird protection and proper grassland management, ecological reconstruction of the old steppe lakes by grazing.</p> <p>Visiting steppe lakes in different reconstruction stages and participating in discussions between the project team member and the herder about the way and proper time to let the animals enter in the steppe lake in order to achieve the favorable conservation stage.</p>	<p>Field visit to the Bükk-Fennsík (Beech Plateau), the most valuable area of the BNP in grasslands and floristic composition.</p> <p>The area is owned by the Hungarian State and administrated by the BNP Directorate, but mostly abandoned by agricultural activities.</p> <p>Discussions about the possible and proper grassland management in the area, floristic composition, problems and possibilities in the future.</p> <p>Visit to Cserépfalu, Hideg-kút-lapos a wood pasture which was cleaned from bushes and invasive wood species by the BNP Directorate.</p>
5 th day	<p>Rangers' field visits with Tihanyi Gábor. We were visiting different grasslands which were ecologically reconstructed from abandoned land with huge cover of invasive plants by mulching and incorporating scrubs (Kardacs-alj). The visit also included some areas where different protected plants/birds occur strongly related to</p>	-

	grasslands. Discussions about the continuous communication with land managers, locals, the role of ranger in the proper implementation of land use contract requirements and the importance of practice based research for grassland conservation in the HNP.	
6 th day	Visit of the HNP Visitor Centre, collecting information about Hortobágy, pasturing traditions, animal husbandry. Watching the Four Seasons in Hortobagy (3D) Documentary on nature protection and conservation in the HNP. Field visit and great bustard (<i>Otis tarda</i>) watching in Nagyiván-Tiszafüred open farmlands and grasslands.	-
	In the time between I visited Budapest and Eger.	

Czech Republic

Activities	White Carpathians Protected Landscape Area (WCPLA)	Krkonoše Mountains National Park (KMNP)
Period of visit	21.05.2016 - 25.05.2016 and 02.08.2016 - 04.08.2016	08.08.2016 - 11.08.2016
1 st day	Field visit on protected landscapes with Ivana Jongepierova and Jan Willem Jongepier; grasslands with scattered trees used as hay meadows, famous about their richness in species, especially in orchids (Čertorie National nature reserve). Discussions about the WCPLA and the Czech nature conservation and protected area categories and their administration, management plans. The role of <i>ZO ČSOP Bílé Karpaty</i> (NGO-Czech Union for Nature Conservation) in the conservation of the local landscape, short description of grassland restoration projects and results.	Visit of the protected area headquarters. Collecting information, documents about the KMNP Directorate with Michael Hošek and educational center with Michal Skalka. Presentation about the Czech nature conservation and discussion about European nature conservation policy, biodiversity strategy and IUCN - Michael Hošek. Field visit in the Krkonoše Mountains overview on the landscape, grassland and discussions about the typical habitats and species for this area - Michael Hošek.
2 nd day	Visit of the WCPLA administration in <u><i>Luhačovice</i></u> . Interview with the director of Nature	Field visit to the Life project area (<u><i>Grasslands and streams restoration in SCI Krkonoše: Future of Nardus grasslands*</i></u> ; <u><i>Dwarf Gentian*</i></u> &

	<p>Conservation Agency - Ing. Jirina Gatakova concerning the administration of different protected areas, the elaboration of management plan, monitoring, rewarding systems and stakeholders' acceptance/support.</p> <p>Participation in the establishment of new monitoring plots for species-rich grasslands with Ivana J. and Karel Fajmon.</p> <p>Discussions about grasslands monitoring in the WCPLA, online databases of plant species, methodology, etc.</p> <p>Visiting different natural reserves and monuments important for plant and animal species and also restored areas which used to be ploughed in the past.</p>	<p><i>Bullhead</i>) with Alena Bartošová and Stanislav Březina.</p> <p>Discussions about grassland management in the Krkonoše Mountains in the past, present and possibilities, pressures for the future.</p> <p>Discussions about the appropriate assessment process and administrative procedures in the Czech Republic; socio-economic changes and their influence on grassland management in the area; establishment of monitoring plots and methodology.</p>
3 rd day	<p>Participation on botanical surveys in different long-term monitoring plots with Ivana J. and Karel Fajmon.</p> <p>Visiting different grasslands in the landscape protection area.</p> <p>Discussions about land use and land management, difficulties, possibilities, grassland restoration.</p> <p>Visiting different natural reserves and monuments important for plant and animal species (near the village of Horní Němčí: Bahulské jamy Nature monument, Za lesem Nature monument and grasslands on the top of Lesna)</p>	<p>Participation at the fest of saint Lawrence of Rome, the patron of the mountains at the top of Sněžka (Michael Hošek, Ing. Jan Hřebačka and Jakup Kašpar).</p> <p>Discussions about grassland management and restoration, visions of the national park, forest management, natural reforestation of the abandoned mountain grasslands, etc.</p>
4 th day	<p>Participation on botanical surveys in different long-term monitoring plots (29 years) in Kutky Nature reserve near the village of Radejov with Ivana J. and Karel Fajmon.</p> <p>Discussions about land use and land management, difficulties with the fallow deer population and a private hunting area which represents a huge pressure for the species rich grasslands in the area.</p> <p>Presentation about the species rich meadow</p>	<p>Interview with Jiří Flousek on subjects like elaboration of the management plan, zonation of the park, habitats/species conservation, property rights in the national park, changes in the structure of the national park administration in the last 20 years and public administration, etc.</p> <p>Consultation of the management plan of the KMNP.</p>

	management (Ivana J.)	
5 th day	Participation on botanical surveys - establishment of two new plots in Horní louky Nature reserve) with Ivana J. and Karel Fajmon. Discussions about the management of the area in the past and present.	Visit of the museums of the KRNP with Jakup Kašpar.
3 days in August	Participation for 3 extra days together with the Münster University's students and Prof. Norbert Hölzel on study excursions in the WCPLA. We were visiting important conservation areas, natural reserves and monuments, participating in interesting discussion subjects like the ecology of the grasslands, the development of the floristic composition, species need for different habitats, grassland restoration.	-
	In the time between I visited Prague and České Budějovice.	

Slovakia

Activities	State Nature Conservancy of The Slovak Republic Nízke Tatry National Park - Low Tatras National Park (LTNP) Velka Fatra National Park - Great Fatra National Park (GFNP)	
Period of visit	15.08.2016 - 19.08.2016	
1 st day	Visit of the State Nature Conservancy of the Slovak Republic, collecting information about the visited national parks. Discussion with Jan Kadlecik and Theresa Thomson about the Slovak nature conservation, protected area categories and institutional structure, strategies, international perspectives. Discussions with Andrej Saxa about the monitoring of habitats and species in Slovakia. Visit of the LTNP headquarters and interview with Peter Turis (botanist) about the grassland habitats in the national park, grassland management in the past, present challenges, future perspectives.	
2 nd day	Field visit in Liptovská Lúžna - in LTNP with Libor Ulrych and Peter Turis. Discussions about the Slovak nature conservation, national park management, botanical surveys, monitoring, subsidies. Comparison with the Romanian situation. Interview with a local farmer (head of local cooperative) about the grassland management, changes during different periods (1950-1990, 1990-2004, 2004-	

	<p>present), animal husbandry, rewarding system.</p> <p>Visit of some important natural reserves in the area with travertine mound.</p>
3 rd day	<p>Field visit in Kráľova hoľa - in LTNP with Libor Ulrych and Peter Turis.</p> <p>Discussions about land abandonment in the LTNP and different classification types of grassland habitats.</p> <p>Interview with another local farmer (local cooperative) about the grassland management, changes during different periods (1950-1990, 1990-2004, 2004-present), animal husbandry, rewarding system.</p>
4 th day	<p>Field visit in Krížna area and Smrekovica - in GFNP with Libor Ulrych and Viktoria Chilova (botanist).</p> <p>Discussions about the Slovak nature conservation, national park management, botanical surveys, monitoring, subsidies, animal husbandry, property rights, etc.</p>
5 th day	<p>Field visit in Martinské hoľe - in GFNP with Libor Ulrych and Viktoria Chilova.</p> <p>Discussions about the impact of tourism and urbanization on natural habitats; effects of land abandonment on the grassland habitats; possibilities of conservation with low budget and multiple property right system.</p>

Annex 2 Pictures

Hungary



Fig.6 Traditional farm in the Hortobagy



Fig.7 Cattle grazing on the Puszta (Hortobagy)



Fig.8 Steppe grasslands of the Hortobagy



Fig.9 Ecologically reconstructed steppe lake by cattle grazing (Hortobagy)



Fig. 10 Woody vegetation in succession; ecological reconstruction projects were implemented in the area, but without an optimal grassland management (mowing/grazing) the succession it will take place again (Bükk National Park)



Fig. 11 Mowing season in Dél-Heves (area administrated by the Bükk National Park Directorate, outside of the national park). The plots are samples within a Life project (Conservation of *Falco vespertinus* in the Pannonian Region). Birds' conservation and grassland management are nicely harmonized in order to achieve the targeted number of species in the area.

Czech Republic



Fig. 12 Traditional cultural landscape in Certoryje with species-rich hay meadows and scattered trees; this area is famous about the meadows' species-richness and it is the most well preserved area of the White Carpathians Protected Landscape Area.



Fig. 13 Field visit and discussions with Ivana Jongepierova and Jan Willem Jongepier (taking picture) about restored grasslands from arable land in the surroundings



Fig. 14 Different stages of the vegetation applying mosaic mowing in the White Carpathians



Fig. 15 Grassland monitoring and vegetation surveys in the White Carpathians



Fig. 16 Different stages of the vegetation; in the background buildings are indicating the remnants of agricultural activities even on the highest elevation of the Krkonoše Mountains



Fig. 16 Walking around with Michael Hošek (taking picture) on the border of the Krkonoše Mountains National Park with Poland (Karkonosze National Park).



Fig. 17 Participation to the fest of saint Lawrence of Rome, the patron of the mountains at the top of Sněžka (highest peak of the Krkonoše Mountains, 1603m)



Fig. 18 Monitoring plots for the vegetation and different management regimes within a frame of a Life project (Krkonoše Mountains National Park)

Slovakia



Fig. 19 Field visit in Liptovská Lúžna; Libor Ulrych (right) and Peter Turis (taking picture) on the in interview with a local farmer (left) about the changes in grassland management during different periods (1950-1990, 1990-2004, 2004-present)



Fig. 20 Abandoned grasslands from agricultural point of view, but important for conservation; grasslands are not used since the collectivization in in Kráľova hoľa, Low Tatras National Park



Fig. 21 Field visit in Martinské hoľe in Great Fatra National Park with Libor Ulrych (taking picture) and Viktoria Chilova (right); discussions about the Slovak nature conservation, national park management.



Fig. 22 Field visit in Krížna area and Smrekovica - Great Fatra National Park



Fig. 23 End of the journey, my last morning in Banska Bystrica, Slovakia