PROTECTED AREAS IN FOCUS: ANALYSIS AND EVALUATION

Michael Getzner
Michael Jungmeier (eds.)

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Protected Areas in Focus: Analysis and Evaluation

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To Georg Grabherr,

Scientist, teacher,
Conservationist,
Role model and friend.

FOREWORD

Nature conservation and protected areas continue to offer hope to the world under circumstances through which the planet faces many profound challenges. Despite the ongoing destruction and degradation of natural ecosystems as a result of human development, persistent poverty, natural and man-made disasters and accelerating global climate change, the protected area systems of the world continue to grow in number and extent and attract an increasing share of investment of governments, development agencies and a wide variety of public and private interests. The Protected Planet Report 2012 provides quantitative measures of this success. It also points towards challenges that remain pertinent, including the challenge of achieving most dimensions of protected area quality. Despite of all the good work, there remain many situations in which protected areas are not managed effectively and at the same time degraded, in which poor governance results in ongoing conflict and harm, and either as a result of or perhaps leading to situations of unsustainable financing.

Developing capacity for the professional management of protected area systems and sites, on land and in freshwater, on coasts and in the marine environment, remains top of the agenda. Graduates of Klagenfurt's Masters Programme in Protected Areas are among the most highly qualified of these professionals. Combined with their experience in the field, the graduates will prove to be the most effective of these managers. But the question of what kinds of capacity are most needed must still be answered and addressed by tertiary institutions involved in education and training in this field. In the past, it may have been sufficient to set out what kind of curriculum was needed to foster this learning, with an emphasis on education to ensure that protected areas are well-managed. Today, this question has become quite broad. Protected area systems not only have to be managed to achieve the conservation of representative ecosystems, demanding the application of complex ways of undertaking systematic conservation planning, they also have to fully embrace the social and economic dimensions of development planning at landscape and seascape scale and to address challenges which previous generations of protected area managers have not been aware of. While an increasing focus must be placed on skills to secure the diversity and quality of management effectiveness, good governance and sustainable financing, new skill sets and competences are required to deal with understanding and making the case for investment, in communication to a much wider group of stakeholders, engagement with non-

traditional partners and an ability to become part of the wider discourse that could lead to sustainable development, including influencing development policy and practice, trade and consumer behaviour, a rapidly urbanizing global population and an increasing competition for space disregarding even planetary boundaries.

Capable, wise, and above all, professional protected area managers, along with institutions such as Alpen-Adria-University Klagenfurt and the Masters of Science Programme on Management of Protected Areas are an essential community that can and must engage in this enterprise, not just "drawing lines in the sand" or speaking from a privileged position inside a protected area, agency or university but be willing to be part of the discussion, the trade-offs and the uncomfortable realities of helping to solve the world's problems through nature conservation. We all need to inspire one another to face up to this challenge and to be the visionaries of the world that inspire us to become protected areas managers.

Klagenfurt's Masters Programme is one of the premier institutions globally that helps professionalizing protected area management and is involved in IUCN WCPA's priority capacity development initiative to set quality standards for curricula, qualifications and resource materials that can be used to develop a new generation of professional managers able to be the custodians of protected areas. For more information on the initiative to professionalize protected area management, please visit www.iucn.org/wcpa to read more, become involved or contribute your ideas.

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LAUDATION

The MSc programme "Management of Protected Areas" was awarded the 2012 European Environment and Natur Conservation Prize of the Binding Foundation (Vaduz, Liechtenstein). Prof. Georg Grabherr of the University of Vienna is member of the international selection committee of this award and held a speech at the occasion of presenting the award to Michael Jungmeier and Michael Getzner in Vaduz (Liechtenstein) on 9 November, 2012.

"Your Serene Highness, honoured guests,

the establishment of protected areas is – and will remain – the very backbone of nature conservation, be they wilderness areas such as national parks, protected areas according to the IUCN Categories One and Two, or areas emphasising nature, such as biosphere parks, or national landscapes and nature parks belonging to the IUCN Category Five.

Figure 1: Binding Award Ceremony in Liechtenstein
Andreas Adank, Stefan Forster, Dominik Siegrist, Michael Jungmeier, Michael Getzner, Georg Grabherr (from left to right)

To provide an example, there are 4,885 national parks and 610 biosphere parks worldwide. Their management represents an enormous challenge, and the following quote continues to apply virtually everywhere: 'Money is short, staff is limited, problems are numerous.' The demands faced by leaders and managers of protected areas of this kind mean that sound training and maturity are required. It is

therefore all the more surprising that focused academic education has only become available in the very recent past.

This year's Binding Prize is awarded to three pioneering efforts in this field, together with their promoters:

- to the Alpen-Adria-University Klagenfurt for the establishment of a study programme, lasting 4 semesters and dedicated to the 'Management of Protected Areas' (Austria);
- to the HSR Hochschule für Technik Rapperswil with the specialist division for Nature-oriented Tourism & Parks located within the Institute for Landscape and Open Space (Switzerland);
- to the Zurich University of Applied Sciences in Wädenswil, with the specialist division for Tourism and Sustainable Development, belonging to the Institute for the Environment and Natural Resources (Switzerland).

The study programmes and specialised university institutes have been designed to meet the challenges of today and represent the pinnacle of the efforts made to professionalize nature conservation. In addition to the establishment of protected areas and parks as well as species conservation etc., progress, such as these new study programmes, allows us to refer to nature conservation as a success story. In doing so, we do not merely mean the effort of conservation but also the sustainable ongoing development of and in protected areas. This is facilitated through ecotourism, environmental education but also with land use and economic systems that are ecologically sound. It is precisely this combination of protection and gentle use that is a distinguishing feature of the work of our three award recipients.

What, precisely, do these study programmes offer? The course of studies in Klagenfurt is designed to follow on from a university degree and provides a focused training programme for the management of protected areas; in Rapperswil and Wädenswil the courses take the form of Bachelor and Master degree programmes including an emphasis on planning activities. The prize is awarded by the Binding Foundation in recognition of these initiatives that bring stability to the relevant professional groups, while elevating the conservation of nature and of landscapes to the highest possible educational level. Gratitude is also due to the initiators and supervisors involved with the study programmes and institutes who have joined us today."

Georg Grabherr
Member of the international Binding Prize selection committee
Professor of Ecology at the University of Vienna

PREFACE

The fourth volume of our series, "Proceedings in the Management of Protected Areas," marks a turning point for the editorial team. The papers and chapters presented in this volume are from the last group of graduates at Alpen-Adria-University Klagenfurt whom Michael Getzner has worked with as the co-director of the 2009 class of our education programme "Management of Protected Areas." Future volumes will be edited by the new director, Prof. Heike Egner (Alpen-Adria-University Klagenfurt) together with Michael Jungmeier.

Directing the programme, watching "our" students work in the fields of nature conservation and pursuing their careers has been very rewarding. However, the last year also brought about an important international recognition for our work in this programme. The highly renowned European Binding Prize for Nature Conservation was awarded to this education programme. This is very honouring for the Alpen-Adria-University Klagenfurt, and we are personally very pleased since this award recognizes efforts that make "a substantial contribution to nature conservation" – and this quite special for an education programme.

We are also very thankful that WWF International supported students from Central and Eastern Europe with a generous grant covering parts of the tuition fee and travel costs of students.

In the fourth volume, there is again a great collection of the dedicated works of our students, and we are proud to congratulate each one to their well-earned graduation. A conglomerate of different experiences and views feeds the unique think tank that characterizes this MSc programme and therefore is a steady stimulus to further explore PA management challenges in-depth.

Regarding the chapters of the current volume, we have not restricted ourselves to presenting our graduates' works but we have included two additional chapters submitted to us for publication in the collective volume. These two chapters very well suit the general topic of the volume and may form the start of a new approach in this series by calling for and including chapters from international experts and scholars complementing the single volumes. Thus, we like to invite papers to be included in the future volumes according to the specific overall topics presented.

The Centre of Public Finance and Infrastructure Policy (Vienna University of Technology) as well as E.C.O. Institute of Ecology, Klagenfurt and the MSc. Programme "Management of Protected Areas" at Alpen-Adria-University Klagenfurt provided financial support for the current volume.

Last but not least, we are also very grateful to the authors for their innovative contributions, Prof. Hans-Joachim Bodenhöfer for leading the education programme from 2010 to 2012, and to Anna Drabosenig, who significantly helped in managing the editorial work of this volume.

Michael Getzner
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CONTENTS

1 INTRODUCTION, INTENT AND STRUCTURE OF THE BOOK

Michael Getzner, Michael Jungmeier

Learning, capacity building, communication, information and governance in protected areas are the general keywords of the broad understanding of the dimensions and tasks of the management of protected areas (PA). Already at the 1992 UNCED summit when the Convention on Biological Diversity was passed as an international treaty to conserve the earth's biodiversity and natural heritage, many concepts and fundamental principles of biodiversity conservation and management were acknowledged. For instance, issues such as burden and benefit sharing, empowerment of marginalised social groups and governance were discussed. Since then, the scientific debate as well as the practical implementation and day-to-day management of protected areas has deepended our understanding of these fundamental concepts. Still, with every gain in knowledge, more questions arise, for instance, with respect to (social) learning in PA management, and the transformation of governance systems to equally consider conservation effectiveness, fairness and equity, economic efficiency and manifold cultural perceptions and dimensions.

The second chapter – similar to the preceeding volumes of this series – presents and summarizes works and projects finalized during the third course of Alpen-Adria-University's postgraduate M.Sc. programme on "Management of Protected Areas" (2009 to 2011).

The presentation of the graduates' works is divided into the following topics:

- planning of protected areas at the site level;
- planning and developing national and international protected area systems;
- participation, communication and governance in protected areas;
- ecological aspects in the management of protected areas;
- tourism and livelihood in protected areas;
- economic and social aspects in the management of protected areas.

The third chapter of this volume is written by Violeta Orlović-Lovren, who presents the main findings of her Ph.D. dissertation in the fields of learning and capacity-building with respect to the management of protected areas. The author emphasizes the wide range of aspects in learning, education and capacity building,

for instance, by considering the human capital and financial resources but also the (cultural) values and the attributes of the whole management system. Empirical results are presented with respect to knowledge, leadership and responsibility, and gaps are identified which may promote or hinder an effective and sustainable management of protected areas.

Engelbert Ruoss discusses the concept of biosphere reserves as model sites for sustainable development in the fourth chapter. He stresses the diverse elements of biosphere reserves with the aim to contribute to a sustainble ecological, economic and social development. His empirical analysis is concentrated on the discussion of several case study regions where biosphere reserves are located. The impressive results on the regional level are condensed by the author in the sense of a comprehensive model whose basic attributes are defined. Finally, E. Ruoss describes the concept of a "global region" as a best practice model for interlinking the pillars of sustainable development based on "biocapacity" i.e. the natural resources and limits of extraction and use for human development.

The final fifth chapter includes a description of the education programme and a short documentation of the 2009 class and the excursions and courses students were involved in.

We hope that the book is received well in the community and that one of the main aims and visions of our programme – the effective and efficient conservation of biodiversity worldwide – is supported by our and the students' works.

2 PROTECTED AREAS IN FOCUS: ANALYSIS AND EVALUATION

2.1 Planning of protected areas on site level

2.1.1 Strategies to improve the protection of the Gorgany Nature Reserve, Ukraine

Olena Slobodian

The Gorgany Nature Reserve in Ukraine is a nature protection and scientific research institution with the four objectives: protection of natural complexes and objects, scientific research and observations, elaboration of scientific recommendations for nature conservation and dissemination of ecological knowledge. The ultimate goal of the reserve is the protection of the unique primeval forests, in particular those with Swiss pine *(Pinus cembra)*.

The reserve consists of two nature protection and scientific research divisions – the Gorganske division and the Chernykivske division. Their total area is 5,000 ha, and the protective (buffer) zone around it makes up 3,800 ha (Figure 2).

Figure 2: Location of the Gorgany Nature Reserve, Ukraine
Source: Digital Vector Maps, www.protectedplanet.net (both modified by author), picture by Dmitriy Polishcuk.

This study is a part of the effort to identify and create a proposal for future activities for improving the protection of the Gorgany Nature Reserve. The aims of the study were: identifying main stakeholders, analysing threats and challenges and drawing proposals for improving protection of the Gorgany Nature Reserve.

The main methods such as *situation analysis, stakeholders or participation analysis, problem analysis, logical framework*, *interviews* and meetings with the most relevant stakeholders of the Gorgany Nature Reserve were used. Workshops were organized during 2009–2011 with the staff of the protected area, stakeholders and international experts. The data collection brought information about key stakeholders and their role in the protected area and problems Gorgany Nature Reserve faces. The study focused on collecting data from the workshops as well as analyzing, summarizing and interpreting them.

Data analysis provided a list of stakeholders, the current and future situation of the problems as well as it highlighted their importance. Based on a problem tree and an objective tree, a logical framework was developed (Figure 3).

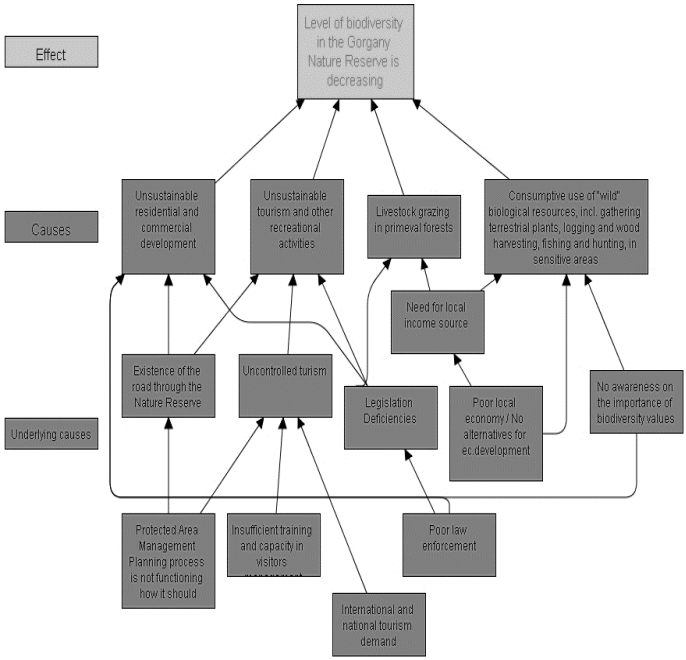


Figure 3: Causes of biodiversity decline in the Gorgany Nature Reserve

A number of 10 workshops with staff of Gorgany Nature Reserve and stakeholders (stakeholders and problem analysis) were organized. The main results of the meetings were as follows:

- 15 key stakeholders as well as their role and importance for the Protected Area management were identified and analyzed;
- 11 threats and problems facing the Gorgany Nature Reserve were analyzed; 4 main threats were detailed and addressed for future management.

The relationship and cooperation between the nature reserve and stakeholders was improved. The nature reserve administration has not yet worked with stakeholders nor has it involved stakeholders in discussions or decision-making procedures before. This was the first attempt for starting a real stakeholder engagement and involvement in the management of the protected area. It was a good practice and experience for both sides.

Recommendations

The analysis of causes and effects of the problems helped developing an objective tree and future activities to reach the proposed objectives. The proposals for improving protection of Gorgany Nature Reserve consisted of three main parts:

Program 1. Research and conservation of the species, habitats and ecosystems.

Subprogram 1.1. Documentation of data on species, habitats and ecosystems.

- Collection of data on rare and common species of flora and fauna, habitats and ecosystems;
- Creation of a database with information about results of researches.

Subprogramme 1.2. Monitoring programme

- Development of a monitoring programme based on an assessment of treats;
- Development of an action plan for research.

Program 2: Participation

Subprogramme 2.1. Programme on traditional grazing

- Organization of workshops with stakeholders to develop a programme for traditional grazing in the surrounding area.

Subprogramme 2.2. Establishment of a trail network

- Creation of a net of trails in the territory which are adjacent to Gorgany Nature Reserve;
- Discussion about future activities with local stakeholders.

Programme 3: Ecological education

Subprogramme 3.1. Cooperation with the public

- Development of an information plan to disseminate information about values of Gorgany Nature Reserve.

Subprogramme 3.2. Cooperation with NGOs, education institutions

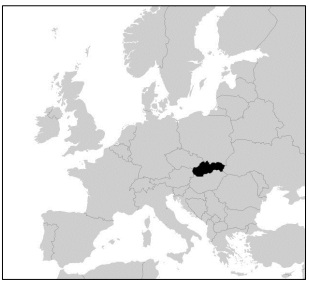
- Identification of target groups;
- Development of a communication strategy;
- Promotion of the cooperation with and between Gorgany Nature Reserve and non-governmental organisations in awareness-raising, education, training and other forms of communication.

The main expected results of implementing the proposed strategic plan are:

- comprehensive plan of research and conservation actions;
- close cooperation with stakeholders;
- communication and information strategy.

2.1.2 Feasibility check for PAN Park certification of Tatra National Park, Slovakia

Peter Puchala



There has been a quite growing interest in wilderness and wild areas in the recent period throughout the world and in Europe, which has become an important concept of the management of protected areas. Wilderness and wild areas are vital because their indirect and direct relation to economic, health, social, research and cultural values. Wilderness areas are laboratories for research of biological diversity, natural and ecological processes and provide genetic banks for the future. They can also contribute to adaptation and mitigation of climate change and provide a wide range of ecosystem services. Moreover, they are an important part of the strategy for halting biodiversity loss and promoting natural ecosystem processes and functions (Coleman and Aykroyd, 2009).

Recently, wilderness and its conservation has become a very important issue of the European Nature Conservation Strategy. The European Commission and the European Parliament approved documents to ensure biodiversity and wilderness conservation. These documents are the EU Biodiversity Strategy for 2020, which pursues the headline target of halting the loss of biodiversity and degradation in the EU by 2020 and the European Parliament Resolution on Wilderness in Europe. This resolution urges the commission and the member states to develop wilderness areas, stresses the need for the provision of special funding for reducing fragmentation, careful management of re-wilding areas, development of compensation mechanisms and programmes, raising awareness, building understanding and introducing wilderness-related concepts such as the role of free natural processes to the monitoring and measurement of favourable conservation status. This should be accomplished by cooperating with the local population and other relevant stakeholders.

The PAN Parks initiative has identified several areas of wilderness in Europe in order to find a sustainable solution for European wilderness (PAN Parks, 2008). The initiative certifies selected protected areas. It is considered an incentive for conservation, tourism and sustainable development and creates a European network of the best managed protected areas. The aim of this network is to improve the management of protected areas and nature conservation using sustainable tourism as a tool. All certified protected areas have to meet the PAN Parks quality standards, which cover wilderness protection, socio-economic and

cultural aspects. The core idea of PAN Parks is to develop and preserve large natural areas of wilderness which welcome visitors and provide an outstanding access to wildlife.

The Carpathians host a few pieces of the last remains of the European wilderness. Most of the large areas that could be qualified as wilderness are already part of established national parks or other types of protected areas. One of the potential candidates for PAN Parks in Slovakia is Tatra National Park (TANAP), which represents one of the oldest national parks in the country. The national park has a lot of natural values and high biodiversity concentrated in a relatively small area and a relatively unfragmented and large area without interferences. Thus, the park shows great potential to become a certified PAN Park.

The Tatra National Park was established in 1949 by the Act of the Slovak National Parliament as the oldest national park in Slovakia. The national park was included in the UNESCO's Man and Biosphere Programme and recognized as a biosphere reserve together with Tatrzanski Park Narodowy in Poland in 1993. When Slovakia became a member state of the European Union in 2004, the national park was designated as a part of Natura 2000 network. Totally, the national park in its current borders covers an area of 73,800 ha. Buffer zones of the national park cover 30,703 ha (Figure 4 and 5).

Figure 4: Tatra chamois (Rupicapra rupicapra tatrica) – flagship species of the Tatra National Park
Source: www.arollafilm.com

The aim of the current study was to assess the potential of TANAP for PAN Park certification, to find out lacks and to recommend further steps for increasing the chances of the national park for a PAN Park certification. Based on the principles and indicators of PAN Parks (http://www.panparks.org/learn/apply-for-

verification/principles-and-criteria), an assessment of the status and the management of the national park was carried out.

From all five PAN Parks principles those representing natural values, habitat and visitors management were chosen. Moreover, a SWOT analysis from a wilderness point of view was conducted.

The assessment showed that Tatra National Park clearly fulfills all the criteria and indicators of the principle regarding natural values. The national park complies with all indicators dealing with legal status, international recognition and minimum size of protected area as required by the PAN Park initiative. Regarding habitat management, only 64% of the indicators are completely met, whereas one third of the indicators are only partially accomplished. Some gaps and lacks were found in dealing with the implementation of conservation strategies through a management plan, in management planning and regarding the zoning system. In the case of visitor management, only 28% of the respective indicators were fulfilled. Half of the indicators are only partially fulfilled. Deficiencies were found in the planning process of visitor management, monitoring of visitor management, in training programmes for staff in this field and in the cooperation with tourism providers, communities and other partners.

There are several deficiencies and problems which should be solved to increase the national park's chances to apply for PAN Park certification at the first step. One of the most important tasks in this phase is the finalization of the management plan and the process of zonation, which should be officially approved. The management plan should consist of and fulfill all criteria and indicators defined by PAN Park principles. There should be links between nature conservation management, visitor management and regionally sustainable tourism development. Management planning should be improved in several ways but particularly in the field of participation and stakeholders' involvement. Following this way, Tatra National Park could become a model for effective management through modern planning and governance arrangements. Currently, the level of communication and participation of stakeholders is still insufficient and lacks a platform for systematically involving stakeholders in planning processes. It could be improved by establishing a consultative or scientific board in the national park. In further steps, the creation of a local PAN Parks group can lead to improving the participation as well.

Figure 5: Kôprová valley – core of the wilderness area
Source: www.arollafilm.com

Zoning was found as one of the crucial issues which should be fixed in consensus with all relevant stakeholders and officially approved. It should be based on the principles of the IUCN category system and be a tool for maintaining all values of the national park. A critical key issue is the designation of a wilderness zone without intervening with habitats and with sufficient size to protect the natural systems and processes. In accordance with PAN Parks principles, wilderness zones should be coherent, unfragmented and as large as possible.

There is also a need for a management plan for the wilderness zone which can be a part of an overall management plan. However, the PAN Parks initiative prefers it to be a separate document which defines all objectives and the management of wilderness areas. Passive management is an important tool but should be actively planned and included in this document (PAN Parks, 2008). The management plan should ensure a clear strategy for the wilderness area with no exceptions for cutting and removing trees and any interventions with natural processes. This principle has significantly been violated several times in the last years, for instance, when interventions following a wind storm in 2004 led to an extraction of fallen and broken trees for a "sanitary logging" in the areas under the highest degree of protection.

There are many strengths of TANAP and numerous opportunities which support PAN Parks certification but there are also some weaknesses and threats which could negatively influence the process of verification. However, strengths and opportunities overwhelm existing weaknesses and threats could be minimized or, in the best case, completely eliminated. There are several threats closely connected to tourism development. It could be difficult to improve the situation and develop sustainable ways of tourism but this should be the best way for sustainable

development of the national park and its region. Development of sustainable tourism seems to be the right option for the future of the national park.

PAN Parks certification is quite a big challenge for Tatra National Park. Tourism should meet quality standards and be based on sustainable principles instead of focusing on mass tourism. The requirements for PAN Park certification are similar to the recommendations of an IUCN mission in 2005 (Crofts et al., 2005), which stated that there should not be built any further tourist infrastructure in the zones A and B (zones with the highest level of protection). There should be a greater focus on improving the quality of existing infrastructure instead of building a new one.

From the point of view of nature and wilderness conservation, PAN Parks certification is the best option for TANAP. PAN Parks certification brings several benefits to certified parks including improved wilderness conservation, demonstration that the protected area is managed by complying with high quality standards, effective expertise exchange of knowledge and international recognition. Other benefits are in the field of tourism. PAN Parks certification provides effective tools to develop sustainable tourism and control and monitor tourism, which is a very important task for many protected areas. Finally, one of the very important benefits is the improvement of cooperation with stakeholders and local communities as well as branding and promotion activities opening up access to new markets for small businesses.

Generally, the Tatra National Park has a great potential for PAN Parks certification. However, many issues in management should be improved or finalized and officially approved. PAN Parks certification is a great challenge and opportunity as well, in particular for the improvement of the park's conservation status.

2.2 Planning and developing national and internationally protected area systems

2.2.1 Recommendations for implementing the IUCN protected area management categories in Serbia

Goran Sekulic

The system of protected areas in Serbia has been gradually developing for almost 70 years. This is a rather long tradition which resulted in some good examples of site-based protection. However, the system faces a lot of problems and challenges today and improvement is still crucial. National coverage of protected areas is very low and many of them do not have adequate management. Current total size of protected area is 518,200 ha what amounts to only 5.86% of the national territory. The period 1993–2002 can be considered as "golden days" for protected areas in Serbia. During that period, total coverage of protected areas tripled. A positive trend continued till 2008 when the area protected decreased for around 30,000 ha.

The current system of categories of protected areas is set by the law on nature protection adopted in 2009. It consists of 7 categories:

- national park;
- nature park;
- landscape of exceptional features;
- natural monument;
- special nature reserve;
- strict nature reserve;
- protected habitat.

The international system of protected area categories (IUCN system of PA categories) is a potentially very convenient tool for the improvement of national systems. Starting with the analysis of the national system, this thesis explores possibilities of improvement of the national system of PA by use of IUCN system of PA categories.

The explicit tasks of the thesis were:

- to analyze the national system of categories of protected areas by use of objective and standard parameters;

- to characterize every of the categories regarding legal definition as well as real situation in the field;
- to check consistency within categories and to asses distinctiveness between categories;
- to make parallels to the IUCN system of protected area management categories;
- to give general recommendations for applying the IUCN system.

Main characteristics which were analyzed are: size of protected areas, naturalness, zoning and conservational objectives.

According to the average size, categories can be generally grouped as:

- smaller areas (average size up to 1,000 ha);
- medium sized areas (average size from 1,000 to 10,000 ha);
- large areas (average size more than 10,000 ha).

Strict nature reserves, natural monument and protected habitats belong to the group of smaller areas. Special nature reserves and landscapes of exceptional characteristics are medium-sized areas while nature parks and national parks represent large areas (Figure 6).

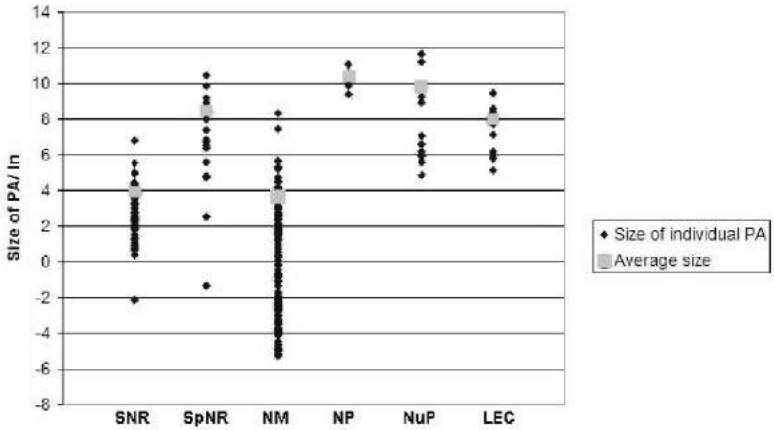


Figure 6: Comparison of average sizes of protected area categories

SNR: strict nature reserve; SpNR: special nature reserve; NM: natural monument; NP: national park; NuP: nature park; LEC: landscape of exceptional characteristics.

The analysis of size distribution shows problems of the categorization. First, high inconsistency is characteristic for categories of strict nature reserves, special nature reserve and natural monument. This is especially the case for the category

"special nature reserve", which shows great variation. Another problem is very small size of some areas in these three categories. Around two thirds of the total number of analyzed areas (n=303) are smaller than 10 ha. Having in mind that strict nature reserves and special nature reserves are focused on the conservation of individual habitats and species, it is really the question whether these target features can be achieved with such restricted size.

Despite relatively low resolution of the data used in spatial analysis, some general correlations of categories and naturalness can be shown. All categories, except natural monuments, in average include high percentage of natural areas. They differ mainly concerning the proportion of agricultural areas. The extent of artificial surfaces is very low in five categories and it could be considered insignificant (Figure 7).

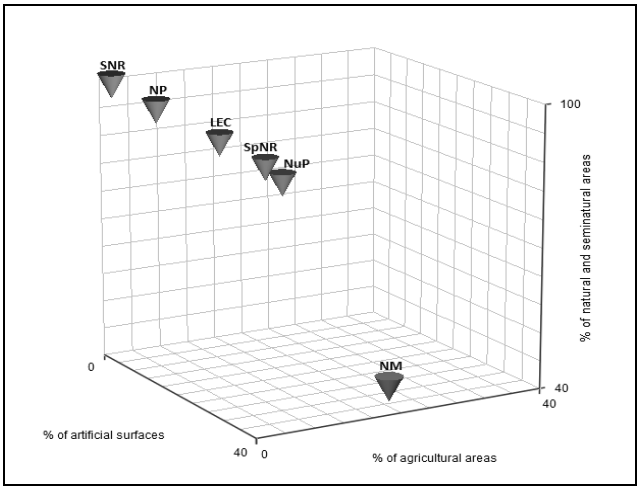


Figure 7: Average pattern of land cover in six categories of protected areas as a measure of naturalness

SNR: strict nature reserve; SpNR: special nature reserve; NM: natural monument; NP: national park; NuP: nature park; LEC: landscape of exceptional characteristics.

Clearly, the most natural areas are strict nature reserves. Naturalness is very consistent in this category and all areas almost exclusively consist of natural or semi-natural areas. The distinctly least natural category is natural monument although by the legal definition, it should consist of mostly natural or slightly

modified areas. Naturalness of natural monuments is probably biased by urban parks which are recognized as artificial areas in the spatial analysis.

Zoning pattern has the most direct impact on management principles of a protected area. Zones with different levels of protection actually define management concept of a certain area. Legal provisions of the Law on nature protection do not set different zoning principles for different categories. Three-level zoning applies to all categories.

The comparison of average zoning patterns of six categories of protected areas (Figure 8) shows relatively low differentiation. Again, the most distinct category is strict nature reserve with 100% of areas under the highest level of protection.

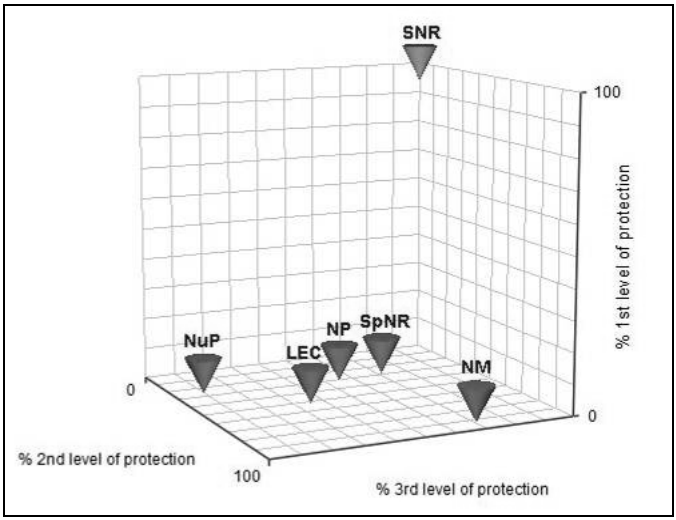


Figure 8: Average zoning pattern in six categories of protected areas

SNR: strict nature reserve; SpNR: special nature reserve; NM: natural monument; NP: national park; NuP: nature park; LEC: landscape of exceptional characteristics.

A basic problem in the analysis of conservational objectives of protected areas in Serbia is that they are mostly defined in vague and implicit manner. Legal definitions of categories do not imply clear and specific determinants for conservational management. Due to that, categorization of protected areas in Serbia is not directly based on different management approaches.

Table 1: Overview of management objectives in different categories of PAs

Management objective	SNR	SpNR	NM	NP	NuP	LEC	PH*
Science and research	*1*	*1*	*2*	*1*	*3*	*3*	*1*
Biodiversity conservation	*1*	*1*	*3*	*1*	*2*	*2*	*1*
Providing of environmental services		*2*	*2*	*2*	*2*	*2*	
Conservation of geodiversity or cultural features		*3*	*1*	*1*	*2*	*1*	
Tourism and recreation		*2*	*2*	*1*	*2*	*2*	*3*
Education	*1*	*2*	*2*	*2*	*2*	*2*	*2*
Sustainable use		*2*		*1*	*1*	*1*	
Cultural attributes		*2*	*3*	*2*	*1*	*1*	

Dark grey colored cells (1) mean that a given objective is prioritized and frequent. The grey (2) stands for common objectives of medium priority and the light grey (3) for objectives which appear rarely and have a low priority. SNR: strict nature reserve; SpNR: special nature reserve; NM: natural monument; NP: national park; NuP: nature park; LEC: landscape of exceptional characteristics.

Strict nature reserve and protected habitat are the only two categories which are distinct considering their management objectives (Table 1). Management of strict nature reserves is focused on biodiversity conservation with human intervention reduced to a minimum. Protected habitat focuses on specific habitat or species and allows different activities and interventions which are less prioritized.

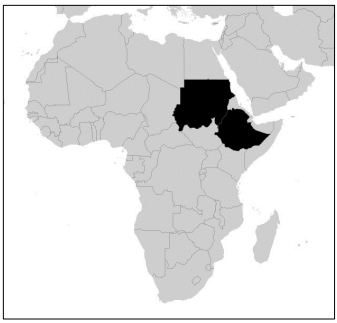
After the analysis of the national system of categories of protected areas and a comparison with the IUCN system, the following conclusion can be drawn:

- national system of protected areas is based on the system of seven categories and as such it provides an appropriate set of different conservational modes which allow adaptation to any of specific situations;
- categorization of national protected areas is not primarily based on management objectives but rather on content of areas (values) and on status of the ecosystems;
- protected areas are not consistently classified as categories. There are no clear distinction between some of the categories according to the characteristics of protected areas they include;

- one of the main reasons for inconsistent categorization is lack of comprehensive definition of different categories and explicit criteria for their implementation;
- another significant issue is rigid and general zoning system. Such zoning systems allow opportunistic mix of management principles and human activities, which in general hardly differs between different categories;
- differences in management principles of some categories are not clearly visible. They have different names but they are managed in almost the same way. Due to that, the actual array of implemented management categories is narrowed;
- the current national system is not fully compatible with the IUCN's system and the international categories cannot be automatically transposed and implemented on a national level;
- general compatibility exists and IUCN's system can be used as a reference for the improvement of a national system of categories;
- most consistent national category is strict nature reserve, which almost fully comply with category Ia;
- other categories are less distinctly connected to particular IUCN's categories and they often include areas which currently fit more than one IUCN category;
- none of protected areas in Serbia currently has management principles which are in accordance with category II;
- protected areas should be assessed individually and IUCN's guidelines should be used to improve the management and to prioritize nature conservation;
- management of most of the protected areas should be improved and more focused on nature conservation in order to achieve proper harmonization with the IUCN's system;
- IUCN's system of categories shall not be used to devaluate protected areas and to downgrade the protection of natural values.

2.2.2 Potentials and challenges of a transboundary park between the Dinder and Alatish National Parks of Sudan and Ethiopia

Hailu Menale



International borders are political, not ecological boundaries. That is why natural resources do not end at administrative borders. As a consequence, conservation measures have to be taken across national borders. International organizations strongly recommended the establishment of transboundary protected areas. Transboundary protected areas sustainably help conserving biodiversity in an effective way by complimenting the ecosystem of the natural resources in addition to using the protected area as a peace making area.

Dinder National Park in Sudan and Alatish National Park in Ethiopia are national parks which are located in two different countries but adjacent to each other and share about 75 km border. Dinder National Park (DNP) was established in 1935 following the London Convention of 1933 for the conservation of the African flora and fauna. The park covers an area of 7,123 km². Dinder is a national park, biosphere reserve and Ramsar site at the same time. Alatish National Park was established in 2006 and covers an area of 2,665 km².

The two national parks are found in the same ecosystem, hence, they have many common features. The two national parks share common natural resources like Ayma and Gelegu River, which are tributaries of the Nile River, have common wild animals which migrate daily and seasonally between the two parks. Also the landscapes and local climate such as annual amount of rainfall are similar. Similar interests of stakeholders on both sides, particularly of the indigenous groups of Gumuz, may be important reasons to establish the management in a transboundary manner and, thus, a transboundary park.

Even though the advantages and the necessity are evident, the management bodies of both national parks have not started any formal cooperation and communication yet. Due to this, a great loss of biodiversity, in particular in the border areas, has to be considered.

Hence, a transboundary cooperation and later on the development of a transboundary park between Alatish and Dinder is important, complementing ongoing initiatives such as the Nile Basin Initiative (NBI). NBI strives for consolidating the cooperation and partnership among the riparian countries in a fair

and equitable sharing of the Nile water. The cooperation between Ethiopia and Sudan in the proper management of the natural resources in the two national parks would therefore have a positive impact on the intended mutual trust- and peace-building process.

The findings of the study indicate that there is immense potential for the establishment of a transboundary park between Alatish and Dinder National Park. In this regard, potential resources for establishing and implementing a transboundary park management cooperation between Alatish and Dinder NPs are:

- common natural resources require a cooperation for equitable sharing. Proper management seems necessary as both sides have the same habitats, the same wild animlas and the same ecosystems.
- common ethnic groups;
- common threats require a cooperation to effectively protect biodiversity ;
- existing national agreements on security, wildlife conservation, agriculture, health and trade;
- international environmental conventions and agreements signed by both countries;
- existing initiatives like Nile Basin and Ethio-Sudan border development commission.

The study also revealed that the different economical standards of the two countries, different administrative structure and different organizational strengths of the two parks might be a challenge in this process.

2.3 Participation, communication and governance in protected areas

2.3.1 Guidelines for the development of a participatory management of protected areas in the Carpathian Ecoregion

Alina Ioniță

Although participatory management of protected areas (PAs) is widely promoted all around the world as an instrument to increase long-term management effectiveness, it proved to be very challenging to put this instrument into practice. Rich in biodiversity, the Carpathian Ecoregion (CER) overlaps with the so-called "post-socialist" Central and Eastern Europe. The long tradition of centralized decision-making, together with the political, social and economic context hinders the development of participatory decision-making systems and management practices, including the field of natural resource management and nature conservation.

In this context, the paper aims at supporting the implementation of the CBD Programme of Work on Protected Areas (PoWPA) by elaborating a set of guidelines for the development of a participatory management of protected areas in the Carpathian Ecoregion. It continues the work initiated in 2009 in the framework of Protected Areas for a Living Planet Project, funded by the Mava Foundation and implemented by WWF-Danube Carpathian Programme in this region. Part of the thesis is currently published by WWF-DCP in a revised form.

Based on the results of the assessment which was undertaken in 2009–2010 in 11 selected sites from 6 Carpathian countries, on some preliminary results of the WWF scorecard analysis (2008) and on literature, the study explores the enabling environment, the forms of governance and the status of stakeholder involvement in the management of PAs in the CER. Management and governance systems are documented, enabling the analysis which underpins the development of recommendations and of a comprehensive, context-oriented methodology of assessment and planning for participatory management.

Based on a comprehensive literature review, the rationale, benefits and risks of participatory management, the PoWPA provisions concerning stakeholder involvement and governance, the role of participation within the PA life cycle are presented and used as a starting point to develop the methodological tool.

Based on a form and a guide for interviews that were elaborated to collect information, structured interviews with the PA staff and national experts were conducted to collect information concerning the administrative and decision-making systems and the overall status of stakeholder involvement at the protected area level as well as at the national level.

The following aspects have been considered as relevant for the development of participatory management and are considered for this analysis:

- the legislative framework – i.e. existing requirements/obligations for the authorities in charge with the management to engage stakeholders in different phases of the PA life cycle;
- the local context of each PA – i.e. geographical context, management scope and regime, local communities, stakeholders, their interests, natural resource management conflicts;
- the capacity of the PA administrations (PAAs) to solve stakeholder-related conflicts and involve stakeholders in the management process, i.e. authority, financial/human resources, communication means;
- the existence and functioning of multi-stakeholder bodies;
- concrete examples of participation, i.e. experiences with stakeholders involvement and their effectiveness (examples of success and failure);
- the opinion of the PAAs with regards to the need for stakeholder involvement, the opportunities, barriers and the most suitable approach to the relation with local communities and stakeholders.

To avoid the different interpretations or confusions, criteria to define stakeholders and some possible categories to be considered, levels of stakeholder involvement, types of attitudes and relations with the stakeholders were predefined and standardized.

The results of the WWF scorecard analysis show that all the Carpathian countries started the implementation of PoWPA but there was little progress to achieve the objectives concerning participatory governance and stakeholder involvement. Moreover, as resulting from the country reports, this objective does not represent a priority yet, therefore, the development of innovative, participatory forms of governance and management is slow.

Even though in most of the countries the law offers the possibility to develop different types of governance, provisions concerning the need for a comprehensive approach based on the PA life/management cycle for the development of participatory management are insufficient or completely lacking. It is therefore not known when and how to involve stakeholders. Many PAs were declared with no or limited stakeholder involvement, which resulted in negative attitudes and conflicts between PA authorities and the local communities, which were activated during the management implementation phase. Consequently, the PAAs have the difficult mission to cope with this “handicap” despite their lack of/insufficient capacity and

compensatory "arguments." National and site level evaluations of this issue were not undertaken and the existing multi-stakeholder bodies (which had been established in most of the Carpathian countries) for the management of PAs are neither based on the principle of inclusiveness nor functional in the sense of "fully and effectively involving stakeholders," as required by the PoWPA. As resulting from the case studies, given the lack of tradition for public participation, information is considered highly important by the PA practitioners as a form of participation (although passive from the perspective of the stakeholders) in consultation and functional/instrumental partnerships.

Concerning stakeholder involvement in the management of PAs in the CER, the assessment emphasizes the following factors:

A. Land use and development conflicts which hinder the active involvement of stakeholders in the management process

- limitations/restrictions for land use, i.e. reduction of immediate economic gains for landowners and managers of the natural resources with no compensation payment systems in place, is the main source of conflicts and problems in most of the PAs in the Carpathians;
- pressure and threats deriving from development are the second driver for conflicts in PAs. As a result of lacking or insufficient transparency, dialogue, involvement concerning the PA establishment and management planning and of weak instruments for the integration of PAs in their territories and social-economic context, pressures and threats deriving from development, is increasing. Stakeholders' negative perceptions of PAs are determined both by the economical limitations and by the insufficient knowledge and understanding of the rationale and role of nature conservation.

The benefits of PAs, which might represent an argument pro "working together" in the context of a negative socio-economic impact the PAs generate by the restrictions are not yet assessed.

B. Protected area governance issues

In all Carpathian countries, most of the PAs are managed by governmental bodies at different levels, either directly or by delegating the management authority to other stakeholders. The existence of consultative and advisory bodies in some countries favours the active participation of stakeholders to different extents but the enabling conditions for effective and efficient participation are still not sufficient..

C. Protected area capacity issues

In most countries, there is a need for capacity-building (increasing knowledge and know-how for practitioners) and for allocating resources (special programmes and budget lines). The low capacity of the PAAs and lack of appropriate resources and skills to develop and implement a communication strategy, to initiate a dialogue, to find solutions and solve conflicts, to negotiate

and communicate with stakeholders efficiently in a conflicting situation are one of the greatest challenges for the development of participatory management.

D. History of establishment with no consultation

Consequently, for the proper acceptance and successful use of participative management techniques, there is an obvious need across the region for a combination of:

- clear understanding of the role and need for participatory management and of the means to put it into practice, especially at the PAA level;
- proper resources and sufficient capacity available at the PAA level for information, permanent communication with stakeholders and development of participatory processes;
- clear legislative provisions and guidelines for those who manage the resources in the PAs and implement the conservation measures;
- an effective system of control, monitoring and measuring the effectiveness of participation.

As resulting from the study, even though the needs and the functioning of society together with the specific legislative and administrative framework for PA management are not fully supportive for participatory management, the PA administrations and custodians can achieve some significant progress in improving their relationship with the stakeholders and in fostering their involvement in the PA management.

The *guidelines* for the development of participatory management are structured in 2 major phases, i.e. (1) the assessment phase and (2) the design and planning phase, comprising 4 steps, i.e. (i) the context analysis and the identification of stakeholders, (ii) the stakeholder analysis, (iii) the assessment of current status of stakeholder involvement and (iv) the planning phase (Figure 9).

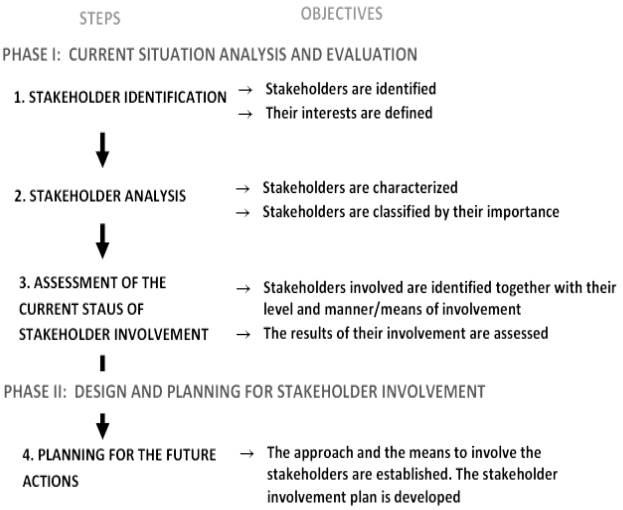


Figure 9: Methodological steps of assessment and planning for participatory management

For each of the 4 steps, the guidelines describe the objectives and provide a list of guiding questions to be answered as well as a brief inventory of the data and information needed.

Step 1: Stakeholder identification – implies the revision or assessment of the following aspects, from the perspective of the relations between the PA and the local communities

- the "area of interest"/"interaction" which is relevant for the management activities;
- the PA aim and management objectives, the internal zoning and the situation regarding land ownership;
- the social-economic assets of the PA (e.g. land use types, resources, social-economic values);
- the PA benefits;
- the threats for the PA and the main management problems;
- the organizational context for the PA management.

Step 2: Stakeholder analysis – is organized in 3 main working stages

Stakeholder characterization in relation with:

- the impact of the PA regime;
- stakeholders' power and capacity to influence the management;
- stakeholders' importance for the management.

Stakeholder classification by their importance.
The stakeholder network analysis – the identification of stakeholders' relations.
Step 3: Assessment of the current level of stakeholder involvement in the PA management
Implies the identification of previous forms of involvement for each category of stakeholders and the analysis of benefits and risks associated with their participation in correlation with their role in achieving the PA management objectives.
Step 4: Design and planning for stakeholder involvement
Building on the results of the assessment carried out in the previous steps, it implies the choice for the optimal forms and means of involvement of each group of stakeholders. The elaboration of such plans should take into account the requirements of strategic planning (including SMART objectives, milestones and indicators, timelines and resources, risks).

2.3.2 Planning and managing Sacred Natural Sites of the Great Inca Trail in Sangay National Park, Ecuador

Maria Augusta Almeida Ferri

Sacred Natural Sites (SNS) have always been present in many religions and systems of traditional knowledge of different cultures. These sites are spread all over the world and have a special meaning to local people. Some of them are a "living heritage" today, while others have been lost due to development or a change in human values and practices. Where lost, it is important to recover this information to conserve and share it with future generations as part of their roots and their identity.
Where still in place, Sacred Natural Sites need to be preserved and managed. They can be seen as the essence of sustainable development, a place where humans experience the connection with and care for nature.
Sacred Natural Sites are often located within formally designated PAs and, in fact, SNS have gained substantial attraction from the conservation scene in the last decade. Different initiatives started to raise awareness by collecting and sharing information and to advocate on this issue. Nevertheless, a good practice inclusion of Sacred Natural Sites in worldwide protected area planning and management seems to be rather the exemption than the rule.

Ecuador has a rich natural and cultural heritage and these values have been recognised by the country's constitution as well as its heritage and conservation policies. Moreover, some areas in Ecuador are still considered to be Sacred Natural Sites, a living patrimony to learn, protect and conserve. This is the case for some of the natural elements related to the Gran Ruta Inca, a strategic network of trails that was constructed by the Inca Empire in order to control and use their lands (Figure 10). In this part of the country, Andean ceremonies are still an important practice for local communities.

Figure 10: Culebrillas Archaeological site along the Inca Trail is a major cultural centre used as a place where the Inca prepared and trained their army

One of the main issues in the Andean culture of Ecuador is that – due to many factors – poverty is associated with the Inca trail. Nevertheless, some people also argue that the Inca trail can be the key for re-activating this region. As demonstrated by other destinations like Machu Picchu in Peru, marketing (nature and culture) tourism related to the Andean culture can attract significant visitor interest. Although the cultural elements of the Inca trail that crosses Sangay National Park (SNP, Figure 11) are less prominent than the Peruvian ones mentioned above, there is potential for a positive contribution towards a sustainable development in this region by activating local communities and their traditional knowledge.

Sacred Natural Sites are sensitive, fragile areas. They usually have their own myths, their functions, their custodians, their very unique rituals and non-material qualities. Their use or non-use is usually clearly defined and in many cases, this (tacit) knowledge is kept confidential and strongly related to the people who take care of these places. These are reasons why Sacred Natural Sites located within protected areas need a special emphasis on collaboration between custodians of these sites and park managers. Rights and responsibilities of access and use together with appropriate governance structures are of utmost importance to places of "living heritage."

Figure 11: Ingapirca, the "Temple of the Sun," is an ancient astral observatory in the buffer zone of Sangay National Park, Ecuador

The findings of this research suggest that the process of including Sacred Natural Sites in the planning and management practices of Sangay National Park has just begun. Most of the documents related to Qhapac Ñan do not provide guidance for the active management of SNS under the umbrella of a protected area structure. Due to the lack of such (national and regional) guidelines, the progress level of SNS inclusion was identified by applying IUCN best-practice guidelines (Wild and McLeod, 2008) in a self-assessment done by people familiar with Sangay National Park. Although this assessment was done by only a very small group of four people, its results seem to be supported by the findings of the literature review.

In short, there is still a lot to be done. Out of the 44 activities defined by the IUCN best practice guideline, five activities have not even started yet. These are

concentrated on conflicts over the control and use of land in the park (highlighted by the guidelines on conflict management, cultural use, decision-making control, zonation, coordinated tourism development).

Activities that have just been started (20% average progress level) focus on the broader topics of land use planning (guidelines on development planning, visitor management, SNS identification, demarcation and protection), stakeholder involvement (institutional analysis, consultation, and confidentiality) and administration (sustainable financing).

More progress can be seen in the third group of activities (21–40% average progress level) which relates to the broader topics of awareness building (guidelines on traditional knowledge, networking, communication, intercultural dialogue), the legal framework (access and use to the land, custodians rights, governance) and planning approaches (holistic, ecosystem and landscape approach, multidisciplinary management).

The most advanced activities (41–60% average progress level) indicate that there already is a strong awareness and recognition of the importance of SNS for human well-being and the conservation of natural and cultural values. Moreover, there is an understanding of linkages between SNS on the regional level. Park-internal planning processes to include SNS have been initiated and there has already been integrated research on biodiversity and SNS. The highest ranking activities were the formal recognition of SNS within parks and the recognition of the role of custodians as well as the importance of SNS for the cultural renewal (guidelines 1.3 and 4.7; IUCN, 2008) with a score of 50%. This again indicates the early implementation stage of SNS in SNP.

The results of the progress level rating suggest that although there is a strong understanding of the importance of SNS for the natural and cultural heritage of SNP, the implementation of appropriate structures, policies and actions is lagging behind. There seems to be a great need to bring stakeholders together, create an atmosphere of trust and (prior) consent and solve conflicts over decision-making control and (ancestral communal) land use rights within the park boundaries. This should be done by involving community leaders and SNS custodians as well as the competent authorities involved in planning, management and development of the region and country.

Developing a tourism strategy for this area before solving issues relating to land use rights and governance will only magnify the conflict potential going forward and potentially destroy some of the fragile treasures of this park. The recognition of sacred natural sites, their custodians and practices have the potential to improve communication and collaboration among stakeholders in Sangay National Park.

Over the last years, the Environmental Ministry and the National Biodiversity Department have strengthened the whole system of protected areas in Ecuador. Participatory management of the cultural and natural resources will become more

important as the national government works towards the decentralization of patrimony management and the delegation of competences as well as decision-making power to local governments. Therefore, the current situation in SNP can be an opportunity to adapt a new, participatory planning and governance approach for the park making it a key player for a sustainable development in the region. Some recommendations for future actions are mentioned below:

Continue to raise awareness about SNS

The development of guidelines for sacred natural sites management and planning will build awareness of the potential of Sacred Natural Sites among the broader public in general, but moreover, it will be a tool for the PA managers of Sangay National Park, the Ministry of Environment, the Ministry Coordinator of Patrimony, the Ministry of Tourism and other actors, like NGOs and local people involved in the implementation of programs and projects linked with this PA and the Inca Trail.

Analyze capacities

In order to start with the process, relevant local, national and international stakeholders should be identified and analyzed due to their human and institutional capacities, historical interaction and current positions. This is a necessary step in understanding the context of Sacred Natural Sites in Sangay National Park. Once the analysis is done, the stakeholders should be contacted and a communication process should be started that is based on respect and continuity.

Identify and resolve potential conflicts

The dialogue among stakeholders seems to be weak in Sangay National Park, especially in the study area. A reason for this might be the extension of park boundaries to communal land in 2002. The identification and analysis of potential issues of conflict by involving all relevant stakeholders should be considered. For actions going forward and relating to SNS, the guidelines based on the prior consent which require protected area managers to "ascertain the free, prior and informed consent of custodians before including sacred natural sites within PAs and when developing management policies affecting sacred places" should be considered. It is important to create an atmosphere of trust between the SNP and communities (explaining potentials but also the limits of the national park for the development of local livelihoods).

Continue to build knowledge

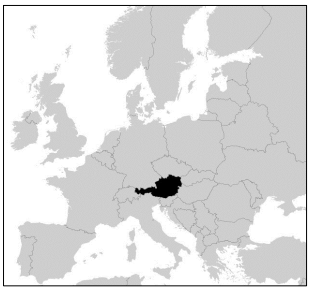
It is recommended to continue to identify sacred sites and map them by using the technique of participatory mapping; to define the zonation, identify SNS custodians, Rights of access and use and monitoring requirements should be defined, research should be conducted on the biodiversity of the SNS, the cultural memory of the local communities should be recovered and their identity strengthend.

Provide continuity in funding

Another problematic issue which has continually eroded the relationship between the park, local communities and other actors is borne by a lack of funds – a lot of initiatives in the region were started but not continued beyond the project duration because of missing sustainable self-financing capacities.

2.3.3 The role of UNESCO Biosphere Reserves in regional governance networks

Christian Diry



To solve coordination problems in and across a wide range of specialized social systems such as the economy, the legal system, the political system and the health system but also in sustainable development and in nature protection, conventional structures of government and governance are at their limits and new forms of governance are emerging.

Since no single agency or organization can "govern" or "manage" sustainable development in complex social-ecological systems, biosphere reserves facilitate collaboration by defining a common agenda, and sharing knowledge and resources to develop joint projects and collective solutions (Pollock, 2009).

Jessop (2002) defines governance "as the reflexive self-organization of independent actors involved in complex relations of reciprocal interdependence, with such self-organization being based on continuing dialogue and resource-sharing to develop mutually beneficial joint projects and to manage the contradictions and dilemmas inevitably involved in such situations."

Designated by the United Nations Educational, Scientific and Cultural Organization (UNESCO), biosphere reserves are seen as models for community-based sustainable development. They are geographic areas that contain globally unique ecosystems and encourage communities to integrate biodiversity conservation into sustainable development activities. Sustainability requires a variety of innovative governance models and approaches.

In my work at the BR Wienerwald, I have experienced the animosity of existing regional managements, of PA managements as well as GOs and NGOs in fear of loss of money from public funding but also due to a lack of clear differentiation of the tasks of the BR.

The tasks of biosphere reserves to promote sustainable development in all areas of sustainability based on a protective zoning system to ensure the protection of biodiversity can be fulfilled in various ways. The BR managements are quite free too choose which tasks they start their work with.

Mostly, they look at existing BRs with similar settings and more or less copy the activities there, which is a legitimate way to use model regions. But the conditions, may it be in terms of politics, social or even financial issues, can be very different and in need of more accurate analysis to find the most effective way to use all synergies in an area and prevent redundant use of effort and money.

As it is the case in the Wienerwald BR on the rim of the capital of Austria, many of the "usual" tasks that a BR in a more remote area fulfils are already done by one organization or the other. In the vicinity of universities and pedagogic academies, research and education are abundant. The tourist sector is, although focused on the capital Vienna, well-organized and institutionalized. Due to the efforts of the governments of Lower Austria and Vienna, as the BR Wienerwald lies in between the capitals of the provinces, several "near governmental" organisations promote environmental education and education for sustainability. Several regional managements in the area of the BR help with economical and social development (Figure 12). Managers of smaller regions and co-operations of several communities organize projects to receive EU funding for LEADER or INTERREG projects. There are even areas that are under nature protection by law or designation with existing managements inside the biosphere reserve (e.g. nature parks). All the people working there wonder whether the BR is a competitor to their institutions in the struggle for public funding. So, instead of being recognized as a unit to help a region on the way to sustainable living, the BR is seen as a rival, duplicating efforts of existing organizations.

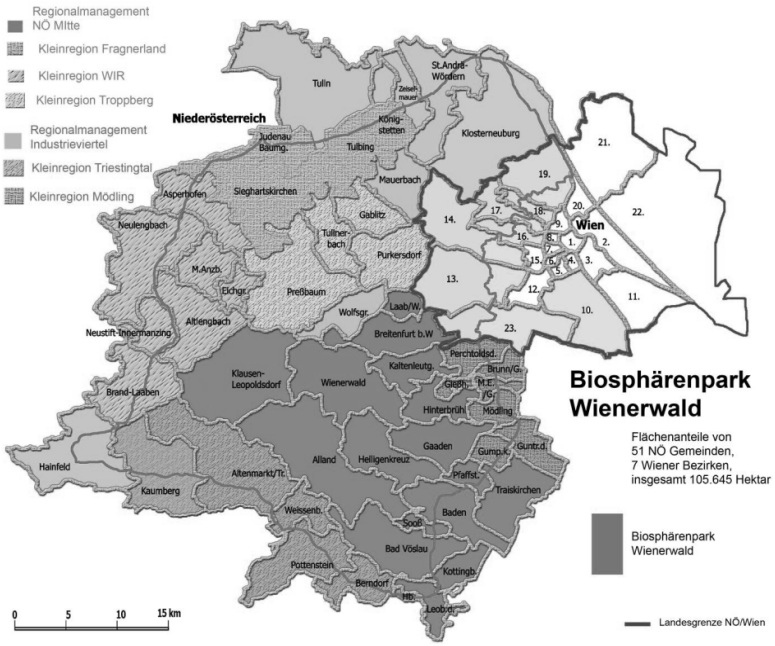


Figure 12: Regional managements in the Wienerwald biosphere reserve region

Climate alliance | Save on Traffic | Wienerwald Declaration (Charter)

Figure 13: Examples for governmental programmes in the Wienerwald region and communities

There is a complex overlay of institutions and organizations in most biosphere reserves (Figure 13 and 14). Biosphere reserve managements as bridging organizations connect certain levels of actors to promote biodiversity protection

and sustainable development, from inhabitants, local stewards, scientists, communities or NGOs to governments and international organizations. Similar functions are also carried out by other organizations in the same place.

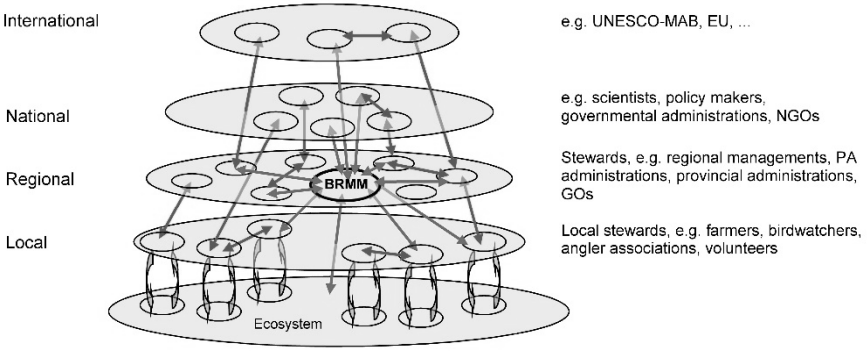


Figure 14: Governance levels and cooperation around the Biosphere Reserve Management (BRMM)

The aims of the work are:

- To what extent are local BR organisations involved with networks and in what capacity (governance profile)?
- Are there common structures of BRs in the EuroMAB network that can be used as models for successful implementation of BRs?

By now, I can say that there are very different ideas about the role of BRs. This role also varies in different settings (provinces, countries, structures) so that common structures are not easy to define. Starting from the original biosphere reserve idea, the itself has undertaken dramatic alterations as well as its perception has changed from a scientific point of view or even in the public. The high demands by the UNESCO of BRs can be met from different sides to bring about sustainable development.

2.4 Ecological aspects in the management of protected areas

2.4.1 Ecological asessement of biodiversity pressures in Mgahinga Gorilla National Park, Uganda

John Emitchell Okot

The understanding of habitat pressures and threats forms the basis to design pragmatic regimes for the protection of biodiversity and species assemblage in Mgahinga Gorilla National Park (MGNP). The study gives an insight into human habitat use as basic components of reality checks. An ecological assessment of biodiversity pressures was conducted between October 2010 and January 2011. The aim of the study sought to identify potential pressure on biodiversity and a priority ranking was done based on the degree of threats.

The objectives of this study were: to establish ecological pressures and historic threats on biodiversity in MGNP, to determine the protected area (PA) copying mechanisms in addressing threats, to assess local community influence on the use of resources of the protected area and to develop conservation recommendations for planning integral management regimes.

Thus, empirical data on pressures was gathered subdividing the study area into three stratified blocks approximately 4.2 km from West to East, covering about four percent of the park area. The park map was overlaid with Universal Traversal Mercator grids. Within each block systematic line transects were positioned 500 m length x 10 m width and 5 m observation on either side. The target ecological variables were measured and data on threats were collected. Threat reduction assessment (TRA) parameters formed a benchmark of a quantitative method, complemented by a qualitative approach for threats as well as an ethnographic method for demographic survey. Besides, the Threat Reduction Index (TRI) mode and an Analysis of Variance (ANOVA), the Statistical Package for Social Science (SPSS) was used for the data analysis.

The study revealed a total of 17 threats that were significant on the park's aesthetic and ecological biodiversity. 8 of the threats were rated critical, with snare poaching as the highest at 50.6%. These results indicate that the pressure on the habitat is heavily affected by anthropogenic factors. The occurrence of these

pressures in the park was an increasingly major concern for the management. The impacts on wood products were significantly different at the buffer and core zone of the park due to the different types of human interventions of the habitat (timber harvest, fires, bamboo and wild honey harvest, livestock grazing) that occasioned irreparable damages on biological resources. The analysis of distribution patterns of the different threats in Sabinyo (SB1), Gahinga (GB2) and Muhavura (MB3) blocks showed no significant differences of human interventions of the park ecosystem. Snares accounted for 67.2% as predominant tool, synonymous with poachers, and caused 71.3% of Cephalophus nigrifrons; Tragelaphus scriptus were most often in the line of fire. The park intervention strategies addressed 37.2% of the pressures and threats that were perceived as threats to biodiversity. The demographic pattern that emerged from this study indicates that 52 household were sampled representing 196 individuals interviewed. Out of them 57.7% lived at the buffer zone of the park and 42.3% settled further away. The study found poaching is strongly positively connected to the ages 20 and 39 years (55.7% of all poaching arrests) and linked with low education and insufficient conservation education and awareness among the communities at the PA matrix.

Okot (2002) defined and described snare as simple wire structure with sliding loop at the tip of the snare commonly synonymous with poachers, and the other part is anchored on the stump or live stand tree. The sliding loop is set in way that any slight touch on it entangles the animal either on the neck or part of the leg (hoof) and kills the animal by strangulation. The graph below provides an overview of mean percentage snare removal pattern from the park's environment. The study showed that snares were more prevalent in GB2 and MB3 compared to SB1 block, and this includes snare data from January 2007 to December 2010. This could be attributed to the proximity to the neighbouring villages and abundance of animal populations in the area of GB2 and MB3.

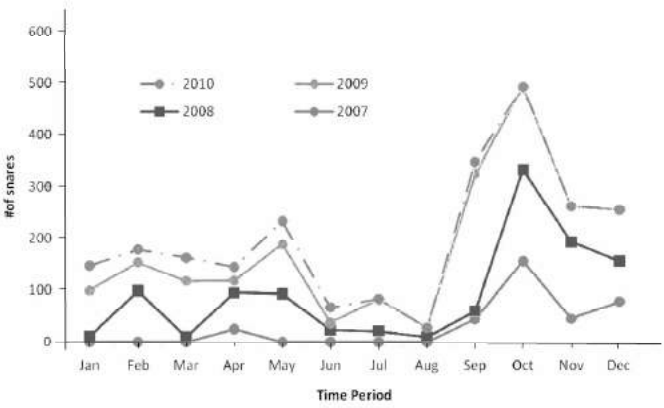


Figure 15: An illustration of snare removal pattern in the park's environment
Source: MGNP-LED, 2007–2010

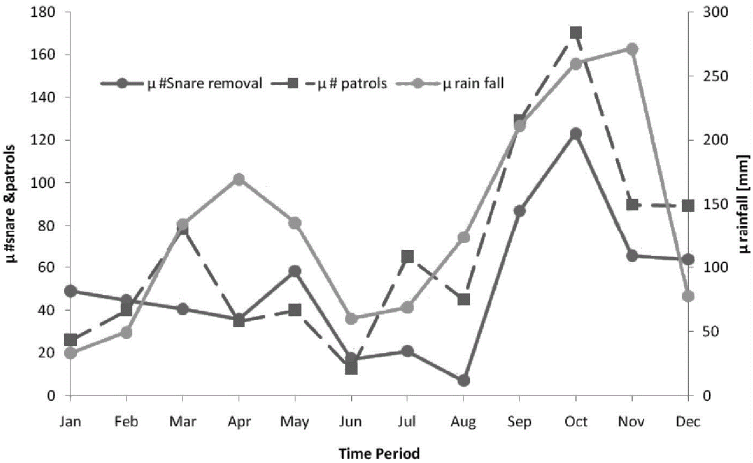


Figure 16: Temporal relationship between patrol/snare and mean rainfall
Source: MGNP-LED, 2007–2010

As shown in Figure 15 and 16, the mean number of snares removed per months by patrol rangers varies widely with mean percentage as low as 1.1% in the month of August and peaks up to 92% between September, October and November. This, therefore, explains why the snare setting is more or less present in all months of the year but is at peak in the wet season. This relative pattern corresponds to the mean

percentage of rainfall which peaks in the month of March, April and September to November. One interpretation of this correlation is that it is easier to locate snares in the wet season because at that time, poachers tracks are more easily detectable and traceable in the dew.

It is interesting to note that in the month of December, the mean percentage snare collection trend falls sharply as the dry season begins. Poachers also choose not to set snares so frequently during the drier season between June and July, which is perhaps due to the fact that it is difficult to detect animal tracks. This explains why the patrol coverage efforts showed a percentage average of 68.4% from January to December and slightly lower in June to July period (Figure 16), as these months are deemed to be of low poaching pattern in the park. The graphical illustrations clearly show human exploitation of biological resources and perhaps sporadic reduction or even cause more extinction of some species. Plumptre et al. (1997) observed that increased snaring of ungulates and other important species in the park affects representative biodiversity (species, ecosystem and landscape diversity).

A total of 33 animals belonging to 28 mammal species were recorded during the study in block SB1, GB2 and MB3, including data obtained from the park records to have been poached using snares or other tools in the park between January 2007 and January 2011. The duikers *(Cephalophus nigrifrons)* featured most frequently in the kill 36.4% (n = 12), followed by bushbuck *(Tragelaphus scriptus)* 30.3% (n = 10). Snaring was the most predominant method of poaching and accounted for 39.2% (n = 11) of the total duikers and 32.1% (n = 9) of Serval cat *(Leptailurus serval)* above all.

All in all, patrols have made significant inroads towards the reduction of snare poaching. For example, rangers were able to arrest 21 poachers (58.3%) and together with a significant amount of snares removed this will go a long way to reduce snare poaching and related threats. The researcher also noted that more snares are now set in thicker vegetation and in locations more difficult to reach for rangers. Also the rate of snare removal by patrol is falling considerably. For example, the average proportional percentage of snares collected from January to December 2009 – records indicate 1,056 (88%) compared to 242 (48.4%) in 2010 the same period – shows gradual decline in trend patterns. This could be ascribed to the fact that snares are set in difficult areas to reach or poachers are scared of ranger patrols. Furthermore, community conservation awareness programmes conducted by the park could also have changed the community's attitude towards poaching. All in all, the park has increasingly demonstrated considerable efforts to remedy the situation without claiming to be completed. However, the present study provides in-depth analysis of the impacts of biodiversity pressures, which gives an insight into the management challenges.

Figure 17 below shows the distribution of spatial impacts on the park's biodiversity values. The result in Sabinyo (SB1) block shows that 12.2% accounted for trees are at the buffer zone and 5.3% of the trees are in the core zone of the park. In total, 17.5% of the trees ha^{-1}, were removed from Sabinyo (SB1) block by local communities living next to the park. Meanwhile, Gahinga (GB2) block accounted for 16.3% impacts at the buffer and 9.2% in the core zone, suggesting that 25.5% trees ha^{-1} was harvested in the whole area. The pattern in Muhavura (MB3) block shows 30.4% high impacts recorded at the buffer and 19.5% in the core zone. This means that a total of (50%) trees of biomass ha^{-1} was lost to human activity. The spatial impacts caused by human activity on the park's ecosystem in the past and currently were increasingly evident and widespread in all the 3 blocks. Thus, the average impacts between the buffer and the core zone was 8.30±SD2.25 ha^{-1} and the overall proportional impacts of wood trees and poles differed significantly ($t = 6.378$; $p = 0.024$) at the edge and in the interior respectively. Within a distance of ≤ 50 m from the park boundary, high pressure and threats were observed particularly related to firewood and pole extraction. Similarly, ≈100 m to the center of the park, the occurrence of wood tree extraction was significant, whereas at high elevations, the impact was relatively low with the exception of damages caused by elephant. Both wood trees and tree pole harvest occurred throughout the park ecosystem at lower elevations, more intensily at the edge than in the interior. Thus, wood tree harvest remains a critical concern to the park management.

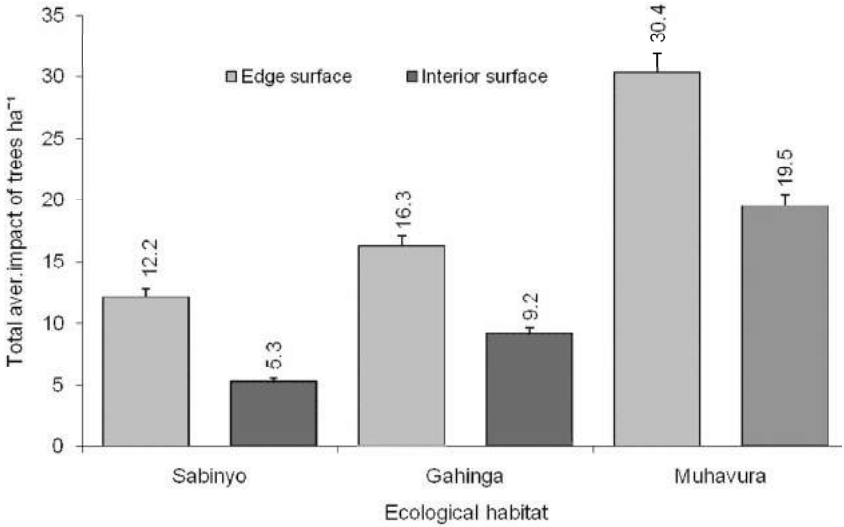


Figure 17: Distribution of spatial impacts on tree species recorded in the blocks

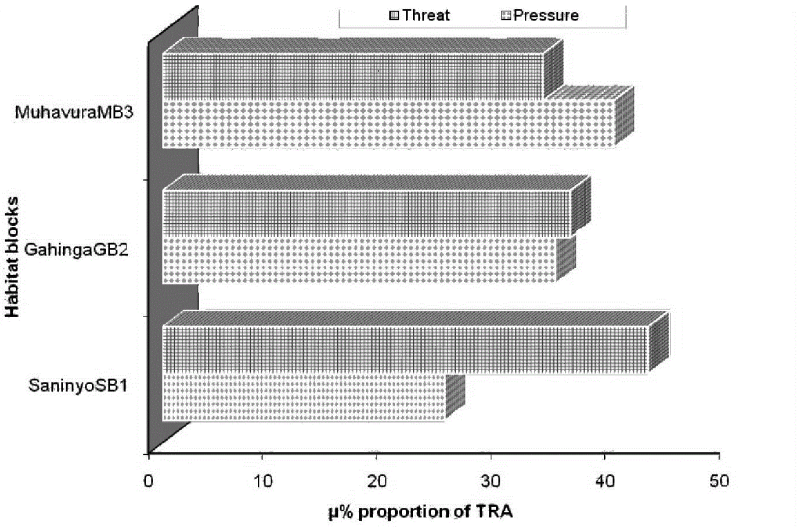


Figure 18: TRA mean percentage estimations of threats and pressure

Figure 18 shows an estimation of variance percentage proportion of TRA spatial impacts on the habitat geomorphology. The graphical explanation shows levels of threat patterns which correspond to the human influences that have directly eroded the habitat both at the buffer and the core zone. As human pressure builds up at the buffer zone, block MB3 shows unduly high demand for park biological resources, and this translates to the loss of aesthetic and biodiversity values. The observed variance in pressure and threats relates to a mean percentage degree of TRA spatial impacts recorded in the 3 blocks (i.e. SB1, GB2 and MB3). When the 3 blocks were analyzed, pressure frequency ANOVA ($F = 0.244$; $df = 9$; $p = 0.927$) showed no significant differences of increased human interventions of the park's habitat and this draws heavily on the loss of biodiversity as authors have argued (Butynski et al., 1990; Kalina, 1993; Twinomugisha, 2000), implying that pressure is greatly felt at the buffer zone and threats are exerted in the core zone. This also applies to the threat and pressure patterns in the MGNP, as shown in Figure 17. Similarly, the threat and pressures in the blocks GB2 and MB3 have shown relative impacts recorded at 36% and 39.5% respectively. Results from block SB1 showed proportionally high threats from livestock grazers with relatively low scale of pressure. Because a small stretch of land lies outside the park, livestock encroachment is often felt in the park's habitat structure.

The magnitude of threat and pressure varied significantly between the study blocks. The TRA analysis in block MB3 showed a tremendous proportion of increased threats, and this corresponds to mitigation strategies at 33.3% index. Most obviously, this resulted to gross violations against park laws observed in MB3 block compared to the rest of the blocks. Evidence on-site showed that the fragile habitat had been impoverished due to increased human patterns in the area. Butynski et al. (1990) as well as Gartlan (1974) noted similar patterns in the same block, largely influenced by anthropogenic factors, for example poaching, livestock grazing, bamboo and tree harvest, that have increasingly thrived the ecosystem. Gartlan (1974) suggested that the anthropogenic factors were unbearable between the late 1960 and early 1970's, and this pattern was closely connected to political turmoil in the region. According to Werikhe (1991), this occurrence coupled with trends of snare increase in the park ecosystem and this pattern has risen dramatically until today, displayed by the behaviour of common man and, thus, creating some form of mosaic varied ecological habitats. This has led to accelerated habitat modification and subsequent loss of MGNP's aesthetic conservation qualities and its highly endangered relic species Butynski and Kalina, 1993; Butynski et al., 1990; Ocen, 2000; Twinomugisha, 2000 and 2007).

An assessment of habitat values provided descriptive results of anthropogenic factors, as mean percentage pressures at the edge of the park and the threats in the interior (Figure 19). The data was used to establish the scatter diagrammatic model, which infers ecological patterns with a strong connection between pressure and

threats operating independently at different scales on the habitat since pressure and threats are strongly interrelated factors which have contributed tremendously to the park's ecological degradation. Siegel and Castellan (1988) observed that the scientific idea behind the scatter diagrammatic patterns tend to display an appreciation of what occurs to a particular variable at the same time and also allows the variables to exist together graphically as in the case below.

Similarly, one could have the impression that the model above typically portrays a similar connection. As shown in Figure 19, that correlation does exist linearly perfect between mean percentage pressure at the edge and threat in the interior of the park. This means that the graph shows pressure on exponential rise on the habitat at a constant rate depicting a perfect linear model. This was also prominent from geomorphology changes observed at the habitat structure during the study with a mean of $\mu = 48.47 \pm SD18.21$ of pressure and threats. Statistical analysis of the Pearson correlation ($r = 0.824$; $p = 0.044$, $n = 549$) shows a positively perfect correlation between the pressure at the edge and threats in the interior. The present results concur with an approach used in the study of edge effects on trees of Bwindi Impenetrable National Park by Olupot (2009).

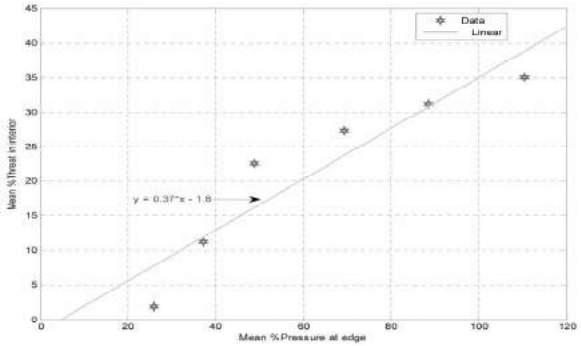


Figure 19: Relationship between μ% pressure at the edge and μ% threat in the interior

In conclusion, the scatter points plotted from left to right represent a straight line pattern. With this connection, the legacy of scientific research demonstrates that the pressure prevailing on the habitat continues to build up both at the edge and in the interior due to increased demand for the park's biological resources by the local communities. Factors manifesting pressure and the threats for the park's aesthetic and ecological functions are well documented and increasingly manifested by anthropogenic influence linked to human patterns (Oneka, 1996; Oates, 1996; Lahm, 1992; Farell, 1980). However, the above model predicts that the

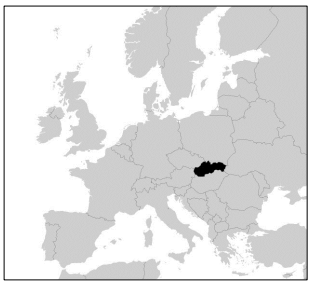
anthropogenic factors affecting the biodiversity represents spontaneous increase, despite management interventions attempting to mitigate the spread of threats on biodiversity.

It is more plausible to mitigate the threats that may contribute to the deterioration of biodiversity as they may as well contribute to climatic changes within the region (Pimm et al., 1985; Sayer and Stuart, 1988; Wilson, 1988; Boyd, 1989). The model also shows graphical tendency to fall more closely or on the linear line drawn, and the factors in question are considered highly linearly correlated. As discussed elsewhere in the context, this conceptual model predicts positive pressure increase on biological resources while the increasing pressure may cause severe habitat loss. For an ideal situation, the illustration of the model is significant because it shows a distinctive relationship between pressure at the edge and threats in the interior. As these findings are linked with demographic factors, Tole (2002) observed that the occurrence of pressure at forest margins is related with human degradation of the habitat. Thus, there is a need for concertedly informed plans in order to reverse the prevailing trends for the future survival of the Mgahinga Gorilla National Park's ecological barometers.

Critical analysis of the model shown above suggests that if the park mitigation strategies are increased to dominate the current areas of threat, a significant portion of the biodiversity can receive substantial protection to ensure long-term conservation. Likewise, others could argue from the above illustration that the level of pressure on biodiversity is peaking and this may cause significant destruction of the ecological functions of the park's environment and species. On the other hand, it is unlikely that the trend will be reversed because of the growing human population with $\mu = 10.00 \pm SD1.00$ ($n = 57.7\%$) at the edge of the park and $\mu = 7.33 \pm SD2.08$ ($n = 42.3\%$) representing respondents far from the park, which exerts more pressure on the park's aesthetic resources. Therefore, the quantification of these patterns helps to devise mitigation measures to reduce an alteration of the habitat geomorphology.

2.4.2 Best practice guidelines for management planning of Natura 2000 sites

Jan Cernecky



Management planning of Natura 2000 sites is a very complex issue. It is especially relevant at this point in time because the process of designation in most of the member states (MS) of the European Union is finishing and proper management of the sites needs to be established. Goals are to assess the actual situation in management planning for Natura 2000 sites and propose the best practice guidelines through the execution of:

- an analysis of the actual situation of Natura 2000 management planning in Europe – theoretical overview based on literature research, online sources and expert opinion;
- a more in-depth analysis of the situation with regards to management planning for Natura 2000 sites in selected member states – practical results and an overview on the national level, based especially on an online survey completed by the national experts for Natura 2000 issues in selected Member States. The analysis is based on the responses of ten member states, namely Germany, the Netherlands, Denmark, Cyprus, Hungary, Slovakia, Poland, Austria, Romania and the UK.
- a proposal of guidelines for management planning of Natura 2000 sites based on best practice observed from the analysis of the online survey responses, interviews with national Natura 2000 experts, literature review, lectures attended and the author's personal experience. This is the main result of the thesis and includes a GIS-based IT tool designed specifically to assist planners and managers for the identification of the most appropriate management measures for specific sites, providing suggestions based on the habitats and species occurring in specific Natura 2000 sites. This IT tool is online and available for free.

The first step in the process of preparing the thesis was the identification of the current status of Natura 2000 sites concerning management planning. This was done in several steps. First step was the overview of basic terms followed by the assessment of the current situation in different Member States, status of establishment etc. It was done by literature review, review of internet sources followed by interviewing national experts. The legislation support and the relevant

directives were identified and described in a detailed overview. Next step was the overview of the basic management planning definitions and practices on member states level.

Analyzing the status quo is crucial for a proper identification of best-practice examples. Concerning the specifics of the management planning, the analysis started by gathering information via internet by the review of already existing management plans. However, the language problem occurs due to the fact that the management planning process is usually prepared on a local level and no additional English translations are most of the time not available. The analysis and assessment of the existing management plans was therefore very difficult as there currently are 22 different official languages used in 27 member states. Due to this issue, it was decided to prepare a basic survey to assist in the process of gathering basic information concerning management planning in different member states. The survey was prepared by means of an electronic web form using HTML code and was published online: http://www.sopsr.sk/survey/.

The respondents of survey were precisely identified and selected out of the national experts in each member state. Focus was especially laid on those experts who already possessed information on a national level, who have access to the national databases and who have already collected information for similar purposes on a local level. Therefore, the data gathered through the the web form were already very comprehensive and objectively describe the situation on a national level.

In addition, the analysis was carried out by further interviews with national experts. Main focus was on the experts working in "umbrella" positions (ministries, competent authorities for Natura 2000), most of them working on an international level, members of the working groups and committees. They are considered the most relevant source of information on a national level as they have a great knowledge of legislation, the general status of designation and establishment and of "what is going on." Therefore, the data was collected from different sources on a national level.

The next step was the assessment of the information gathered and the identification of similarities/differences. Simple comparing methods and figure assessment were used for the analysis. Comparing the management measures and objectives occurred mainly in quantitative terms. Overlapping results were the most important ones as they identify practices currently used in Member States.

Based on these results, a GIS tool for a Natura 2000 overview and the identfication of possible management measures was developed as well. The tool is based on a Google earth platform where the Natura 2000 sites are presented in a spatial form.

Based on the results from the survey and other literature overview, the database of management measures was built up and every management measure was

connected to the specific habitat type or species. According to the subject of protection from Standard Data Form database, the relevant management measures for each site were identified and every user of this tool can easily obtain the list of relevant possible management measures by clicking (left mouse button) on one specific site.

The guidelines were prepared on the grounds of the results from all previous assessments. State-of-the-art approaches for management planning based on the knowledge of different international experts in the field of nature conservation were included. It was decided to integrate current approaches in order to prepare comprehensive guidelines. The guidelines comprise the results from the investigation, analysis and best practice identification as well as the general approaches used, which could help the member states in the process of general management planning on a national or local level. The author's personal experience and expert opinions were included as well.

According to the results, the basic conclusions are especially connected to the results from the survey which describe the current situation in management planning for Natura 2000 in 11 member states, namely Germany, the Netherlands, Denmark, Cyprus, Hungary, Slovakia, Malta, Poland, Austria, Romania and the UK. This information could be useful for comparing the member states' approaches and the progress in management planning for Natura 2000 sites. Additional information and the specifics could also be the pool for ideas for changing the actual status if there is need to change the approach. There also are examples of management plans from selected member states. National experts suggested some of the management plans which were assessed as good examples of best practice.

Identified similarities were the basis for proposing guidelines, the overall proposed structure is based on the statements of the member states. Using personal experience/knowledge and knowledge of other experts, some parts were added to the guidelines as well.

Guidelines include the following chapters (Figure 20):

a) Planning phase

There are several suggestions for planning the process for a management plan. It is important to understand the management planning as the process but not as a static issue. In the preparatory phase of planning, there is the need to think about the aspects to be included. Most of the plans contain ecological and socio-economic aspects but there is a possibility to consider the cultural aspect as well. The time schedule for the finalization of all management plans on a national level is still rather unclear. First results based on the achievement from the implemented management plans on a European level will be visible in the reporting period 2018–2024. Most of the Member States, however, do not have any idea when the management plans will be completed; therefore, there is high uncertainty

concerning the future of management planning. Most of the member states prepared the national legislation in support for the management planning, which seems to be very essential. The structure of the plans is similar in most of the member states but there are some exceptions. The UK has an interesting structure of the plan starting with the vision of the site. An example of a SWOT analysis from Slovakia prepared on a national level could be useful as the basic setting for preparation of the management planning process on a national level.

b) Budget

In most of the management plans, the budget is not included, which could be one of the weaknesses. Therefore, it is suggested to include the financial plan in the management plan in order to ensure proper resources for successful management. It is might be beneficial to switch from the traditional approach to the market-based approach. Diversified financial sources help to reach higher sustainability of financing. Compensatory payments and projects play an important role in financing the practical implementation of the measures.

c) Data collection and basic evaluation

A certain amount of detailed data is a precondition for proper management planning. However, the resources for data collection are precious and most of the time complex data do not exist. Data collection for ecosystem-based management planning is in need of two basic sources – mapping and monitoring. There are other data which should be used in other sectors, especially socio-economic ones. Zoning is essential but only when zoning is properly done using comprehensive approach.

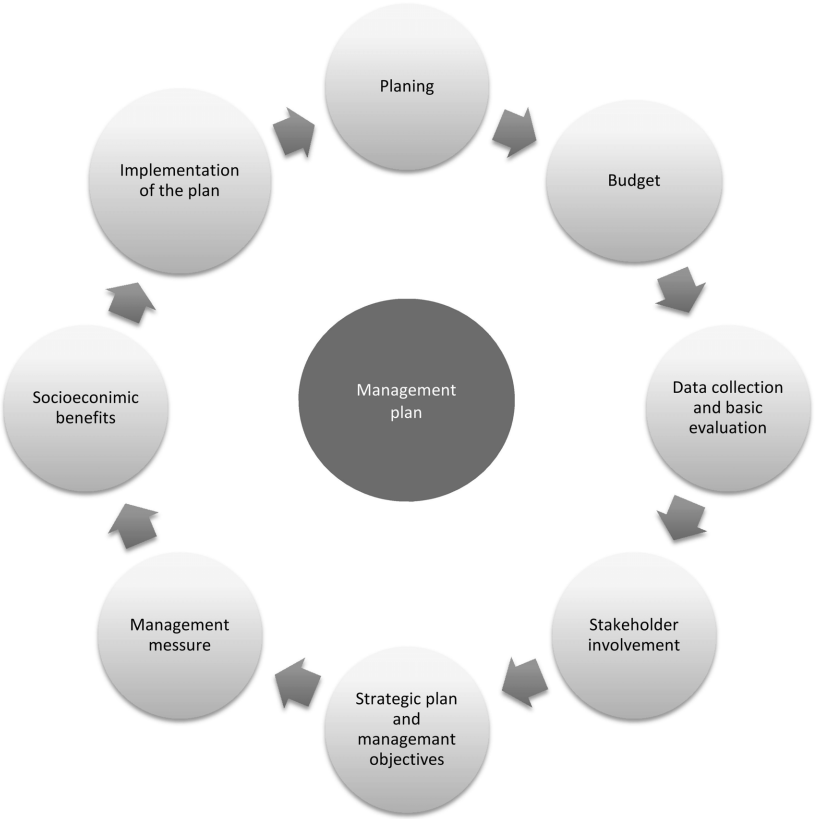


Figure 20: Management planning in protected areas

d) Stakeholder involvement

The main aims of stakeholder involvement for Natura 2000 management planning process are:

- to have a democratic process and respect the rights of people (e.g. the ownership rights) and the fact that some decisions taken influence stakeholder environments. Therefore, logically stakeholders should at least know or have an opportunity to express their opinion (as it is about measures affecting private lands or the area where the stakeholders live/use the land)
- to integrate the knowledge and the resources of the stakeholders (e.g. institutional or non-institutional actors) in order to make the future management more effective

e) Strategic plan and management objectives

Strategic planning is important due to the long-term perspective, which should be in line with slowly changing natural processes. It is essential to plan further and apart from the objectives and also try to define vision and goals. Objectives should be fulfilled by targets and activities. A hierarchic structure is essential, and a logical framework is the suggested format for strategic planning.

The SMART approach should be used every time without any exceptions. Primary objectives should be defined based on protection of species and habitats, protection of natural heritage, communication and participation, advertisement of the area and environmental education. Secondary objectives should be based especially on the development of regional identity, increasing tourism, conservation of cultural heritage, creation of new attractions, possibilities for recreation, research on nature and conservation of landscape. We should not use the improvement of infrastructure and limitation of land use as the objectives for Natura 2000 management planning.

Table 2: Most common management planning tools and instruments used in the EU member states' management of Natura 2000 sites

Managing Instruments	**Percentage**
Mowing/grazing	26
Sustainable forestry	12
Prohibited of land use, non-intervention management	9
Increase/decrease of water level	8
Monitoring	7
Fish management	5
Invasive/alien species management	5
Species population support	4
Environmental education	3
Guard activities	3
Hunting management	3
Pollution control	3
Stakeholder involvement	3
Support of traditional land use	3
Zoning	3
Awareness raising	1
Maintenance	1
Restoration activities	1
Other	1

f) Management measures

More than 50% of the most frequent management measures used in member states which responded to the survey are related to mowing/grazing, sustainable forestry, prohibition measures/non-intervention management and monitoring activities (Table 2). These frequently applied management measures indicate what types of activites are considered most relevant for a favourable conservation status in whole Europe. The mentioned measures play an important role for the future of biodiversity and nature protection on a European level. The list of most frequently used management measures could be used as pool of ideas that covers most of the needs for management measures.

IT tool for management measures suggestion[1]

Lots of management measures used in nember states are usually connected to a specific habitat or specimen. Therefore, the decision was made to build up the database with management measures connected to the specific annex species/habitats (Annexes 3 and 4).

There is a list of more than 60 different habitat types, and for each habitat type, there are suggestions for one or more management measures. The list contains more than 200 species, and for each species, there are one or more proposed possible management measures. The list of this study is especially based on the species/habitats occurring in the Slovak Republic due to the availability of the information concerning particular management measures connected to species/habitats. The basic source of information is the favourable conservation status of habitats and species of the European importance publication (Polák and Saxa, 2005) where particularly important parts were selected, translated into English and filled in to the database. The second source of information used for the development of IT tool was the Standard data form database of all Natura 2000 sites in Europe and detailed information concerning the species/habitats and general site information. Afterwards, a connection between the two databases was made using the information concerning sites, species/habitats and management measures.

[1] The IT tool is available online at maps.sopsr.sk/mapy/map_jc.html (optimized for Internet Explorer).

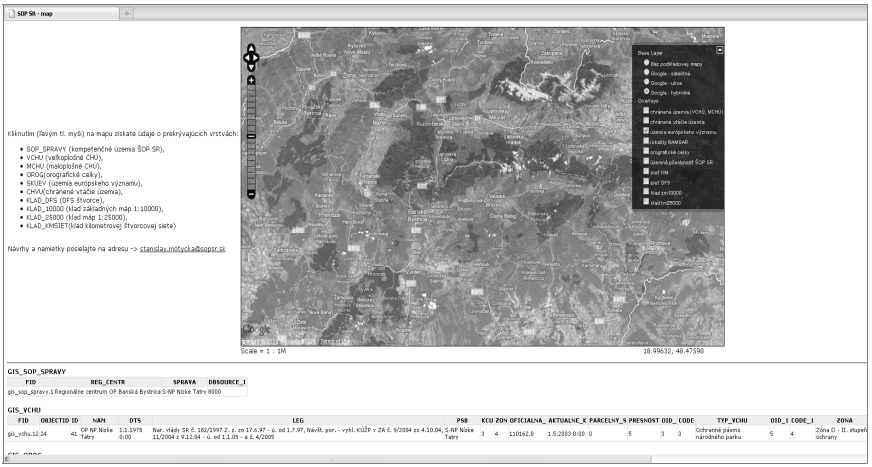


Figure 21: IT tool for management policies for species/habitats

This comprehensive database is one basic part of the IT tool. The IT tool is based on interactive spatial information. Combining shape files with information concerning the sites from the existing database led to the development of an interactive Natura 2000 viewer. By simply clicking on any Natura 2000 site in Europe, the basic information about the site is listed and if species/habitats ocurr that match the species/habitats from the database, the tool proposes also possible management measures which can be used for particular habitats or species distributed on the site (Figure 21).

By using the developed IT tool particularly for proposing the management measures, the idea of possible management measures used for management planning is available. The IT tool is easy to use, interactive and web-based, therefore, there is no need for installing any additional software; internet connection and web viewer are the only requirements. The Google maps platform, offering several choices for using satellite images, street view or combined background, was used as a background for the map viewer. The combination of spatial information and database information is essential and could potentially be useful for all Member States. By adding more management measures connected to the habitats or species in future, the IT tool developed could be the most comprehensive tool for proposing basic management measures for each Natura 2000 site without a lot of effort and can serve as pool for ideas for management measures. The potential of the IT tool for the future is therefore quite high.

g) Socio-economic benefits

Socio-economic aspects are included in most of the member states. However, descriptive information should more focused on possible socio-economic benefits. Stakeholders should benefit from each Natura 2000 site directly or indirectly and in a sustainable way. The assessment of ecosystem services is essential.

h) Implementation of the plan

The definition of steps for successful implementation of the plan is crucial to connect the planning to reality.

i) Monitoring

IT systems, an existing methodology, consensus-building mechanisms, a significant and representative number of permanent plots, a proper amount of well-trained staff, external expertise and material back-up are all basic preconditions for a successful monitoring system. Monitoring should not be focused on the species and habitats only but also on each action in the process of managing the site.

When proposing a monitoring system, it is possible to calculate the resources needed by the Slovak example.

j) Management effectiveness

Management plans need a process of permanent revision with regard to planning, implementation or practical management of the site. There is a high weakness in management effectiveness visible especially on the newly established small SCIs/SPAs where no protected area has existed before.

2.4.3 Impact assessment of expansion of garden coffee production system at Kafa Coffee Biosphere Reserve, Ethiopia

Ayele Kebede Gebreyes

In Ethiopia, four types of coffee production systems can be distinguished, namely forest, semi-forest, garden and plantation. This study particularly attempted to examine the impact of expansion of garden coffee production system on the conservation of forest coffee.

The study was conducted in Ethiopia, South Nations Nationalities and Peoples Region, Kafa Zone – Gimbo Wereda, which is part of the Kafa Coffee Biosphere Reserve. In particular, the three Kebeles in Gimbo Wereda, Kay Kelo, Keja Araba and Malingawa were the principal locations of the study sites. The study Wereda and the three Kebeles were selected systematically. The selection was based on the availability of both garden and forest coffee production systems in relative distances and accessiblity. Time and funding were major limiting factors.

Data were collected from October to December, 2010, with two phases of field work. Combinations of surveys and qualitative and quantitative data collection techniques were employed to collect the required information on the status and extent of expansion of garden coffee in the study area. Data were analyzed using descriptive statistics and responses compared using Chi-square test to understand the attitude of respondents towards the expansion of a garden coffee production system and to determine the factors that cause the land use conversion.

The analysis indicated that 98.33% of the respondents confirmed that garden coffee production system is in an increasing trend in the study area ultimately triggering a negative impact on the conservation of the forest and the coffee. This is further confirmed by the fact that 63.33% of the respondents prefer having more plots of land for garden coffee. The reasons for this preference, in addition to the dynamic nature of the coffee production system, are that responents are affected by land tenure and land use system, the need for economic satisfaction (productivity), relative distance that eases management, safety issues and communal ownership.

Given that the study area is now recognized by UNESCO as a coffee biosphere reserve which reconciles the conservation of biodiversity and economic interest of land/resource users, proper implementation of the concept of zonation with public participation and recognition, strengthening the indigenous forest management system and diversification of household income could be critical points to be

addressed in order to set the limits of the expansion of a garden coffee production system in the study area. The following recommendations should be considered to ensure long-term sustainability of the forest coffee system and delimiting the expansion of garden coffee:

- more effort should be made in order to clearly define the different types of coffee production systems exercised in each of the three distinct zones. In this regard, intensification of garden coffee in the buffer and transition zones of the biosphere reserve will have multiple benefits to minimize the pressure on the core and candidate core areas of Kafa Coffee Biosphere Reserve through enhancing the economic interest of land users.
- this study has also revealed that the understanding about the concept of biosphere reserve by individual farmers is very insignificant. Hence, more effort should be made in order to properly implement the concept particularly delimiting the three zones with public participation and recognition. This process of course should be supported by workable communication plan and public awareness creation strategy to develop the sense of ownership. The outcome will be respecting the zoning theory and the type of activity in the respective zone.
- as indicated in the other sections of this paper, there are ongoing initiatives which reinforce the management objectives of Kafa Coffee Biosphere Reserve such as conservation and economic development. Therefore, there should be well-defined strategies to collaborate with and strengthen the institutional capacity and proper functioning of the already existing complementary initiatives such as Participatory Forest Management, Kafa Forest Coffee Farmers Cooperatives Union and other development plans. These efforts definitely assist the conservation of the forest coffee and boost the economic interest of farmers through fetching premium price for their product.
- a strategy to acknowledge and promote indigenous forest management practices.
- further investigation must be conducted to develop a strategy in order to create nonfarm job opportunities to reduce or absorb the pressure on the forest resource and delimit the interface between the different coffee production systems.

2.5 Tourism and livelihood in protected areas

2.5.1 Valuation of the tourism activities of the Mures Floodplain Nature Park, Romania

Ovidiu Pîrv

The purpose of the study was to estimate services provided by the recreational value of the Mures Floodplain Natural Park (MFNP) and services provided by biodiversity conservation. At the same, time I wanted to assess the local community's perceptions and awareness regarding the existence of the MFNP.

The MFNP is one of the new protected areas in Romania, which this year celebrates five years of existence (Figure 22). Almost 40% of the protected area is covered by forests which contribute to the maintenance of air quality not only locally but also globally. The protected area offers disturbance prevention mainly through flood control as it is an area where waters can cause flooding. But this is rather an advantage more for the localities situated upstream and downstream of the protected area than for the local population. Other ecosystem services are especially significant to the local communities. The MFNP provides water, recreational and educational opportunities and a number of other forest ecosystem benefits.

To be able to fulfil the purpose of monetary valuation of the study, the travel cost and contingent valuation methods were chosen. The travel cost method is a survey-based method which uses the travel costs of respondents as a measure of their willingness to pay for visiting the park. Their willingness to pay will be used to derive the demand for the park and the demand will be used to estimate the consumer surplus, which will be used as the measure of the recreational value for the natural park. To be able to get a good estimate of the recreational value, more variables than travel costs were found.

Two surveys were carried out in the period August 2010–May 2011. For perception of the environment matters – in MFNP, a first survey was conducted in summer 2010 (21. August to 15. September, 2010). The administration of this first questionnaire reveals the fact that most respondents have heard of the park and they are aware that its existence brings them benefits (74%). However, only few of

them (5%) know much about the plant and animal species protected by the park. So, they are not well-informed about the reasons why the MFNP was established.

Figure 22: Location of Mures Floodplain Nature Park

The survey from May 2011 was divided into four main sections focusing on:

1. *Environmental attitudes*
   The questionnaire starts with a block of questions related to tourists' engagement in and being informed about biodiversity in general and to the objectives of the nature park in particular. This attitudinal section was designed for two main purposes. The first is to elicit the level of environmental commitment of the respondent.
2. *Travel cost valuation section – recreational values*
   The second part of the survey contains questions about the following topics:
   - location of the visitors' home – how far they travelled to the site;
   - how many times they visited the site in the past year or season;
   - the length of the trip;
   - the amount of time spent at the site;
   - travel expenses;
   - the persons' income or other information about the value of their time;
   - other socio-economic characteristics of the visitor;
   - other reasons for the trip (for visit only or for other purposes)

   The value of recreation service is based on the travel cost method and statistical data on protected area visitors. The mean spending per person per

day and the mean duration of stay per visitor are found out through filling in this part of the questionnaire.

3. *Contingent valuation section – biodiversity conservation values*
   The next part includes questions related to the contingent valuation method. The respondent is in the simplest form of the discrete-choice format asked to accept or reject one bid. Thereafter, those who said that they were willing to pay for European souslik conservation were exposed to the complete bid-vector which contained 17 bids: nothing, LEI 4, 8, 12, 20, 40, 80, 120, 160, 200, 250, 300, 400, 600, 800, 1000, over 1000 (EUR 1 = LEI 4.1).
4. *Socio-economic description section.*
   A final brief section of the questionnaire dealt with socio-economic characteristics of respondents. The socio-economic characteristics of respondents were collected to examine the composition of the sample as well as to analyze how the WTP varies according to these characteristics.

This study estimates the recreational value of the nature park. The value of recreational services provided by the park is $VRS = S_m \cdot D_m \cdot N_v$, with mean spending per person per day (S_m; EUR), mean duration of stay per visitor (D_m) and the average number of visitors of the MFNP per year (N_v).

The biodiversity conservation value (VBC) is calculated by means of contingent valuation, such that $VBC = N_p \cdot WTP_m \cdot s_E$, with the national population (typically considering over 14 years; N_p), mean willingness to pay per person (WTP_m) and the share of respondents indicating the existence, bequest or option motive as priority (s_E).

Table 3: Travel expenses of visitors at the Mures Floodplain Nature Park

No.	*Expenditures category*	*Percentage*	*Mean (EUR)*	*Standard Deviation (EUR)*
1	Accommodation	12	1.5	9.1
2	Meals	48	5.3	5.3
3	Shopping (souvenirs)	2	0.2	2.3
4	Transport	27	3.1	5.6
5	Sport	2	0.2	3.2
6	Other expenditures	9	0.9	3.7
Total		100	**11.2**	**9.9**

Measuring travel costs was done via questionnaire by asking tourists regarding their expenses per day for certain expenditure categories. In Table 3, it can be seen that meals are by far the point of highest expenditure (48% of total spending) for tourists when visiting the park, followed by transport (27% of total spending) and accommodation (12% of total spending). In total, visitors spend about LEI 46

(EUR 11.2) per day and per person on average during their visit in the nature park (standard deviation EUR 9.9, median value EUR 7.7). The 90%-confidence interval lies between EUR 9.8 and EUR 12.6.

Taking only transport costs and sport costs into account – expenditure which is directly connected to a MFNP visit while other costs can be assumed to accrue in one way or the other during "normal" life or in other tourist destinations –, visitor spending amounts to EUR 3.3 per day and visitor (standard deviation EUR 4.5; 90%-confidence interval EUR 2.6 to EUR 4).

Total spending per visit and per person is computed based on mean travel costs (EUR 11.2 with a lower and upper bound according to the confidence interval, respectively EUR 3.3, see above), assuming that only those visitors who solely come for the purpose of visiting the MFNP (66%) and staying 1.45 days in the region on average will be considered (EUR 11.2 · 66% = EUR 7.4 per person per day).

Therefore, we can estimate the total expenditure of an average amount of EUR 10.7 per person and stay (with a lower bound of EUR 9.4 and an upper bound of EUR 12.0). Aggregating the travel cost elicited in the survey to the total number of visitors (about 60,000 per year) to the MFNP per year given the daily expenditures, we end up with estimated travel costs of about EUR 642,000 per year ($VRS = S_m \cdot D_m \cdot N_v$ = EUR 7.4 · 1.45 · 60,000 = EUR 642,000).

Taking the lower and upper bound of the 90%-confidence interval leads to a range of possible recreation values of annually EUR 564,000 to EUR 723,000. Taking the lower bound of only transport costs and sport costs, total recreation value amounts to EUR 192,000 per year (possible range between EUR 126,000 and EUR 228,000).

In order to derive an indication of potential value in terms of existence option and bequest value of biodiversity conservation, the willingness-to-pay (WTP) question was formulated as concretely as possible focusing on the possible support for sustaining species conservation programmes of the park.

The basic idea was protecting a charismatic species from the area, the European souslik *(Spermophilus cittelus),* which is also present in the most frequented leisure area in the park (Figure 23). Even though it is a common species for Romania, the European souslik is quite rare worldwide and the Romanian population is estimated to be around 15,000 individuals (Botnariuc and Tatole 2005).

Figure 23: European souslik (Spermophilus cittelus)

The European souslik is listed in Annex 2 of the European Union Habitats Directive. This implies a responsibility of sensible management of this species. The question also explained that the funds provided by the Romsilva are unsecure and that citizens had to pay directly for nature park policies.The question asked refers to the maximum amount the respondent is willing to donate to a conservation programme for this species, considering other expenses during their holidays. An explanatory introduction to the scenario is provided in order to permit a homogenisation of information across respondents.

That amount of EUR 22.8 per year and person means that people WTP is 0.5% from annual income for protection of this kind of species taking into consideration that annual average income is about EUR 4,140. The study carried out in Sri Lanka for elephants protection value shows that respondents are willing to pay 1% from their annual income for the protection of this species. Thus, the population in Romania would be willing to pay twice less than the people from Sri Lanka considering the annual income in each country.

Accounting for the deviation around the mean WTP of EUR 22.8 per person and assuming a 90%-confidence interval, we can calculate a range between EUR 19.4 and EUR 26.1 (for the distribution of WTP bids across the bid range, Figure 24). This estimate gives a range of potential non-use values between EUR 382m and EUR 514m per year (Table 4).

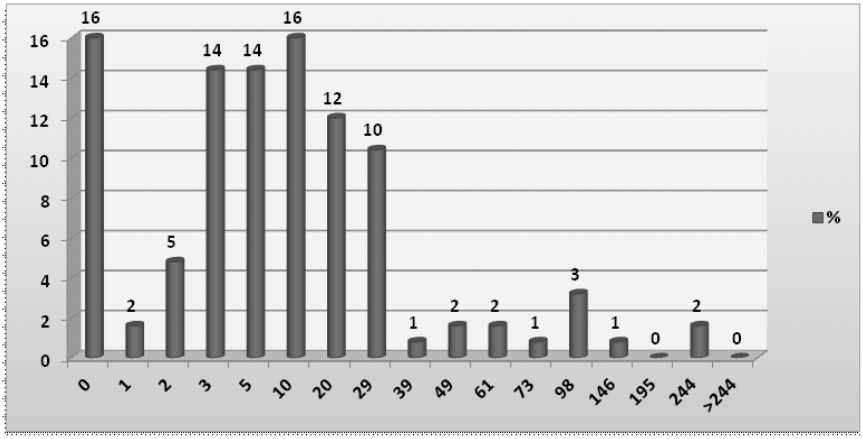


Figure 24: Distribution of WTP (willingness-to-pay) bids

Table 4: Values of ecosystem services at the Mures Floodplain Nature Park (in EUR 1,000 per year)

Ecosystem services	Lower bound	Reasonable mean value	Upper bound
Recreation value	564	642	723
Recreation value (transport costs and sport cost)	126	192	228
Biodiversity conservation values	382,000	449,000	514,000
Existence values	148,980	175,110	200,460
Option / quasi-option values	84,040	98,780	113,080
Bequest values	148,980	175,110	221,130
Total	**382,564**	**449,642**	**514,723**

The recreational value of the nature park in this study is about EUR 642,000; this value seems much smaller compared to similar studies from Poland and Slovakia (Getzner, 2009). The lower recreational benefits of MFNP compared to Tatra NP or Slovensky Raj NP are mainly due to the lower number of tourists and to the lower average number of stay but it is also related to less income per person.

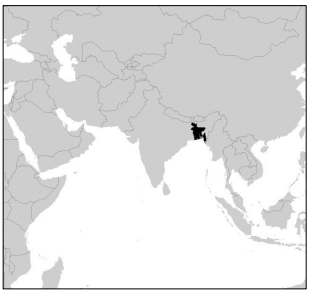
The MFNP provides in total around EUR 450m per year (potential range from EUR 383m to 515m). Less important are recreation benefits by about 60,000

visitors per year due to the short average stay of visitors in the region (just 1.41 days). Most of them stay just a few hours inside the park and in case they spend more than one night here, they prefer to use a tent to reduce costs. Camping accommodation is used by all tourists who go on canoe excursions. Even for the canoe excursion, visitors spend EUR 10.7 per person and stay. Recreation benefits amount to around EUR 642,000 (reasonable mean value) while non-use values are comparatively higher with EUR 449m. However, while recreation benefits accrue to 60,000 visitors per year, non-use values benefits apply to the whole population of Romania of over 19.7m people.

One of the recommendations arising from the study is the need to generate local awareness regarding the main aim of the park and the most important species under protection. It is a first step that must be taken so that the local community becomes aware of the natural assets in the area. The costs of managing the MFNP (EUR 130,000/year) are insignificant compared to the benefits provided. The local community represents the majority from the total number of visitors (60,000) coming here annually, the recreational benefits offered by the park being estimated at EUR 630,000/year. This is a small value compared to the estimated value offered by biodiversity conservation services of EUR 449 millions. The average amount of money the respondents are willing to pay annually for the conservation of a charismatic species from the park is EUR 19 annually, which represents 0,5% of their annual income. It is also envisaged that the results and conclusion of this thesis will be valuable for the management of the park, emphasizing the current awareness and the monetary value of two of the services offered by the MFNP.

2.5.2 Prospects for conservation and sustainable livelihood in Sundarbans Reserve Forest World Heritage and Ramsar Site, Bangladesh [2]

Muhammad Shariful Islam



The Sundarbans Reserved Forest and its surrounding buffer zone are one of the most diverse and richest natural resource areas in the People's Republic of Bangladesh. It holds one of the largest continuous mangrove forests in the world and has been recognized as an internationally important World Heritage and Ramsar site. It is considered a highly productive ecosystem that provides a wide range of valuable forest products. The Sundarbans play a significant role for supporting a wide range of floral and faunal biodiversity and ecosystem services that support livelihoods of local communities. Most of the communities in buffer zone of Sundarbans are dependent on Sundarbans resources for their livelihoods.

This study explores the livelihoods of different groups of local residents in and around the Sundarbans Reserved Forest, who depend on natural resources from the forest and compares their living standard. The research finds a large difference between the annual selling income (EUR 1,481.70) and the households' net income (EUR 602.14) from harvesting products of forest dependents. The results indicate that the resources harvesters are not able to gain actual benefits from the resources of the Sundarbarns due to factors such as water hijackers or forest staffs, who illegally collect money. This limits the income of forest dependents. Due to low income, they borrow loans for their annual harvesting operating cost. Forest dependents also lose significant amounts of money from their selling income to paying loan interest (loan provider takes an average 8.29% interest from harvesting selling income).

Our research found that the users are highly dependent on Sundarbans for their livelihood, each household's total income about 89.76% comes from forest resources and their average harvesting resources consumption values 101.86 Euro. Households depend on Sundarbans fuel wood for their fuel consumption. The paper shows that if the forest dependents did not have to deal with water hijackers,

[2] A scientific paper was published on the results of this study; see Getzner and Islam, 2013.

forest staff and loan interest, their income would be increased to 60.25% from present net annual income.

The paper recommends to focus on good governance, strong law enforcement and effective management systems for improving livelihoods of Sundarbans dependents to ensure the actual benefits of users of the resources of the Sundarbans and to support the recovery of vulernable livelihoods.

2.6 Economic and social aspects in the management of protected areas

2.6.1 New ways of cooperation between regional businesses and the Kalkalpen National Park, Austria

Eva-Maria Heigl

The modern understanding of a national park's meaning has shifted from pure nature conservation to reconcilability between conservation aims and sustainable economic development in the vicinity of the park. In the best understanding, a national park can serve as a motor for the region by enabling local people and businesses to make use of the brand national park in tourism or business marketing and, thus, create added value for the region. Local people gain (economic) benefits from the national park, which may be one way to raise their acceptance and support for the national park's goals even if nature conservation is not their primary concern. Without the acceptance and support of local people and stakeholders, it will be difficult for the national park to fulfil its goals in nature conservation. The protected area would stand alone as an island and might not be as effective.

By contrast, the chances that a national park can offer for regional economic development may also not be overestimated and especially the tasks the park management itself can perform. Apparently, the expectations towards the management of a national park are too high in this regard. The main goal of a national park is nature conservation; besides that, the park management can provide a contribution for the pursuit of regional economic development but this topic certainly requires the cooperation of different regional and superregional bodies as well as political commitment.

All involved people and institutions have to be aware of the fact that a national park cannot meet all expectations. It has to fulfil its main tasks at a maximum degree and beyond that, it also has to optimize its other tasks and targets (Baaske, 2006).

Since the establishment of the Kalkalpen National Park in 1997, there have been efforts by regional businesses in different sectors to make use of the brand Kalkalpen National Park for their marketing. The term national park is perceived

as a good selling argument for various products and services because it transports topics such as sustainability, care, responsibility or environmental awareness.

The Kalkalpen National Park, therefore, developed the network of Kalkalpen National Park Partners. Member businesses can use the protected partner label and the topic national park in their own marketing if fulfilling certain membership criteria, such as environmental-friendly business management. Over the last years, additional cooperation programmes with focus on tourism have been developed – also by regional stakeholders – allowing for a more specific support of certain groups of businesses. In addition, there are further cooperation programmes with focus on regional food products or farm holidays.

Some of these initiatives are rather recent, others have already existed for several years; some are rated as more successful, others as less successful – according to the estimation of involved people and institutions.

The thesis uses this issue as a starting point and deals with the following three questions:

- Which kind of cooperation between the national park and regional economy does exist?
- What is the current status of the cooperation?
- How can the cooperation be improved (if necessary) in order to create added value for the region?

The results of this thesis are based to a large extent on personal experiences and opinions of interviewed stakeholders. From these interviews, conclusions were drawn that serve as the basis for recommendations. All interview partners consider the Kalkalpen National Park as a great chance for the region but they also state that the current situation leaves some room for improvement.

The role of the national park in regional economic development is not completely clear for many regional stakeholders and the general flow of information from the national park to the region is perceived as limited. There is a gap between the expectations of regional people and institutions towards the national park and the real possibilities of the park. Regional stakeholders have to be aware that the main task of the national park is nature conservation; besides that, the national park management can make a contribution to regional economic development but this certainly requires the cooperation of different regional bodies.

During the interviews, it became visible that the national park should clearly communicate its goals concerning regional economic development to the outside and set concrete actions to pursue these goals. It has to be clear what the role of the national park in this context can be and what goes beyond that role.

The national park has already (co-)implemented or triggered a series of valuable projects that create added value for the region such as the Kalkalpen long-distance hiking trail, the electrification of alpine pastures on the Pyhrn pass, the successful

event alpine music summer, which attracts many visitors to alpine pastures, the hiking bus etc. The economic impact analysis that was performed in 2006 (Baaske, 2006) also showed the positive impact of the national park on the region. According to this study, the park has directly or indirectly created 104 new jobs in the national park region by 2006. These positive facts should be well communicated in order to help raising the support for the national park in the region.

There are several cooperation networks of businesses in the national park region that aim at the creation of added value through the brand National Park Kalkalpen. The degree of involvement of the national park in these initiatives varies. The touristic initiatives, such as the hiking specialists, mainly organize themselves in unions and do not depend so much on the national park's support; but still the involvement of the national park management is necessary in some points. The "Nationalpark Kalkalpen Partner" on the other hand requires systematic coordination by the national park. In order to continue this initiative and create benefits for the involved businesses and for the national park – because both sides can profit from each other –, it is recommended to implement well-functioning coordination structures and a clear framework for cooperation, including regular exchange and communication.

An important issue that was treated in this thesis is the relation between the national park and the regional WKO offices (Austrian Federal Economic Chamber). The WKO represents regional businesses and sees a great potential for the region through the national park. There is the will for cooperation on both sides – national park and WKO – but such cooperation does not exist yet. The thesis gives some similar suggestions and strongly recommends the pursuit of this issue.

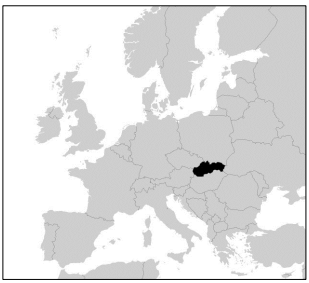
Another point concerns the different integration of the brand Kalkalpen National Park in the touristic regions around the national park. The three tourism regions do not jointly present themselves as *one* Kalkalpen National Park region but are split up in two fractions.

A detailed list of recommendations for different fields is presented in the thesis. The most important recommendations can be summarized as such:

- definition and external communication of the goals of the park management concerning economic cooperation with the region (possibilities and limits);
- establishment of defined (personnel) structures for the coordination and management of economic cooperation between national park and region;
- implementation of a communication concept with regional economy.

2.6.2 Economic and cultural values related to the Veľká Fatra National Park, Slovakia

Radoslav Povazan



The valuation of ecosystem services in protected areas is still in a pioneering stage in Slovakia and in the Carpathian Ecoregion. Previous valuations were done in Central Europe in two national parks – Tatra National Park (Poland) and Slovenský Raj National Park (Slovakia) by Getzner (2009, 2010). These studies showed that ecosystem services are of eminent importance to the local, regional and national economies (Strobel, 2010).

In this paper, another national park in Slovakia, Veľká Fatra, is evaluated and values are compared to results from Tatra and Slovenský Raj National Parks. Valuations are based and elaborated applying state-of-the-art methodological approaches.

There are two basic categories of benefits of the protected areas: Use and non-use values. These kinds of values represent the environmental evaluation as a concept of total economic value (TEV). TEV consists of (Millennium Ecosystem Assessment, 2005): use values (direct and indirect, option values) and non-use values (existence values, bequest values).

There are various kinds of methods for valuation of ecosystem services (and benefits of the protected areas). One approach is a valuation of ecological aspects of nature and landscape (method for habitat valuation) which was used in the Czech Republic (Seják et al., 2010). Nevertheless, most methods are based on deriving environmental values depending on respondents' preferences. These methods can be divided into methods of deriving values from markets (e.g. hedonic method, travel cost method) and direct survey willingness to pay method (WTP, contingent valuation). In the Veľká Fatra NP, these methods were used in valuation.

The work follows the methodology which was used for valuating Tatra and Slovenský Raj National Parks (Getzner, 2009 and 2010). It also takes into account new guidelines developed by WWF (Strobel, 2010; draft version); its official version was introduced in 2012 (Bucur and Strobel, 2012). The first step consists of a collection and interpretation of the relevant ecological data on ecosystem services of the Veľká Fatra National Park and on a geographical assignment of the relevant national park region. The identification of relevant criteria was taken from previous studies in Tatra and Slovenský Raj National Parks and slightly adapted to

the area of Veľká Fatra National Park. Certain aspects of information could not be accessed mainly due to the lack of resources at local or regional level, e.g. there was no proper access to regional data regarding energy or agriculture issues. For this reason, it was even harder to acquire the data and many numbers had to be estimated (expert judgement) or taken from other studies.

Additionally, there were data collected by a visitor survey on individual's willingness-to-pay for specific ecosystem services. In particular, the recreation value and non-use values (existence values) of the park's services (species & habitat conservation) were addressed. Finally, the individual values were aggregated, e.g. by means of annual number of visitors to the national park to derive a broad indication of the potential value of ecosystem services provided by the national park. The study includes the valuation of ecosystem services in the Veľká Fatra National Park (Slovakia) and compares these results to Tatra National Park (Poland) and Slovenský Raj National Park (Slovakia). Veľká Fatra National Park was declared by Order No. 140/2002 Coll. on April 1, 2002 as an upgrade of the landscape protected area of the same name established in 1973 to protect a mountain range with a high percentage of well-preserved Carpathian forests. The area of the national park is 40,371 ha and the area of the buffer zone is 26,132 ha. In total, Veľká Fatra National Park provides EUR 179,128,728 worth of ecosystem benefits per year (Table 5). This value is lower compared to Tatra or Slovenský Raj National Parks. This is due to the fact that the ecosystem services provided are different but mainly due to lower number of tourists (500,000), lower average number of length of stay (2.28 days) and lower national population in Slovakia compared to Poland. It can be presumed that the Veľká Fatra National Park is not a typical destination for longer holidays but typical place for short-term stays (e.g. weekends) or one-day trips. The length of stay would probably be higher in summer, even though not significantly higher.

Table 5: Values for ecosystem services provided by Veľká Fatra National Park; Tatra and Slovenský Raj National Parks

		Veľká Fatra NP (SK)		***Slovenský Raj NP (SK)***	***Tatra NP (PL)***
		Reasonable mean value (EUR per year: NP	*Reasonable mean value (EUR per year): Buffer Zone*	*Reasonable mean value (EUR per year)*	*Reasonable mean value (EUR per year)*
1.1	*Forest products*				
1.1.1	Timber	1,731,639	1,185,044	856,000	0
1.1.2	Non-timber products	n. a.	n. a.	n. a.	n. a.
1.1.3	Water provi-sion, supply	5,699,475	-	1,480,000	3,700,000
1.1.4	Water retention / flood protec-tion	1,527,448	608,348	808,000	726,000
1.1.5	Carbon sink, climate regula-tion, CO2 sequestration	160,166	51,348	90,000	91,000
1.1.6	Erosion control	see 1.1.4	see 1.1.4	see 1.1.4	see 1.1.4
1.1.7	Medicinal resources	n. a.	n. a.	n. a.	n. a.
1.2	*Agricultural products*				
1.2.1	Cattle, grazing	0	n. a.	0	0
1.2.2	Grains, food production	0	n. a.	0	0
1.3	*Fishing*	n. a.	n. a.	2,000	0
1.4	*Hunting*	n. a.	n. a.	n. a.	0
1.5	*Recreation*	53,010,000	-	152,325,000	519,000,000

1.6	*Recreation opportunities (NP policies)*	10,602,000	-	30,972,000	21,000,000
Rough estimate of use values		**62,128,728**	**1,844,740**	**155,561,000**	**523,517,000**
1.7	*Biodiversity conservation values*				
1.7.2	Existence values	19,890,000	-	15,938,000	92,100,000
1.7.3	Option / quasi-option values	8,190,000	-	7,083,000	48,900,000
1.7.4	Bequest values	88,920,000	-	53,479,000	75,810,000
1.8	*Cultural values*	n. a.	-	n. a.	n. a.
Non-use values		**117,000,000**	**-**	**76,500,000**	**216,810,000**
Rough estimate of TEV (Total Economic Value)		**179,128,728**	**1,844,740**	**232,061,000**	**740,327,000**

Source: Author's calculation; Getzner (2010).

According to Table 5, the most important benefit of the Veľká Fatra National Park is biodiversity conservation represented by non-use values in terms of existence, option and bequest values (EUR 117,000,000). The second most important benefit is the recreation (EUR 53,010,000).

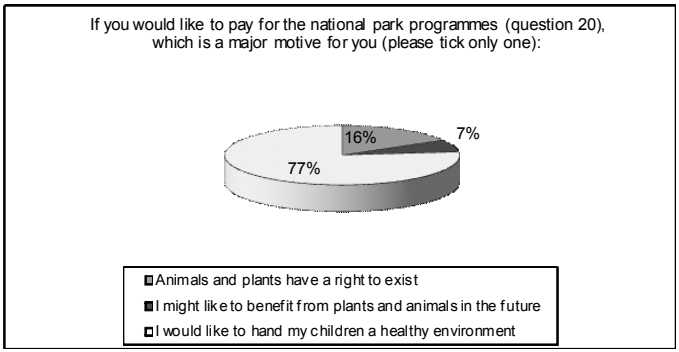


Figure 25: Respondents' motives for willingness-to-pay

In Veľká Fatra, a major motive for respondents to express a willingness-to-pay (WTP, Figure 25) for the financing of the national park is "the right to exist" (existence motive) with 17% of respondents; in order to conserve nature for their children (bequest motive), 76% of respondents are WTP and, therefore, state that the bequest motive is the strongest motive for their willingness-to-pay. The option value (personal benefit in the future) is the main motive of 7% of respondents. The conservation of nature for the children of the respondents is the strongest motive also in Slovenský Raj and Tatra National Parks, however, the "right to exist" was almost not taken into account in Tatra National Park. Other services such as forest products, agricultural products, fishing or hunting are less significant, however, compared to Tatra or Slovenský Raj National Parks, these services are more important. In this sense, Veľká Fatra National Park, the service of timber production, water provision, water retention (flood protection) and carbon sequestration are of the highest value.

Veľká Fatra is clearly dominant in aspects of water provision and water retention (flood protection) compared to the other two valuated protected areas (Figure 26). This is also a reason why Veľká Fatra was designated as a national park as well as protected water management area.

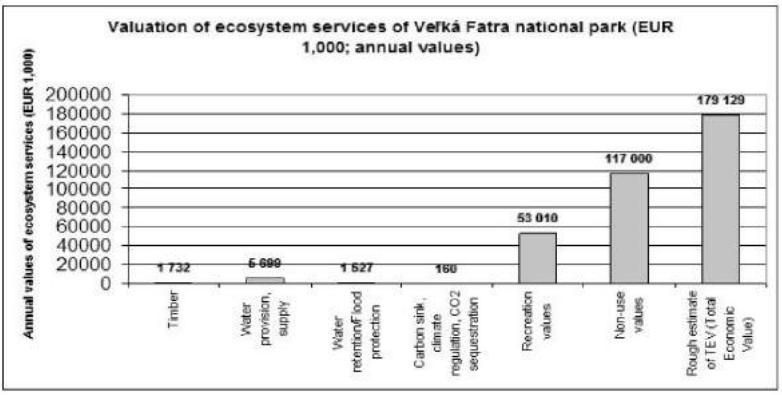


Figure 26: Valuation of ecosystem services of Veľká Fatra National Park

The results of the study clearly show that Veľká Fatra National Park provides important ecosystem services for the national economy. With its services, the park generates values which significantly contribute to human well-being and the national economies. The ecosystem services in the narrow sense (e.g. timber production, water provision, flood protection, erosion control) are not that

important on a national level but they provide important benefits for the local population (Turiec and Lower Liptov regions). This significance of the ecosystem services should be kept in mind when developing management policies within the context of sustainable development.

2.6.3 Social, economic and ecological effects of the relocation of the village of Arkwasiye in Simien Mountain National Park in Ethiopia[3]

Berihun Tiru Tessema

The thesis analyzes the effects of the relocation of the village Arkwasiye in the Simien Mountains National Park, a most spectacular landscape in the northern highlands of Ethiopia. The relocation of the village was deemed to be necessary as just one component in a bundle of measures proposed by the UNESCO World Heritage Commission. Arkwasiye village was considered a problematic barrier for the intended and most relevant extension of the park towards the east and blocked a critical wildlife corridor.

In 2007, some 165 households were relocated voluntarily in the new village of Kayit. The socio-economic effects of the relocation were evaluated by carrying out on-site interviews with the residents.

The results indicate that the relocated villagers are satisfied with the new infrastructures and social services although it has turned out that this has also brought certain disadvantages with far-reaching consequences concerning the daily way of life of the villagers, and, thus, their livelihoods as these have led to a considerable loss of income opportunities and – in contradiction to the goals of the relocation – to intensified grazing in the area because the new location did not offer sufficient income opportunities such as tourism or trade (Figure 28).

[3] A scientific paper was published on the results of this study; see Tiru Tessema, Jungmeier and Huber (2012)

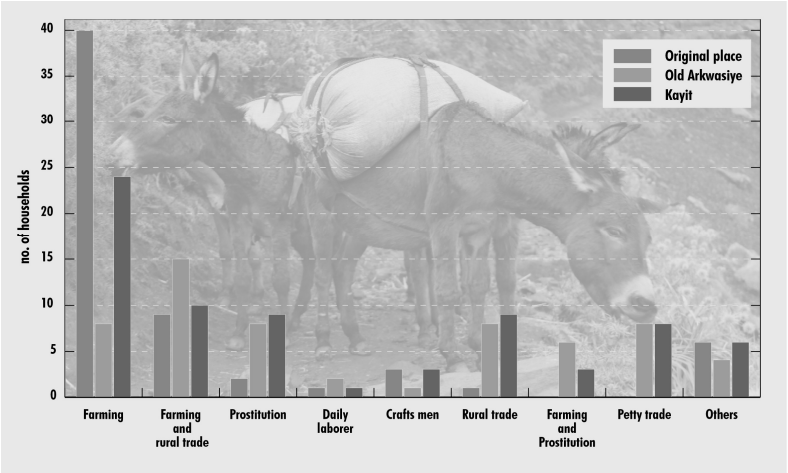


Figure 27: Changing livelihood patterns (based on interviews of 64 households)

The results show that even well-planned and participatively organized relocation may have unforeseen consequences as already indicated by Dhakal et al. (2006). In the light of a recent global discussion on relocation for conservation purposes, this topic is considered highly relevant.

3 LEARNING AND CAPACITY DEVELOPMENT FOR PROTECTED AREA MANAGEMENT[4]

Violeta Orlović- Lovren

3.1 Introduction

The complexity of protected area management is increasing from day to day in a changing world. The dynamics of ecosystems and natural processes, as well as of human–environment interactions, makes this task even more demanding, requiring high competence in coping with permanent changes. It further creates the necessity for learning to continuously provide for such a complex role.

The changing paradigm of protected area (PA) from romantic vision of an "exhibition of untouched nature" to potential models of sustainability, calls for a different distribution of responsibilities, shifting it from PA staff and managers to partnerships with large stakeholder communities, and society in general. In order to be successful in modern PA management, and capable of making such a shift, managers are expected to understand and practice principles of adaptive planning, integrated management and sustainable development.

While the high degree of scientific knowledge and skills was the "… first requirement of a PA manager" (Idle, 2000) in the times of the rapid increase of the number of PAs, skills and knowledge in communication, and interpersonal relations, understanding and willingness to lead in accordance with diverse values of PA and surrounding communities, are much more expected from managers. Management responsibility should not be on individuals only, but rather on interdisciplinary teams and specialized staff, able to engage communities in participatory planning and running of organizations in charge of PAs. The large diversity of organizations in charge of PA management, in terms of ownership, structure and wealth, contributes to complexity of the task. Many of them have

[4] This chapter is based on the authors' unpublished PhD dissertation and research on "Adult Education and Capacity Development for Sustainable Management of Protected Areas" (2011) in Serbia.

been established in the mid-20th century, based on a strong PA management paradigm and approach to its protection of that time. There is a large agreement today about the need for its modernization and powerful role of learning in that process.

It is obvious today that individual learning and improvement of PA management considered alone is therefore not sufficient. PA management hasto be interrelated with organizational learning,has and necessarily to be supported by society. “New learning for Sustainable Solutions” is a concept described by authors as “learning for change”, taking place at the individual level (new knowledge, new skills), the institutional level (new priorities, new procedures, and new practices) and the social level (new agendas, new partnerships, new ways of interacting and participating) (Lamparelo, 2005).

There are nowadays widely accepted approachesto the development of capacities on the individual, organizational and social level, instead of targeting efforts to single individual improvement, mainly through ad hoc planned and short training programs. Such approach can be recognized in documents and activities of World Conservation Union (IUCN), especially in those produced for and by the V. Congress of World Commission on Protected Areas (WCPA), held in Durban, South Africa, in 2003. In its recommendations special attention is paid to institutional and social capacities for PA management in 21st century, suggesting that capacity development programs should be ”… designed and conducted by the beneficiaries themselves in collaboration with government at all levels, partnership, international agencies, NGOs and other relevant bodies, based on mutually agreed needs and priorities” (IUCN WCPA 2004, p 141).

Almost ten years after, unfortunately, we still witness gaps in the implementation of these recommendations. Very few initiatives for the development of standards for skills and knowledge for PA management, such as one in South East Asia (Appleton et al., 2003) or competences inventory (ATEN, France), have been performed. A capacity development task force has recently been established within the IUCN with plans to intensify activities around the world. Awareness of this gap has been more and more visible in the latest initiatives of IUCN at global and regional levels, as well as in strategic plans of its Commission for Protected Area (WCPA), where enhancement of capacities to effectively manage protected areas systems to conserve biodiversity is among the first priorities, and further management effectiveness assessment and standards of competences identification listed among main tasks.

Lack of systematic approaches to harmonized development of individuals and organizations in the field is even characteristic for economically developed countries, while in countries of “upper middle income economies” (http://data.worldbank.org) like Serbia, protected area managers and organizations are not among the highest national priorities and their improvement in practice is

supported more by international projects than by the implementation of conventions and strategies signed by the governmental bodies.

Having in mind the above-mentioned interrelations between learning, modernization of PA management and developing its sustainability, as well as the need to understand capacities at all levels and in specific contexts, our research study has been performed in 2011 in Serbia, focusing on the Role of Adult Education in capacity development for sustainable PA management.

3.2 Conceptual and methodological framework

On the theoretical level, the study is founded on the concepts of lifelong learning and sustainability. While adult education is seen as a natural part of the lifelong learning concept and the process, it has not significantly been interrelated with sustainability at both theoretical and practical level. It was not before the end of the last century that many authors' focus on environmental aspects of adult education started to grow, whereas its mutual relation with sustainability is nowadays still present more at the general, political and policy, than at the level of theoretical examining and practical application.

Following the purpose and principles of both the concepts, it is not difficult to find common values and features incorporated. While the "learning society" is desirable goal of lifelong learning advocates, reaching a potentially "sustainable society", as stated by many authors today, would not be possible without constant learning and sharing of knowledge at all levels and in different areas. The role of learning and education is largely recognized in the nature conservation literature and in international documents; among the others, in the above-mentioned Durban Action Plan and Recommendations (IUCN WCPA, 2004), bodies in charge of PA management are seen as "learning organizations" and actions of all the actors are expected to be directed to its development for the sake of a better future for protected areas.

Both concepts are strongly connected to global tendencies and visions incorporated in the Millennium Development Goals (MDG), and therefore its mutual compatibility is not surprising at all. However, there is one characteristic commonly acknowledged and criticized by a number of authors today: its general character and lack of operational definitions which would help its implementation.

Initiating our interdisciplinary research, we therefore used and modified the multidimensional model of assessing capacities originally created by UNDP. It encompasses individual, organizational and social levels and within each of them dimensions of knowledge, leadership and responsibility.

Within each of dimensions, we defined indicators, starting from the elements incorporated in the PA management effectiveness concept, developed under the

auspices of IUCN (Hockings et al., 2006), as well as from our model of sustainable PA management, created for the purpose of this research and consisting of the following dimensions:

- appropriate human resources (sufficient number of adequately qualified and trained staff and associates at the correct positions in the organization);
- appropriate financial resources (sufficient funds to cover both basic and development functions; application of sustainable financing principles);
- participation and transparency (including of staff and local community in decision making and planning; transparent and regular reporting on activities);
- integrated management (comprising of environmental, social and economic aspects of protected areas);
- innovative approaches (readiness to accept changes and support innovations);
- learning-oriented development (support to learning and improving of staff and organization knowledge and competences; respect and inclusion of traditional knowledge and experience of staff, associates and local communities);
- values-oriented development (respect of rights and needs of staff and stakeholders, of biodiversity, cultural and diversity in all the fields and aspects);
- flexibility and adaptive approaches (harmonizing of decisions making and management in all aspects with real needs, circumstances, results of management evaluation and new trends in the field);
- efficiency (timely achievement of projected goals and tasks planned for certain period);
- long-term oriented (strategic planning led by a vision of future development, considering needs of future generations).

Following the main research question – what is the role of adult (vocational) education and training in the management of protected areas and its potential for improvement of this activity in accordance with principles of sustainability – the research was performed within the framework of a qualitative paradigm. Understanding learning as a holistic process of acquiring knowledge, skills and experience – through formal, non formal or informal channels –,we particularly concentrate on segment-organized education programs aimed at improving capacities of PA management actors (staff, managers, associates and stakeholders).

Three different questionnaires were developed and applied, asking PA managers, PA staff representatives as well as external experts to give their opinion and estimations. For the interviews with managers of selected four areas included

in case studies, semi-structured protocols were prepared and used by the author. While questionnaires for internal assessment were distributed to previously contacted and selected representatives, those for external assessment were created and posted as online version. Interviews performed within the case studies were organized face-to-face with interviewees.

Desk analysis of documentation and references was performed in studying of capacities at all the levels and especially its legal (laws, decrees) and institutional parts (institutions in charge of nature conservation and adult education).

3.3 The research area and sample

The system of protected areas in Serbia consists of national parks, nature reserves, nature parks, landscapes and natural monuments (Table 6). Several protected areas in Serbia have international designation, one Biosphere Reserve (UNESCO Man and Biosphere Program), and nine Ramsar (internationally recognized wetlands) sites. There are 38 Important Bird Areas as well as 10 Green Belt and Transboundary Areas.

Table 6: Protected areas network in Serbia

Protected area category	**Number of PAs**
National Parks	5
Nature Parks	16
Protected Landscapes	16
Nature Reserves	67
Nature Monuments	317
Protected sites of cultural and historical value	42
Total	**463**

Source: Institute for the Protection of Nature of Serbia, 2012

Serbian protected areas are mainly managed by public enterprises; a few are managed by nongovernmental organizations and private companies. According to the legal regulation, areas may be proposed for designation by national authorities, legal or physical entities at the national, regional or local level.

Currently, 5.91% of the Serbian territory is legally protected. Selection of the areas to be included in our research has been made using the following criteria:

- PAs contributing to "territorial meaning": national parks, special nature reserves, nature parks or landscapes;
- existing organization structure of management and staff engaged;
- existing programs and visible activities of management organizations.

There were two groups of respondents selected: managers and staff representatives of PA management organizations (internal assessment) and representatives of experts' institutions or independent consultants (external assessment).

The research included 15 PA management organizations, 17 management staff representatives, as well as external assessments provided by 10 experts in the field. There were also 4 protected areas – 2 national parks and 2 special nature reserves – selected for the case studies.

3.4 Comparative review of individual and organizational assessment of capacities

Having in mind the amount of data collected and information analyzed, in the following text we will summarize and present main findings based on internal assessments (PA managers, individual and PA staff representatives, and the organizational levels) of respondents related to three levels of capacities for PAs management. Results are going to be presented by dimensions followed at each level of capacities "knowledge", "leadership" and "responsibility".

"Knowledge"

Education level of managers/PAs staff: Nearly 80% of managers have a university degree, while 11% have a high school degree, and equal percentage of 5% have college education or advanced (postgraduate) degrees. The majority of PA staff have high school education, and equal percentage of them have gained primary and higher (university) education (Figure 28).

Willingness to learn and training needs of managers/support to learning at the organization level: The majority of PA managers express a strong willingness to continue learning, through formal or informal channels. The most attractive issues, based on their needs, are project cycle management and leadership. According to the data collected from representatives of selected (15) PA management organizations, the majority (10) stated that there are staff development plans, but they do not seem to be systematically implemented. Only two out of 15 organizations' representatives claim that organized support and incentives for learning is organically embedded in their overall policy.

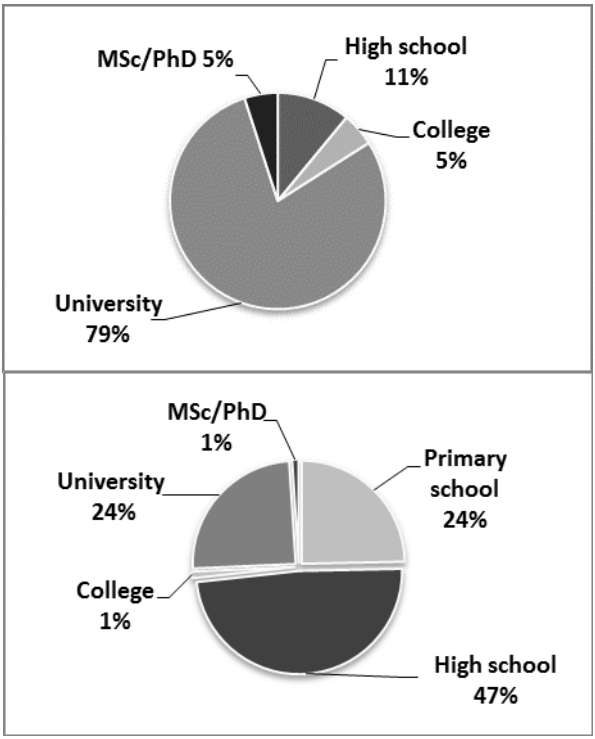


Figure 28: Education level of PA managers (above) and staff (below)

Actual participation of managers in education-training programs/provision of awareness or training programs: At the time of the research (2011), around 80% of managers were not involved in any of the education/training programs. Other forms of knowledge sharing are also organized on an ad hoc basis: less than 1/3 of managers state that they were involved in study tours and visits to other countries or were able to gain some knowledge or experience through peer learning or exchange. Only in 1/3 of PA management organizations, there is supporting infrastructure (visitor centers, facilities for learning) and in the same proportion, they continually organize and provide some forms of learning for others (stakeholders, local community, schools). In two organizations only, there is staff employed to primarily work on education and training activities, while in all the others it is rather a secondary responsibilities of staff engaged with other duties on daily basis.

Individual/organizational participation in scientific and development projects: Most managers and organizations are involved in national scientific research projects and few of them in development projects funded by international donors. Those who are not participating in majority of cases do complain about lack of access to results of scientific research at national level, in comparison to those participating in it.

"Leadership"

Previous experience in management/nature conservation: Most managers and staff spent at average more than 10 years working in the particular PA. Half of managers have previous experience in management gained in other sectors, and 20% had some management role in nature conservation. Around 30% of them do not have previous management experience at all.

Willingness to work in the PA management field: Over 80 % of managers express high satisfaction with the field of their work; 53% of them report they were determined to find a job in a protected area. The majority of staff expressed satisfaction with the field of work and were not willing to change it.

Leadership style/interpersonal relations in organizations: Most of the managers highly value the importance of a transparent information flow and of mutual trust in their organizations. At the same time, in almost 1/3 of selected organizations, there is no system for internal and external communication in place. Huge gaps between managers and staff estimations are found in the decision making field – in nearly 80% of inquired organizations, the decision making process is taking place within the small management circle, and information shared randomly, not being transparent for all the employees. It is interesting, however, that decision making and problem solving skills are perceived by most of the managers in this research as being among their strongest competences, where there is no, by their opinion, significant need to improve.

Monitoring and evaluation of employees: While most of the managers agree about the importance of this activity, in practice, according to information gathered from staff representatives, there is no adequate procedure established nor regularly conducted with employees, who are not presented an opportunity to provide feedback on their performance in most of the cases, or to plan their career development together with their supervisors. Therefore, both incentives and disciplinary measures are applied on "ad hoc basis" with few general criteria embedded in the written policies of the organizations.

"Responsibility"

Cooperation with local community: The majority of managers understands the importance of this kind of cooperation. Some mechanisms of providing help for local communities, according to their answers, could be the following: providing

jobs for locals, continuous information, and the training of the local community. In practice, it looks like they manage to offer some jobs on a seasonal basis, rarely on a permanent basis, while education and training programs are more the exceptions than usual business of PA management organizations.

Distribution of responsibilities for problems solving: There is high degree of agreement about main problems existing in PA management in Serbia, between individual managers and staff representatives: lack of adequate staff qualification, first of all, of specialized skills for PA management, lack of funding (unstable revenues) and pressures to resources followed by conflicts of interests of different land users. For solving these problems, everybody agreed that partnerships between managers and the national government are necessary, with a slight tendency present in managers' attitudes to shift parts of the responsibility to "others", first of all to national governments' bodies in charge.

Building of partnerships and support: at both the individual and organization level, there is agreement in more than a half of the cases that there is a lack of support for PAs from wider (both local and national) community, including decision makers. According to the results, the best cooperation can be found between PA management organizations and scientific and experts institutions/ agencies and the weakest in relation to businesses. Private-public partnerships are very week and communication with business stakeholders are mainly reduced to the payment of taxes for environmental services or sporadic sponsorships in some cases.

Securing funds: While both managers and staff of PA organizations agree on the fact that financial resources are neither sufficient nor stable, there is a tendency that managers estimate their financial portfolio as more diversified than it is. Almost half of organizations do rely mainly on budget funds and collection of taxes for environmental services, while only few of them tend to be proactive in securing funds through projects funded by international or national donors or other forms of self created financial opportunities.

3.5 Identifying of gaps

Within the insights of the briefly presented results above it is not difficult to identify gaps existing in individual and organizational learning potentials and management capacities of Serbian organizations in charge of PAs.

The qualification level is significantly higher among managers than PA staff, though both groups have at least one in common: solid formal education and weak specialized knowledge in the field.

Also, there is obviously higher need than there is opportunity for PA managers and staff to continue learning and improve their competences in an organized

manner – within their working environments or programs systematically provided by national authorities or institutions in charge. Capacity development programs are being organized on ad hoc and project basis, without prior training needs assessment and analysis.

Second, there is a gap between staff development plans and their implementation. Systematic development of human resources is not in place in these organizations in Serbia. There are neither clear procedures nor criteria for providing incentives for learning, and initiatives are completely left to individuals. Awareness expressed by PA organizations' managers about the importance of improving the local communities' knowledge and capacity to participate in decision making in this field, is not being followed by learning programs provided for this target group. Only one third of organizations selected for this research have training/visitors facilities, continuously providing programs for public learning.

Further diversification of the financial portfolio is closely connected to managers and staff competences in writing project proposals and managing projects, which is obviously still one of their weak sides in Serbia. Improving partnerships at all levels, and especially with the NGO sector and donors may be of direct help for this improvement. Some of managers recognize this need, trying to find solutions in making space for new employments for experienced staff in this field.

3.6 Conclusion

The above-mentioned and other accompanying gaps affect in many ways the segments of functioning and effectiveness of organizations for PA management in Serbia. Lack of opportunities to permanently improve their knowledge, skills and experience, as well as of the support they are provided (in reality and according to their perceptions), hinder their ability to cope with constant changes and to provide effective and sustainable management of protected areas.

Learning about these gaps may provide clear signals on the steps and actions that should be taken in order to improve capacities and create opportunities in this field. Some of priorities are definitely the following: harmonization between national strategies and practical support to PAs organizations; strategic development of learning opportunities based on needs assessment and on previously defined standards of competences; modernization of human resources functions; improving infrastructure, mainly for awareness rising, education and tourism activities, as well as for other forms of sustainable economic activities in cooperation with local communities.Once again, the study clearly indicates that individual, organizational and social levels of capacities are interlinked; support to the organized development of individuals in these, as any other type of

organizations, is not possible without strategic support coming from society. It is necessary to build such a strong support on continuous research and lessons learnt at local, national and international levels.

4 BIOSPHERE RESERVES AS MODEL SITES FOR SUSTAINABLE DEVELOPMENT

Dr. Engelbert Ruoss[5]

4.1 The UNESCO Man and Biosphere Programme

The Man and Biosphere Programme (MAB) can be considered as a UNESCO flagship programme linking nature and landscape to sustainable development. The International Coordinating Council of the UNESCO "Man and the Biosphere" (MAB) Programme convened for the first time in 1971 and laid the foundations for a new type of conservation area – Biosphere Reserves. It declared the harmonious development of man and nature to be its key goal. The Statutory Framework and the World Network of Biosphere Reserves (WNBR) was initiated in 1975 as a nature protection programme focused on representative landscapes, integrating management, education and research. Today, the world network of 610 Biosphere Reserves, including 12 transboundary BRs in 117 countries (ICC, 2012), adds to the wealth of experience gathered over 40 years in and with model regions for sustainable development to climate change mitigation and adaptation and aims at making a substantial contribution to these processes as well as to the conservation of biological diversity.

The statutory framework of the biosphere reserves

As follow-up to the Rio summit in 1992, the zonation concept was enlarged and the new dimension of 'sustainable development' was added. The so-called "Seville Strategy" was elaborated during an international conference in Seville, Spain, in 1995 and re-confirmed during the Seville +5 conference in Pamplona in 2000 (UNESCO MAB, 2002). New issues and programmes such as sustainable tourism, quality economy, Education for Sustainable Development and climate change were

[5] Head of the "Global Regions" Programme, former Director of the UNESCO Venice Office, Regional Bureau for Science and Culture in Europe.

newly reflected in the Madrid Action Plan (MAP) for 2008–2013 (UNESCO MBA, 2008).

According to the Seville Strategy, all Biosphere Reserves should have the following three main functions:

- conservation in situ of natural and semi-natural ecosystems and landscapes;
- demonstration areas for ecologically and socio-culturally sustainable use;
- logical support of research, monitoring, education, training and information exchange.

Biosphere Reserves (BRs) are established by the countries in which they are located and recognized under UNESCO's Man and the Biosphere (MAB) Programme to promote sustainable development based on local community efforts and sound science and education. The Madrid Action Plan (MAP) aims at contributing to the region's sustainable development agenda by assuring not only a sound management of individual sites but the innovation transfer to the national and regional levels so that decision- and policy-making processes can be progressively geared towards the direction of true environmental integration and sustainable development.

The conclusions in the *Madrid Action Plan* for the future WNBR strategy read as follows: "This Madrid Action Plan was agreed at the 3rd World Congress of Biosphere Reserves, which was held in Madrid in February 2008. It builds on the Seville Strategy and aims at capitalizing on the strategic advantages of the Seville instruments and raise biosphere reserves to be the principal internationally-designated areas dedicated to sustainable development in the 21st century. The biosphere reserve (BR) concept has proved its value beyond protected areas and is increasingly embraced by scientists, planners, policy makers and local communities to bring a variety of knowledge, scientific investigations and experiences to link biodiversity conservation and socio-economic development for human well-being. Thus, the focus is on developing models for global, national and local sustainability and for biosphere reserves to serve as learning sites for policy professionals, decision makers, research and scientific communities, management practitioners and stakeholder communities to work together to translate global principles of sustainable development into locally relevant praxis…"

The MAP defines 4 main action areas with 31 targets and 65 actions that are critical to achieving the vision and mission of the MAB Programme. Targeted actions help its implementation on the appropriate level, may it be local, national or international, within the time-frame set (2008–2013). The MAP was adopted by the MAB International Co-ordinating Council (ICC) in 2008 and intended to be an integral part of UNESCO's strategy working towards the achievement of internationally-agreed goals and targets including the Millennium Development Goals (MDGs), Education for all (EFA), Decade for Education for Sustainable Development (DESD) as well as emphasizing UNESCO's contributions towards One UN,

UN Development Assistance Frameworks (UNDAFs) and other in-country coordination mechanisms promoted under the guise of UN reform on the country level.

The idea of biosphere reserves has met with growing approval worldwide and over the past four decades has become a great success. Biosphere reserves represent a global network of model regions in which sustainable forms of use and options for adaptation to changing ecological, economic and social conditions can be tested, involving all stakeholders (ICC, 2011, Annex 2: Dresden Declaration). After the Rio+20 summit, biosphere reserves were declared models for sustainable development, which is a holistic approach to link nature protection to development.

The way forward for the World Network of Biosphere Reserves

The recent UNESCO MAB International Co-ordinating Council (ICC) reports confirm the commitment to foster the role of the biosphere reserves as models for sustainable development. "The essence of a biosphere reserve is not merely protection or conservation but the building of a mutually beneficial relationship between conservation and development using research, monitoring, capacity building and participatory management approaches as tools to build conservation-development linkages" (ICC, 2012: CONF 201/2, p 11).

The role of BRs as models for sustainable development was promoted by UNESCO as a key contribution to the post-Rio+20 process.

However, some key questions which would strengthen and enhance the significance of the BR as a model for Sustainable Development have not yet been fully considered in the new generation of BRs. The main challenges faced by site managers will be critical in order to achieve progress in the implementation of the BR approach endorsed by the Madrid Action Plan. Some of these critical issues are:

- dealing with natural capital, the core idea of the green economy concept;
- enhancing awareness of values related to natural resources: biodiversity, landscape;
- increasing added value for people through sustainable growth;
- relating cultural diversity and heritage to economy and environment;
- dedicating and linking innovation and research to development;
- transferring knowledge and know-how to the general public;
- involving stakeholders and public in decision processes;
- assessing heritage protection and development in territorial processes (e.g. footprint).

The model role of the BRs

The idea of biosphere reserves has met with growing approval worldwide and has become a great success over the past four decades. Biosphere reserves represent a global network of model regions in which sustainable forms of use and options for adaptation to changing ecological, economic and social conditions can

be tested, involving all stakeholders (ICC, 2011, Annex 2: Dresden Declaration): "Since its establishment the MAB Programme has pursued innovative approaches in research, monitoring, education and capacity building, management and in implementing model projects. These approaches go far beyond nature conservation and are suitable as models for a sustainable way of life. Biosphere reserves are thus an important element of safeguarding a livable earth for the future of generations to come. … Biosphere reserves are learning sites for sustainable development."

The UNESCO/MAB programme has not yet clearly defined what a model and good practice is. A preliminary definition is given in the Madrid Action Plan: "Active and continuing consultations, between the scientific and research communities, policy and decision makers, resource managers and resident populations in a biosphere reserve are critical in finding the optimal mix of ecosystem services that would illustrate the role of Biosphere Reserves as models for land/seascape level sustainable development at the national, regional and global levels" (MAP p 7).

Based on the Seville Strategy (UNSECO MAB, 1996), BRs started developing concepts for their sites as models for sustainable development and have published a series of good practices and model roles (German MAB National Committee, 2003; German Commission for UNESCO, 2007; Österreichische Akademie der Wissenschaften, 2005). The concepts and descriptions mainly explained the model roles and significance of BRs regarding sustainable development. UNESCO has not examined the BRs systematically or has defined an assessment to be applied worldwide. The assessment of the Madrid Action Plan 2008–2013 will reveal the progress regarding the transformation of BRs into models for sustainable development.

The holistic approach of biosphere reserves has been recognized as "model" by the ICC bodies in seven sites:

- Oberlausitzer Heide- und Teichlandschaft, Germany;
- Swabian Alb, Germany;
- Schorfheide-Chorin Biosphere Reserve, Germany;
- Lac Saint Pierre, Canada;
- Großes Walsertal, Austria;
- East Vättern Scarp Landscape, Sweden;
- Entlebuch Biosphere Reserve, Switzerland.

Oberlausitzer Heide- und Teichlandschaft, Germany *(Bureau ICC, 2007)*

"80. The Bureau welcomed the submission of the report for the biosphere reserve included in the WNBR in 1996 and commended the German authorities for the high quality of the report. It expressed its appreciation on the biosphere reserve approaches to sustainable development on a regional scale with the establishment of a biosphere reserve council involving a diversity of stakeholders and enabling partnerships. The Bureau indicated that this biosphere reserve could **serve as a**

model to be shared within the WNBR. The Bureau considered that the site fulfilled the three functions and the biosphere reserve criteria."

Swabian Alb, Germany *(Bureau ICC, 2009)*

"The Advisory Committee commended the German authorities for this well-prepared and comprehensive nomination, supported by an extensive participatory process and the establishment of organizations to take forward the implementation of the biosphere reserve and **recommended that it be used as a model** for other proposals.

It noted that the site was located in the European Jura, with beech forests, extensive orchards, pine and spruce forests, grassland, and extensive meadows, close to Stuttgart with a total area of 84,500 ha and a population of 150,000. It expressed its appreciation on the plan for constructing a sustainable coordination office for the biosphere reserve. It commended the German authorities for the quality of the programmes for regional sustainability, including green businesses and ecotourism."

Lac Saint Pierre, Canada *(ICC, 2012)*

"181. The Advisory committee welcomed the report provided by the Canadian authorities. It welcomed the extension of the transition area to reinforce the sustainable development function and secure the involvement and commitment and engagement of local communities. The total surface of the transition area is now 6,346 km². The Advisory Committee considered that the biosphere reserve is fulfilling the criteria of the statutory framework. The Advisory Committee recommended that the site is **considered as a model site** whose practices should be shared within the World Network of Biosphere Reserves."

Großes Walsertal, Austria *(ICC, 2012; Figure 29)*

"180. …The Advisory Committee highly appreciated the detailed, comprehensive and concrete examples provided. The biodiversity conservation activities include measures implemented in the field of biodiversity and sustainable agriculture, biodiversity monitoring with farmers, establishment of agricultural partner businesses, meadows championships and butterfly monitoring programmes. The Advisory Committee recommended that the site is **considered as a model site** which practices should be shared within the World Network of Biosphere Reserves."

Figure 29: Village Blons in the Großes Walsertal Biosphere Reserve, Austria

East Vättern Scarp Landscape, Sweden *(ICC, 2012; Figure 30)*

"104. The core areas consist of existing nature reserves, Natura 2000 sites and forest habitat protected areas and shorelines protected areas. The three functions are very well described as well as the comprehensive and extensive consultation process. The development of new technology is linked to the conservation objective to enhance bio-cultural heritage. Involvement of the private sector, support for social entrepreneurship for sustainable use of meadows, grasslands, energy through demonstration areas are well-documented and are **considered as a pilot model.** Adaptation and mitigation to climate change is one key objective of this proposed biosphere reserve with many research activities described. The coordination structure and engagement process of the different stakeholders and group were commended, including the Biosphere Centre."

Figure 30: East Vättern Scarp Landscape (Sweden), a new Biosphere Reserve based on the MAP, approved in 2012
Source: Jonkoping, aerial photo over the small village Fingalstorp

There are certainly other BRs to be considered as models but they did not submit nomination files or reviews in the past 10 years. Supplementary BRs to be included in supplementary investigations are amongst others: Wienerwald (Austria), Mata Atlantica (Brazil), Rhoen Biosphere Reserve (Germany), Jeju Island (South Korea), Kalimantan (Indonesia), Talamanca Range-La Amistad Reserves (Panamá/Costa Rica) and Bañado del Este (Uruguay).

Good practices

In the past 10 years, 15 BRs received special recommendations regarding good practice or models for single issues (e.g. research, cooperation, nomination files) from the ICC/MAB. They are situated in Germany (7), Sweden (3), Canada (1), Austria (1), Spain (1), Switzerland (1), and Vietnam (1):

- quality of the periodic review process and report: Berchtesgaden Alps Biosphere Reserve, Schorfheide-Chorin Biosphere Reserve, Flusslandschaft Elbe Biosphere Reserve, Schaalsee, Vessertal-Thüringen Forest (all Germany), Urdaibai Biosphere Reserve (Spain);

- development of MAB-Ramsar cooperation: Red River Delta Biosphere Reserve (Vietnam);
- sustainable development: Pfälzerwald Biosphere Reserve (Germany);
- practices on farming systems with an expanding organic food market as sustainable practices: Redberry Lake (Canada);
- conservation and development challenges facing a region under heavy urbanization pressure: Wienerwald Biosphere Reserve (Austria);
- process for consultation and coordination/quality of the participatory process: Entlebuch Biosphere Reserve (Switzerland), Kristianstads Vattenrike Biosphere Reserve (Sweden), Biosphäre Bliesgau (Germany);
- high quality of the nomination file and process: Blekinge Archipelago and Nedre Dalälven River Landscape (both Sweden);
- research applied on the biosphere reserve management: Urdaibai Biosphere Reserve, (Spain);
- model for transboundary cooperation: Trifinio Fraternidad Biosphere Reserve (El Salvador/Guatemala/Honduras);
- model for promoting an integrated eco-tourism development: the Island of Príncipe (Sao Tome and Principe).

4.2 What is a model for sustainable development?

A model in this context can be defined as "best practice" regarding integrated approach for sustainable development, following the principle of a balanced growth of the three pillars, protecting the natural and cultural heritage and creating added values for people. It has to aim at facilitating the reproduction of the achievements in other areas as well.

The following criteria should be considered as key for models:

- **Attractive:** An attractive model creates interest and curiosity and stimulates willingness of other areas to adapt and to copy.
- **Accepted:** A model has to be accepted and recognized internally and externally. People and stakeholders are the owner of a living model and have to support the aims and accept being part of the model. On the other side, a model has to be recognized as such.
- **Realistic:** A model should not be a dream; it has to be feasible and based on natural laws. A concept which is not realistic cannot be considered as model since it will never be realized.
- **Easy to understand:** A model has to be easy to understand and to be reproduced even though its functioning is highly complex. Therefore, a model has to focus on simplifying the concept to make it understandable for a large number of people.

- **Visible and tangible:** To understand all dimensions of a model means that it has to be visible, tangible and it has to transmit passion. The communication has to be transparent and credible in order to fully be recognized as model.
- **Reproducible:** The creation of a model means to facilitate a process which enables other areas to copy and adapt a concept to other circumstances. In order to facilitate the reproduction of a concept, it has to be understood, it needs to be logical and the processes must be clear; a methodology regarding the implementation of a model must be available.
- **Measurable:** In order to make a model visible, the results have to be measurable. Only this way it will gain acceptance and recognition. Therefore, clear and measurable indicators should be established from the very beginning in order to permanently assess a process and to transparently communicate the achievements.
- **Assessed continuously:** A monitoring based on indicators and evaluation procedures has to be established in order to be able to continuously assess the process. Only a permanent controlling and monitoring allows for needed changes to be made and creates credibility for such processes.

Clear criteria will have to be defined for the "Model for Sustainable Development." They will have to be in line with the Sustainable Development Goals (SDGs), the new targets to be elaborated after Rio+20 (UN, 2012). Furthermore, the sites have to be monitored and assessed continuously and integrated in a world network in order to globally exchange and promote the achievements. This concept should be open to all kinds of certified areas, such as World Heritage and Ramsar sites, Geoparks, Sustainable Regions and Cities programmes and other parks on an international or national level.

4.3 Global Regions: models of sustainable sites

A **Global Region** is a "self-defined and self-organized system" which brings together environment, society and economy and bases its activities on the Biocapacity of the site, particularly the available natural resources (www.globalregions.org). They are part of a global network of areas which focus on the implementation of sustainable development (Figure 31). Their task is to promote the concepts of sustainable development worldwide.

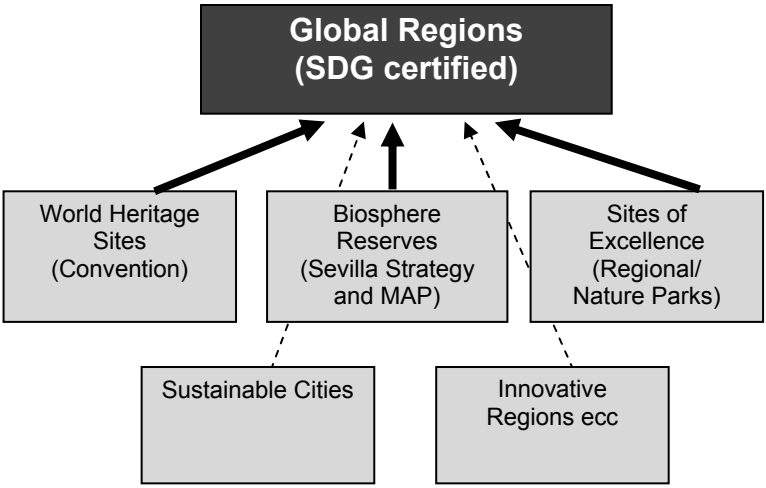


Figure 31: The concept of Global Regions as models for sustainable development

Characterization of Global Regions

Global Regions will especially …

- launch bottom-up process in their areas regarding sustainable development and involve stakeholders in all phases of planning, implementation and monitoring;
- establish legal and institutional frameworks and governance systems to foster sustainable development;
- create added value for people in the area through initiatives enhancing prosperity, well-being, welfare; e.g. income, investments, job opportunities, social cohesion, health;
- base their sustainable growth on renewable natural resources and human capacities, involve people and stakeholders in order to create added value for local people;
- seek excellence through efficient use of natural resources, closing ecological cycles as well as enhancing effective production and service chains;
- focus on achievements regarding international conventions and frameworks, e.g. Human Rights, Millennium Development Goals, Culture Conventions;
- protect natural and cultural heritage as well as natural resources;
- disseminate and promote best practice and methodologies regarding the key aspects of sustainable development;
- cooperate within a network of sites of excellence through exchange of knowledge, transfer of know-how and promotion of the model sites;

- develop networks of excellence further (Biosphere reserves, World Heritage sites, geoparks, Ramsar sites, national and regional parks, nature parks) by adopting the principles of sustainable development.

Global regions will have to focus on the following goals:

- established legal frameworks and regulations as well as strategies for Sustainable Development;
- introduced planning, implementation and monitoring instruments to foster Sustainable Development in the defined areas: incentives, innovation and funding mechanisms, participatory and democratic processes, co-operation, assessment, promotion;
- the involvement of people and stakeholders in consultation and decision processes;
- tools adopted to plan, implement and monitor efficiently the territorial development such as GIS, statistics, indicator system;
- raised public awareness regarding the values of nature, culture;
- introduced appropriate curriculums in education systems in order to strengthen the efforts of continuous capacity building;
- established mechanisms to manage product cycles and services chains more efficiently;
- established networks and support systems in order to create continuity of the development;
- introduced funding schemes (fees, taxes, contributions, donations) which guarantee the financing of the protection of natural and cultural heritage;
- established a communication strategy and information tools (ICT, media) which allows an effective support for sustainable development;
- introduced evaluation systems which allow checking all the projects and actions regarding SD criteria fulfilment of the agreed strategy.

The Swiss Experience

The "Global Regions" concept follows the approach of the Parks Network established in Switzerland and promotes the mechanisms adapted for the nomination and assessment of the regional nature parks. The Entlebuch Biosphere Reserve, the first site of the new generation of BRs (Ruoss and Schaaf, 1999) in Switzerland, has been considered as good practice and as a model for its participatory processes and the holistic approach by UNESCO (ICC, 2001; ICC, 2012). At the very beginning, Entlebuch BR established a framework for sustainable development (UBE, 2002; Ruoss, 2003; Wymann von Dach, 2001) with quantitative and qualitative indicators and defined a continuous assessment of its achievements (Schmid et al., 2004; UBE, 2011).

Figure 32: The Entlebuch Biosphere Reserve, one of the models recommended by UNESCO for its holistic approach and the participatory decision-making process and the first Regional Nature Park in Switzerland

By 2000, Switzerland had established only one national park which was also declared as Biosphere Reserve 1st Generation. With the establishment of the Entlebuch Biosphere Reserve, the project of establishing new parks was launched (Figure 32). Within 10 years, Switzerland has passed the laws and regulations and begun procedures and funding mechanisms for a comprehensive park system (Figure 33).

In Switzerland, a legislation enabling the creation of parks of national importance has been in force since 1. December, 2007. The basic principles for the elaboration of park applications are defined in a set of guidelines (BAFU 2008).

The federal authorities support the establishment, operation and quality assurance of parks by granting financial aid and awarding the park label. Parks of national importance help to protect and enhance exceptional natural habitats or landscapes of outstanding beauty. At the same time, these parks promote the sustainable economic development of the regions concerned as well as allowing visitors to experience nature and offering environmental education. The federal authorities only recognize parks that arise from regional initiatives and are backed by the local community. Regional initiatives are to be supported and overseen by the cantons.

The aim is, thus, to promote regions characterized by high natural and landscape values which pursue sustainable development and meet the specified criteria.

Established parks:

- category of "National park": Swiss National Park;
- "Regional nature park" category: Landschaftspark Binntal, Parc régional Chasseral, Regionaler Naturpark Diemtigtal, Parc Ela, UNESCO Biosphere Entlebuch, Regionaler Naturpark Gantrisch, Parc naturel régional Gruyère Pays-d'Enhaut, Regionaler Naturpark Jurapark Aargau (AG/SO), Naturpark Thal, Biosfera Val Müstair;
- category of "Nature discovery park": Wildnispark Zürich-Sihlwald.

Candidate parks:

- category of "National park": Parc Adula, Parco Nazionale del Locarnese;
- category of "Regional nature park": Naturpark Beverin, Parc naturel régional du Doubs, Parc Jura Vaudois, Regionaler Naturpark Pfyn-Finges.

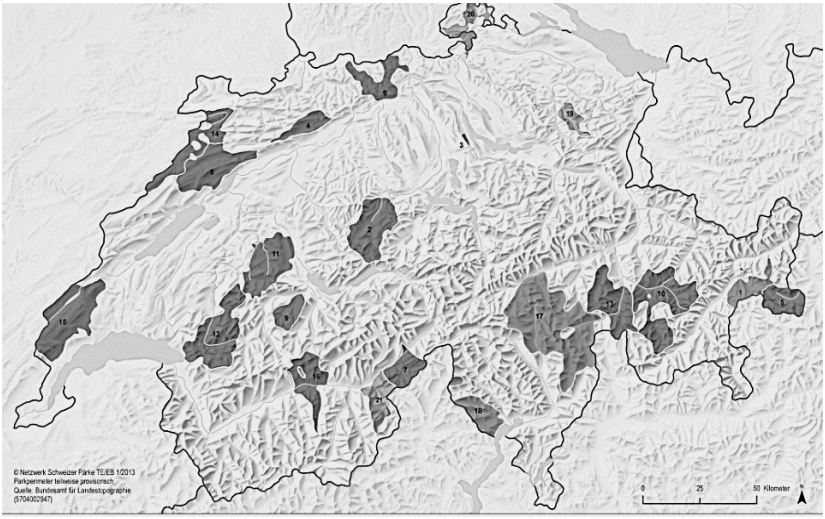


Figure 33: The Swiss Park Network (January 2013) focusing on sustainable landscape development

Source: http://www.paerke.ch/en/schweizerpaerke/karte.php

4.4 Considerations and recommendations

The UNESCO World Network of Biosphere Reserves (WNBR) is in fact an excellent contribution to the post-Rio+20 process establishing models of learning sites for sustainable development. It is important to concentrate the resources on the MAB programme as a main priority within the UNESCO programme and to consequently implement and monitor its progress. The WNBR should finally be considered as:

- the largest and most exciting programme worldwide with the aim of implementing and making visible sustainable development in defined territories;
- a sustainable development initiative bringing long-term benefits for people and nature;
- a unique initiative to launch a chain reaction and to achieve a tipping point in order to spread the Sustainability Sites concept worldwide;
- the overarching programme including all sectors activities of UNESCO and linking other major UN agencies and programmes;
- a revolutionary contribution to the Sustainable Development Goals (SDG) and Rio +30 through the implementation of the Seville Strategy and the Madrid Action Plan;
- a future UN flagship together with the World Heritage convention and other UN priorities (e.g. Decade of Education for Sustainable Development, Millennium Development Goals, Ramsar), re-establishing a lead role in the cross-cutting sustainable development and the post-Rio+20 process;
- the initiative is able to launch a chain reaction to spread Sustainable Regions concept worldwide.

A lot of protected areas (e.g. BRs, World Heritage sites, Ramsar sites) face considerable pressure from economy and politics for not respecting the conservation and development approach or even profiting from the labeled areas for their own purpose without respecting their targets and needs. The present economic situation leads to a decrease of funding and support for the designated sites, mainly the protected areas. As a result, the funds for research, innovation, education or the protection of natural and cultural heritage are reduced considerably.

The principles of mutual interest, learning by doing and through exchange of experience has to be reinforced by enhancing the active cooperation, participation and exchange within the World Network of Biosphere Reserves but also the World Heritage sites, geoparks and Ramsar networks. UNESCO and the member states are, therefore, asked to establish new incentives and opportunities to further improve the financial situation and the management of the sites and to go ahead without delay with the implementation of the decisions taken by the governing bodies of the UNESCO conventions and programmes.

Furthermore, methodologies and a continuous assessment process have to be established in order to guarantee a long-term success of the programmes. Overall, an open and transparent assessment of the Madrid Action Plan would increase the credibility of the WNBR and underline the uniqueness of the UNESCO flagship programme in the post-Rio+20 process.

International organizations and institutions are furthermore asked to support and foster the existing networks of excellence and especially a joint global programme to establish "Global Regions" as models for sustainable development. The concept "Global Regions" should promote and award the achievements of the existing sites implementing the sustainable development on the local level.

The way to achieve sustainable future is based on holistic, inclusive but territorial approaches which will…

- efficiently create wealth and benefit for all by using the natural resources;
- create equal opportunities for all people interested to share;
- create peace and welfare for all;
- protect and take care of nature and ecosystems;
- conserve and protect cultural heritage for future generations.

The Global Regions concept is, therefore, considered as a contribution to the post-Rio+20 programme and should visualize the feasibility of the sustainable development paradigm locally. The credibility of the commitments and the quality of the achievements will be real steps and a progress towards "The Future We Want" (UN, 2012).

4.5 Summary

The target of the biosphere reserves recognized under UNESCO's Man and the Biosphere (MAB) Programme is to contribute to sustainable development in the area by assuring sound management, transfer of innovation, decision and policy-making. The World Network of Biosphere Reserves comprises 610 sites in 117 countries. The biosphere reserve concept has shown its importance beyond protected areas and has increasingly been embraced by scientists, planners, policy-makers and local communities to have a variety of knowledge, scientific investigations and experiences to link biodiversity conservation and socio-economic development for human well-being. The focus of biosphere reserves is on developing models for global, national and local sustainability, to serve as learning sites and to work together to translate the global principles of sustainable development into locally relevant praxis.

Switzerland launched its new park system with the approval of the Entlebuch Biosphere Reserve in a bottom-up process in 2001. Within 10 years, Switzerland has established the laws, procedures, regulations and funding mechanisms to establish

a comprehensive park network. The framework can be considered as a basis for the new generation of model regions for sustainable development. A Model is a "best practice" regarding an integrated approach for sustainable development. It should be attractive, accepted, realistic, easy to understand, visible and tangible, reproducible, measurable and it has to be assessed continuously.

The new concept, "Global Regions", was launched in December 2012. A Global Region is a territorial system, which interlinks environment, society and economy and bases its activities on production cycles on the local biocapacity, particularly the available natural resources. The overall goal is to launch the implementation of sustainable development worldwide.

5 AN EDUCATION PROGRAMME FOR PROTECTED AREAS MANAGERS

Michael Getzner, Michael Jungmeier

5.1 "Education on the highest level" – Overview of the programme

Conserving biodiversity, promoting sustainability, handling conflicts, generating regional benefits: The planning and management of protected areas involves many different legal, administrative and technical aspects. The demand for highly skilled experts is growing.

Our vision is to promote biodiversity conservation and regionally sustainable development in Europe and worldwide by educating and training (future) managers of protected areas.

The learning goals are:

- an excellent and comprehensive understanding of the aims and roles of protected areas with regard to the conservation of biodiversity and (integrated) regional development;
- detailed knowledge of the full range of tools available for the management of protected areas;
- an ability to analyze and solve problems encountered when establishing, planning and managing protected areas, including the implementation of inter- and transdisciplinary dialogues with all stakeholder groups;
- the development of hard and soft skills to create mutual benefits of nature conservation on the one hand and the local population on the other hand, particularly in peripheral regions as well as in developing countries with the aim of achieving an integrated regional development.

The management of protected areas shall account for all three "pillars" of sustainability to make protected areas regional "cornerstones" of globally sustainable development (Figure 34).

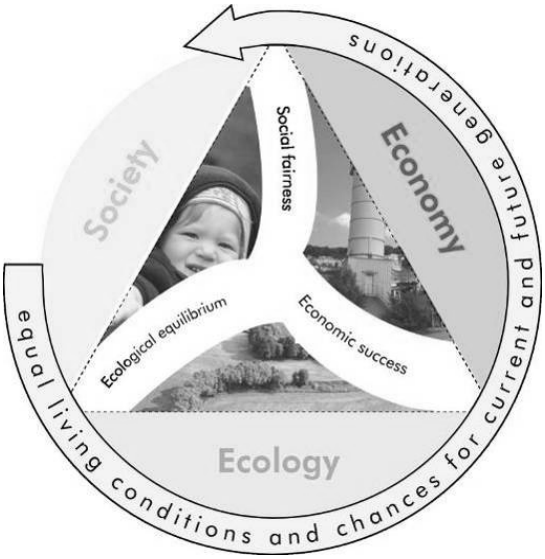


Figure 34: Sustainability approach to managing protected areas

The MSc programme is set up in cooperation of the Alpen-Adria-University Klagenfurt and E.C.O. – Institute of Ecology, a company specialized in planning and consulting in the field of protected areas. An international advisory board supports the programme on a regional, national and international level. The lecturers of the programme are internationally acknowledged experts who represent a broad portfolio of different backgrounds, ranging from theoretical (science) to practical knowledge (park managers, consultants, international organisations). Thus, by attending the programme, the participants become part of an international network of excellence for protected area management.

The programme is divided into four terms:

1st term: Theoretical and scientific fundamentals of the management of protected areas

2nd and 3rd term: Practical aspects of the management of protected areas (tools and best practice)

4th term: Supervised implementation of applied and/or scientific research projects (master's thesis)

The master programme has a particular focus on the following topics:

- European and international categories of protected areas;

- nature conservation strategies in Central and Eastern Europe;
- integration of socio-cultural, economic and ecological aspects;
- participative approaches in the management of protected areas
- new technologies, tools and methods;
- intercultural aspects of the management of protected areas.

The programme's patron is Prof. Michael Succow, holder of the Alternative Nobel Price 1997, who said that "the MSc programme 'Management of Protected Areas' is an outstanding and innovative educational offer intended for managers and planners of protected areas. It not only provides important training but also professional impetus for nature conservation in Europe."

5.2 "A network to work with" – Partners

Besides the Advisory Board, the MSc programme is embedded in a network of partners:

- Alumni Club: The alumni, the lecturers and the advisory board of this post-graduate education programme are building up a globally active and personal network for protected area experts. Via regular meetings, workshops, excursions and an interactive platform (www.alumnimpa.net), the members stay in contact, develop new ideas and projects in the field of protected area management, exchange opportunities and support each other. Moreover, the Alumni Club is open for interested protected area experts. Frequently, the Alumni Club has been on disposal for supporting the programme, for instance by providing a welcome service for new participants or by contributing to lectures, excursions, modules and events.
- "Friends of the MPA-programme". This young initiative has been constituted recently. Supporting the programme, in particular by providing support for individual participants, is the main objective of this initiative.
- WCPA-University: The World Commission on Protected Areas has established a network of institutions contributing to capacity building and training. The Klagenfurt MPA-programme has proven to be an active partner within this network.
- UNITWIN-Network: The MPA-programme applied to become member of UNESCO´s Unitwin-programme and by now hopes for a positive decision.
- University co-operation: The MPA-programme is in close contact and co-operation with institutions providing similar educational offers, such as the University of the Philippines or Universidad Autónoma de Madrid offering a master programme in cooperation with EUROPARC-Federation and three universities in Madrid.

5.3 "Combining theory with practice" – Start of the programme 2009

In June 2009, the second turn of the MSc programme was finalized successfully. During the academic ceremony at Alpen-Adria-University Klagenfurt, Michael Getzner and Michael Jungmeier, the directors of the programme, congratulated participants, lecturers and members of the advisory board on their achievements. Vice-Rector for International Relations and Studies, Hubert Lengauer, postulated: "Let's make the whole world a protected area."

In September 2009, the starting signal for the third round of the programme was given and 20 new participants from 12 different nations were welcomed in Klagenfurt (Figure 35). Most of the participants were able to look back on several years in the management of national parks, biosphere parks and other protected areas. "The Master of Science Programme 'Management of Protected Areas' has become one of Europe's most important study programmes for professionals in the management of Protected Areas," says Michael Getzner, director of the programme. "We would like to wish the participants a good start and hope that their careers will profit from a powerful impetus."

Figure 35: Start of the third MSc programme "Management of Protected Areas"
Participants of the programme 2009–2011 (left to right): Peter Puchala (Slovakia), Jan Cernecky (Slovakia), Goran Sekulic (Serbia), Berihun Tiru Tessema (Ethiopia), Hailu Wassi (Ethiopia), Alina Ionita (Romania), Michael Mertz (Germany), Amli Abreha (Ethiopia), Eva-Maria Heigl (Austria), Augusta Almeida Ferri (Ecuador), Christian Diry (Austria), Radu Povazan (Slovakia), Anastasiia Drapaliuk (Ukraine), Olena Slobodian (Ukraine) and Ovidiu Pirv (Romania). Not in the photo: Ayele Kebede Gebreyes (Ethiopia), Sharif Islam (Bangladesh), Neema Philipo (Tanzania), John Okot (Uganda) and Ali Shah Syed Shahid (Pakistan).

5.4 "Working on a tight schedule" – the programme 2009

Module 1: 18.–24.09.2009, Klagenfurt

The first module took place in Klagenfurt in September 2009. Michael Getzner and Michael Jungmeier welcomed the new participants. The module focused on the functions and categories of protected areas in a changing society. International lecturers Christoph Imboden, Marija Zupancic-Vicar and Vesna Kolar-Planincic presented the global perspectives of managing protected areas. In addition to the theoretical part, the participants visited the Nockberge National Park, received a "traditional" welcome at the E.C.O. office and attended an international colloquium with the international advisory board.

Activities:

- 18. September: Reception at E.C.O. office;
- 21. September: Excursion to Nockberge National Park;
- 22. September: International colloquium with members of the advisory board;
- 23. September: Welcome reception by MPA Alumni Club.

Module 2: 28.01.–7.2.2010, Klagenfurt and Triglav National Park (Sl)

The participants met again in Klagenfurt in January 2009. Besides the basics of ecology and nature conservation, they learned about scientific basics for the management of protected areas. Additionally, the module had a particular focus on conflict management and resolution, presented and trained by Dudley Weeks. The excursions to Triglav National Park lead to the unique snowscapes of the Southern Alps. Some of the lectures took place in the seminar facilities of the park.

Activities:

- 28. January: (Multi-)ethnic evening, celebrated by the participants;
- 31. January: Excursion to Nature Park Grebenzen;
- 2. February: Celebration of the World Wetland Day;
- 3. February: Excursion Bohinj Lake (Triglav National Park).

Module 3: 23.4.–2.5.2010, Klagenfurt and UNESCO Office in Venice, Italy

The third module was two-folded: one part took place in Klagenfurt, the other one in Venice. Engelbert Ruoss, director of the UNESCO Venice office, welcomed the participants in the fabulous Palazzo Zorzi. He and his team gave first-hand information on tasks and activities of UNESCO, about Biosphere Reserves and World Heritage Sites. The guests stayed in Venice for five intensive days with seminars, discussions and an excursion to the lagoon.

Activities:

- 23. April: UNESCO-Day in Palazzo Zorzi, Venice;
- 24. April: Boat excursion to World Heritage Sites and protected areas in the lagoon of Venice;
- 29. April: Excursion Geopark Karnian Alps (Austria).

Module 4: 30.6.–11.7.2010, Klagenfurt and Vienna, Austria

The fourth module was dedicated to communication processes and planning of protected areas. It was linked to a project conference of the project NatReg, which gave the opportunity to connect to managers and stakeholders of many different protected areas in South Eastern Europe. An "Open space in open space" in the nature reserve Vellacher Kotschna was addressed to issues of visitors' management. The second part of the module took place in Vienna, which offered the opportunity to see some outstanding areas in the surrounding of the city.

Activities:

- 30. June: Meeting with the international advisory board;
- 1. July 2010: Open space in open space, nature reserve Vellacher Kotschna, Austria;
- 4. July: Excursion Biosphere Reserve Vienna Forest, Austria;
- 6. July: Excursion World Heritage Site Wachau, Austria;
- 9. July: Excursion Nationalpark Park Danube Floodplain, Austria.

Module 5: 23.9.–3.10.2010, Klagenfurt and Lower Carpathians (Sk)

The module focused on implementation planning of protected areas. For instance, Ladislav Miko, Head of Directorate General for Environment of the European Commission, and Joanna Borg from the Maltese Environmental Agency and a former participant in the programme gave first-hand information on the development of management plans. The module took place in Klagenfurt and in selected protected areas of the Lower Carpathians (close to Bratislava).

Activities:

- 25. September: Excursion to Hohe Tauern National Park;
- 30. September: Excursion to Lower Carpathian Mountains;

- 2. October: Evening in Bratislava.

Module 6: 27.1.–6.2. 2011, Klagenfurt

The sixth module was dedicated to the implementation phase in the protected areas life cycle. The new scientific director, Prof. Hans-Joachim Bodenhöfer, presented himself to "his" students and also to a broader public. Due to technical reasons, the module took place in Klagenfurt only.

Activities:

- 27. January: Reception by Prof. Bodenhöfer;
- 29. January: Excursion to Nockberge National Park, Austria;
- 2. February: Press conference, media training and photo shooting at the Blue Cube, Klagenfurt;
- 2. February: Celebration of the World Wetland Day.

Module 7: 24.3.–29.3. 2011, Klagenfurt

The last but one module was addressed to finalizing the thesis and also to some concluding lectures. The module took place in Klagenfurt.

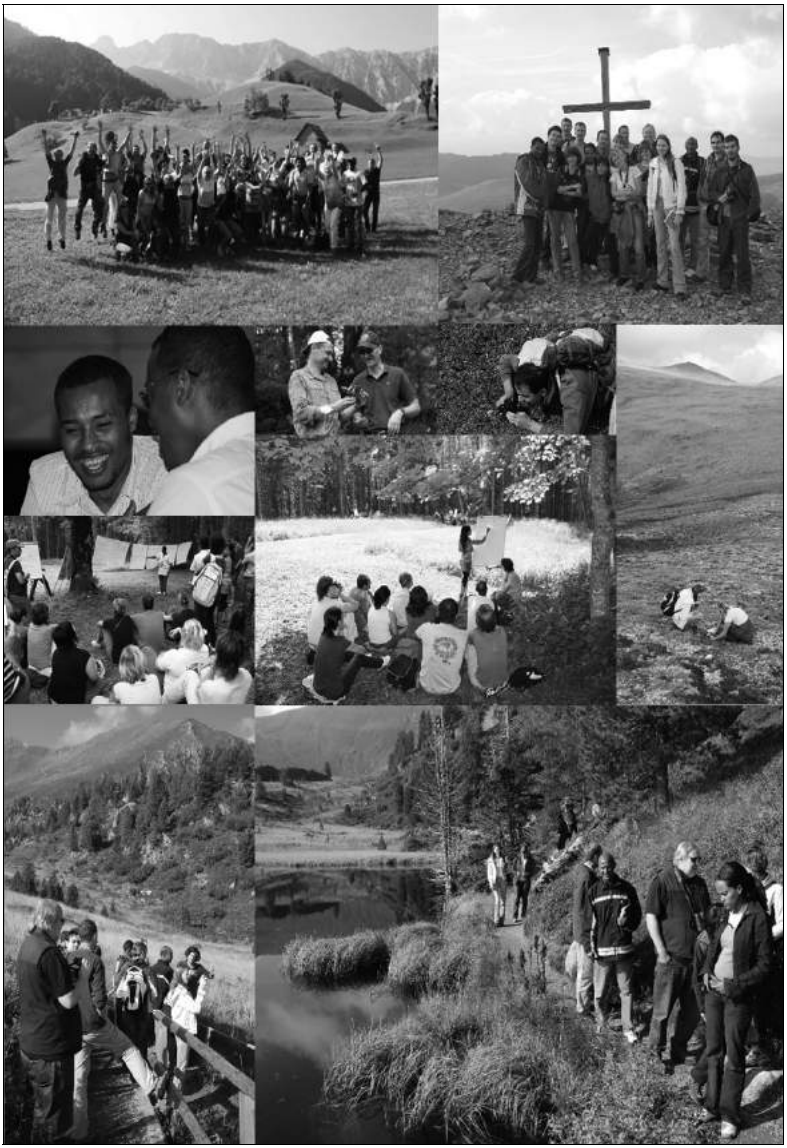
Activities:

- 24. March: Presentation at the Landesarchiv on protected areas of the world by Michael Jungmeier;
- 27. March: Excursion Natura 2000 Site Schütt, Austria;
- 28. March: Information day for new participants.

Module 8: 30.6.–1.7.2011, Klagenfurt Days of Protected Areas

The last module in June 2011 was part of the Klagenfurt Days of Protected Areas, which had already become a known meeting place for professionals dealing with protected areas. Finally, 14 participants of the MSc programme presented their theses to the international audience. A graduation ceremony followed at the University of Klagenfurt. At the end of the day, it was time to celebrate.


Wir schaffen Zukunft!



5.5 Lecturers

(In order of their appearance in the courses of the programme)

Univ.-Prof. Dr. Michael GETZNER; Vienna University of Technology, Austria (formerly Alpen-Adria-University Klagenfurt, Department of Economics)
Mag. Dr. Michael JUNGMEIER; Alpen-Adria-University Klagenfurt, Department of Economics; E.C.O. – Institute of Ecology, Austria
Dr. Christoph IMBODEN; Sustainable Development Biodiversity Conservation, Switzerland
M.S. Vesna KOLAR-PLANINSIC; Ministry of the Environment and Spatial Planning, Slovenia
Dr. Marija ZUPANCIC-VICAR; IUCN Regional Councillor, Slovenia
Univ.-Prof. Dr. Paolo RONDO-BROVETTO; Alpen-Adria-University Klagenfurt, School of Management and Economics, Austria
Mag. Kristin DUCHATEAU; Austrian Development Bank, Austria
Dudley WEEKS; International Mediation, USA
Dr. Rainer HARMS; Alpen-Adria-University Klagenfurt, Department of Innovation Management and Entrepreneurship, Austria
Ass.-Prof. Dr. José VICENTE de LUCIO; University of Alcalá, Spain
Dr. Hanns KIRCHMEIR; E.C.O. – Institute of Ecology, Austria
Dr. Ladislav MIKO; Directorate-General for Environment of the European Commission, Belgium
Joanna BORG, MSc; Malta Environmental Agency, Malta
Zoltan KUN; PAN Parks Foundation, Hungary
Univ.-Prof. Dr. Marina FISCHER-KOWALSKI; Alpen-Adria-University Klagenfurt, Institute of Social Ecology, Austria
Roger CROFT, CBE; Leadership and management advisor, environmental policy and strategy advisor, United Kingdom
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Dr. Martin SOLAR, Europarc Federation, Council member, Slovenia

DI Gerald STEINDLEGGER; WWF International, European Forest Programme, Austria

Dr. Christian WIESER; Museum of the Federal State Carinthia, Austria

5.7 Directors and Editors

Hans Joachim Bodenhöfer

"In my opinion, the management of protected areas in general and this programme in particular are orchids in the bouquet of flowers of future topics. Economic sciences are considered to be rational, I appreciate very much the high ethical standards and the high motivation I can see in the whole field of nature conservation and protected areas."

Field of expertise: Professor emeritus, specialized in macro-economics.

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Michael Getzner

"As an economist and having worked in the context of biodiversity and protected area management for quite some years I am glad that the master programme Management of Protected Areas has been established to increase efficiency and effectiveness of nature conservation by educating professionals and striving for a better understanding of the importance of biodiversity conservation."

Field of expertise: Professor of Economics, specialised in Environmental and Ecological Economics, Regional Economics, Public Finance and Economic Policy, Infrastructure Economics.

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Michael Jungmeier

"Our graduates and alumni have already started to influence and shape the future of protected areas in many regions of the world. Excitingly, the programme Management of Protected Areas has become a unique platform for researching, learning and discussing for, in and about protected areas. I am thankful to find our work substantially supported by the Advisory Board and an international team of lecturers."

Field of expertise: Ecology, human geography, planning and preparing PAs, capacity building and training

CEO of E.C.O. – Institute of Ecology, Austria; Senior Scientist at Alpen-Adria-University Klagenfurt, Department of Geography, Austria (previous affiliation: Senior Scientist at the Institute of Economy at Alpen-Adria-University Klagenfurt)

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6 REFERENCES, TABLES AND FIGURES, PHOTO CREDITS

6.1 Thesis projects 2009–2011

ALMEIDA, M. (2011): Sacred Natural Sites of Great Inca Trail in Sangay National Park Planning and Management. Master Thesis for the Management of Protected Areas Master of Science Programme, Alpen-Adria-University Klagenfurt, 92 p.

CERNECKY, J. (2011): Best Practice Guidelines for Management Planning in Natura 2000. Master Thesis for the Management of Protected Areas Master of Science Programme, Alpen-Adria-University Klagenfurt, 94 p.

DIRY, C. (2011): The role of UNESCO biosphere reserves in regional governance networks. Master Thesis for the Management of Protected Areas Master of Science ProgrammeAlpen-Adria-University Klagenfurt, 86 p.

DRAPALIUK, A. (2011): Implementation of Programme of Work on Protected Areas in Ukraine. Master Thesis for the Management of Protected Areas Master of Science Programme, Alpen-Adria-University Klagenfurt, 105 p.

GEBREYES, A. (2011): Delimiting the Interface between Garden Coffee and Forrest Coffee Conservation and its Implication for Protected Area Management: The Case of Kafa Coffee Biosphere Reserve. Master Thesis for the Management of Protected Areas Master of Science Programme, Alpen-Adria-University Klagenfurt, 97 p.

HEIGL, E.-M. (2011): Cooperation between the National Park Kalkalpen and Regional Economy. Analysis and Recommendations. Master Thesis for the Management of Protected Areas Master of Science Programme, Alpen-Adria-University Klagenfurt, 86 p.

IONITA, A. (2011): Guidelines for the Development for the Participatory Management of Protected Areas in the CER in Relation with the PoWPA Requirements. Unpublished Master Thesis for the Management of Protected Areas Master of Science Programme, Alpen-Adria-University Klagenfurt, 110 p.

ISLAM, M. S. (2011): Biodiversity and Livelihoods: A Case Study in Sundarbans Reserve Forest, World Heritage and Ramsar Site (Bangladesh). Thesis for the Master of Science Programme Management of Protected Areas, Alpen-Adria-University Klagenfurt, 100 p.

OKOT, J. E. (2011): An Ecological Assessment of Biodiversity Pressures in Mgahinga Gorilla National Park South-Western Uganda. Thesis for the Master of Science Programme Management of Protected Areas, Alpen-Adria-University Klagenfurt, 197 p.

PHILIPO, N. (2011): Visitor's Experience on Tourism Services and Facilities in Serengeti National Park. "An Attitudinal and Perception Assessment SENAPA," Tanzania. Thesis for the Master of Science Programme Management of Protected Areas, Alpen-Adria-University Klagenfurt, 86 p.

PÎRV, O. (2011): Valuation of the Ecosystem Services in Mures Floodplain Natural Park - Recreation and Biodiversity Benefits. Thesis for the Master of Science Programme Management of Protected Areas, Alpen-Adria-University Klagenfurt, 79 p.

POVAZAN, R. (2011): Economic and Cultural Values Related to the Velka Fatra National Park (Slovakia). Thesis for the Master of Science Programme Management of Protected Areas, Alpen-Adria-University Klagenfurt, 72 p.

PUCHALA, P. (2011): Feasibility Check of the Tatra National Park Potential for PAN Park Certification. Thesis for the Master of Science Programme Management of Protected Areas, Alpen-Adria-University Klagenfurt, 53 p.

SEKULIC, G. (2011): Overview of the National System of Protected Areas in Serbia: Recommendations for the Implementation of IUCN Protected Area Management Categories. Thesis for the Master of Science Programme Management of Protected Areas, Alpen-Adria-University Klagenfurt, 89 p.

SLOBODIAN, O. (2011): Improved Protection of the Gorgany Nature Reserve. Thesis for the Master of Science Programme Management of Protected Areas, Alpen-Adria-University Klagenfurt, 59 p.

TIRU, B. (2011): Social, Economic and Ecologic Effect of Relocation of Arkwasiye Village from Simien Mountain National Park (Ethiopia). Thesis for the Master of Science Programme Management of Protected Areas, Alpen-Adria-University Klagenfurt, 92 p.

WASSIE, H. M. (2011): Potentials and Challenges of Alatish and Dinder National Parks (Ethiopia, Sudan) – Implementing Transboundary Park Cooperation. Thesis for the Master of Science Programme Management of Protected Areas, Alpen-Adria-University Klagenfurt, 98 p.

6.2 References

APPLETON, M. R., TEXON, G.I., URIARTE, M.T. (2003): Competence Standards for Protected Area Jobs in South East Asia. ASEAN Regional Centre for Biodiversity Conservation. Los Baños, Philippines.

BAASKE W. et al. (2006): Wertschöpfungseffekte im Nationalpark Kalkalpen - Umsätze, Einkommen, Beschäftigung für die Region. Final report commissioned by Nationalpark OÖ Kalkalpen, Austria. STUDIA (Studienzentrum für internationale Analysen), Schlierbach, Austria.

BAFU (BUNDESAMT FÜR UMWELT) (2008): The Swiss Park Network. Available at: www.paerke.ch; www.bafu.admin.ch.

BOTNARIUC, N., TATOLE, V. (eds.) (2005): Cartea Rosie a vertebratelor din România. Museul National de Istorie Naturala "Grigore antipa," Bucharest, Romania.

BOYD, D. (1989): State of the environment. In: UNEP (1989): Our Planet 1 (4): 4–7.

BUCUR, C., STROBEL, D. (2012): Valuation of Ecosystem Services in Carpathian Protected Areas – Guidelines for rapid assessment. Green Steps Publishing House, Braşov, Romania.

BUREAU ICC (2001-2009): Reports of the Meetings of the Bureau of the International Co-ordinating Council (ICC). Available at: http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-programme/about-mab/mab-bureau/bureau-reports/.

BUTYNSKI, T. M., WERIKHE, S. E., KALINA, J. (1990): Status, distribution and conservation of the mountain gorilla in the Gorilla Game Reserve, Uganda.Primate Conservation 11: 31–41.

BUTYNSKI, T.M., KALINA J. (1993): Three New Mountain National Parks for Uganda. Oryx 27 (4), 214–224.

COLEMAN, A., AYKROYD, T. (eds.) (2009): Wild Europe and Large Natural Habitat Areas. Conference Proceedings, 28-29 May 2009, Prague, Czech Republic. EU Presidency and European Commission. 155 p.

CROFTS, R., ZUPANCIC-VICAR, M., MARGHESCU, T., Tederko, Z. (2005): IUCN Mission to Tatra National Park, Republic of Slovakia, April 2005. 43 p.

DHAKAL N.P, K.C.NELSON & S.L. SMITH (eds.) (2006): Assessment of Resident Wellbeing and Perceived Biodiversity Impacts in the Padampur Resettlement, Royal Chitwan National Park, Nepal. Minnesota. 85 p.

FARELL, A. (ed.) (1980): Yearbook 1980–81. World Wildlife Fund (WWF) International, Geneva, Switzerland. 230–235 p.

GARTLAN, J.S. (1974): African forests and Problems of Conservation. Proceedings from the Symposium of the 5th Congress of the International Primatological Society, 21-24 August 1974, Nagoya, Japan. 509-525 p.

GERMAN COMMISSION FOR UNESCO (2007): UNESCO Biosphere Reserves: Model Regions with Global Reputation. Journal of the German Commission for UNESCO 2/2007.

GERMAN MAB NATIONAL COMMITTEE (ed.) (2003): Full of Life. UNESCO Biosphere Reserves - Model Regions for Sustainable Development. Springer-Verlag, Berlin and Heidelberg, Germany.

GETZNER, M. (2009): Economic and cultural values related to Protected Areas. Part A: Valuation of Ecosystem Services in Tatra (PL) and Slovenský Raj (SK) National Parks. Final report commissioned by WWF World Wide Funds for Nature and Danube Carpathian Programme (DCP), Vienna, Austria.

GETZNER, M. (2010): Economic and cultural values related to Protected Areas. Der Öffentliche Sektor - Forschungsmemoranden. Heft 1–2. 65 p.

GETZNER, M., ISLAM, S. (2013): Natural resources, livelihoods, and reserve management: a case study from Sundarbans mangrove forests, Bangladesh. International Journal of Sustainable Development and Planning 8 (1), 75-87.

GETZNER, M., JUNGMEIER, M. (2009): Integrative Management of Protected Areas - a New Scientific Discipline? In: Getzner, M., Jungmeier, M. (2009): Improving Protected Areas. Heyn Verlag, Klagenfurt, Austria.

HOCKINGS, M., STOLTON, S., LEVERINGTON, F., DUDLEY, N., COURRAU, J. (2006): Evaluating Effectiveness – A framework for assessing management effectiveness of protected areas. 2nd edition. IUCN, Gland, Switzerland and Cambridge, UK.

ICC (2000-2012): Reports of the International Co-ordinating Council (ICC) of the Man and the Biosphere (MAB) Programme. Available at: http://www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-programme/about-mab/icc/icc-reports/.

ICC (2011): Final report of the International Co-ordinating Council (ICC) of the Man and the Biosphere (MAB) Programme. Twenty-third session, 28 June - 1 July 2011, Dresden Radebeul, Germany. Annex 2: Dresden Declaration SC-11/CONF.202/11.

ICC (2012): Final report of the International Co-ordinating Council (ICC) of the Man and the Biosphere (MAB) Programme. Twenty-fourth session, 9–13 July 2012, Paris, France. SC-12/CONF.224/15 Corr.

IDLE, E.T. (2000): Assessing the Environmental Education/Communication needs in Protected Areas. In: IUCN (2000): Learning to Sustain – Promoting Understanding in Protected Areas. Proceedings from IUCN Commission on Education and Communication (CEC) Conference, 9–12 September 1999, Losehill Hall, UK. IUCN, Gland, Switzerland. 16–22 p.

INSTITUTE FOR THE PROTECTION OF NATURE OF SERBIA: www.natureprotection.org.rs.

IUCN WCPA (2004): The Durban Action Plan and Recommendations. Vth IUCN World Parks Congress, 8–17 September 2003, Durban, South Africa. IUCN, Gland, Switzerland. 141 p.

JESSOP, B. (2002): The Future of the Capitalist State. Blackwell Publishing Polity Press, Cambridge, UK.

KALINA, J. (1993): Mgahinga Gorilla National Park – Reference for MGNP Management Plan. Unpublished Report. CARE, Government of Uganda.

LAHM, S.A. (1992): Report on baseline study: mammal populations and human presence at Remboué III drilling site, Abanga block. British Gas Gabon, Libreville, Gabon.

LAMPARELO, R. (2005): Protected Area Management Training: Exploratory Analysis on the Training. IUCN Commission on Education and Communication (CEC)/World Conservation Learning Network (WCLN) Report, Gland, Switzerland.

MILLENNIUM ECOSYSTEM ASSESSMENT (MEA) (2005): Ecosystems and Human Well-Being: Synthesis. Island Press, Washington. 155 p.

NATIONAL PARK VEĽKÁ FATRA ADMINISTRATION (2011): Consultation.

OATES, J.F. (1996): Habitat alteration, hunting and the conservation of folivorous primates in African forests. 6th International Theriological Congress, 4–10 July 1993, Sydney, Australia. Australian Journal of Ecology 21: 1–9.

OCEN, M. (2000): The status and ecology of duikers *Cephalophus spp.* at Mgahinga Gorilla National Park (MGNP). M.Sc. Thesis, Makerere University, Kampala, Uganda.

OKOT, J.E. (2002): Assessment and Reporting of Illegal Activity in Kibale National Park during June 1999 - December 2001. Unpublished Report. Uganda Wildlife Authority (UWA), Kampala, Uganda.

OLUPOT, W. (2009): A variable edge effect on trees of Bwindi Impenetrable National Park (BINP), Uganda, and its bearing on measurement parameters. Biological Conservation 142: 789–797.

ONEKA, M. (1996): On Park Design: Looking Beyond the Wars. Doctoral Thesis, Wageningen Agricultural University, The Netherlands.

ORLOVIC-LOVREN, V. (2011): Adult Education and Capacity Development for Sustainable Management of Protected Areas. Unpublished dissertation. Department of Adult Education, University of Belgrade, Serbia.

ÖSTERREICHISCHE AKADEMIE DER WISSENSCHAFTEN (ed.), LANGE, S. (2004): Leben in Vielfalt. UNESCO Biosphärenreservate als Modellregionen für ein Miteinander von Menschen und Natur. Vienna, Austria.

PAN PARKS (2008): PAN Parks Verification Manual. PAN Parks Foundation, Gyor, Hungary.

PIMM, S.L., RUSSELL, G.J., GITTLEMAN, J.L., BROOKS, T.M. (1985): The Future of Biodiversity. Science 269 (5222): 347–350.

PLUMPTRE, A.J., BEHANGANA, M., DAVENPORT, T., KAHINDO, C., KITYO, R., NDOMBA, E., NKUUTU, D., OWIUNJI, I., SSEGAWA, P., EILU, G. (2003): The Biodiversity of the Albertine Rift. Biological Conservation 34 (2): 178–194.

POLÁK, P., SAXA, A. (eds.) (2005): Priaznivý stav biotopov a druhov európskeho významu. Štátna ochrana prírody Slovenskej Republiky, Banská Bystrica, Slovakia. 736 p.

POLLOCK, R. (2009): The role of UNESCO Biosphere Reserves in governance for sustainability: Cases from Canada. Doctoral dissertation. Trent University, Peterborough, Canada.

RUOSS, E. (2003): Erhalten – Entwickeln – Kooperieren: Die Erfolgsstrategie in der UNESCO Biosphäre Entlebuch. Landesdenkmalamt Baden-Württemberg, Arge-Alp-Tagung Insel Reichenau. Arbeitsheft 14: 51–55.

RUOSS, E., SCHAAF, T. (1999): Vom Schutzgebiet zur nachhaltigen Regionalentwicklung: Die Sevilla-Strategie. Berichte aus der Region Entlebuch 1: 53–56.

SAYER, J. A., STUART, S.W. (1988): Biological diversity and tropical forests. Guest Comment. Environmental Conservation 15: 193–194.

SCHMID, A., RUOSS, E., ELSASSER, H. (2004): UNESCO Biosphäre Entlebuch – Modell für eine nachhaltige Regionalentwicklung? Konzept Zielerreichungskontrolle. Geographica Helvetica 2/2004, 144–153.

SEJÁK, J., CUDLÍN, P., POKORNÝ, J., ZAPLETAL, M., PETŘÍČEK, V., GUTH, J., CHUMAN, T., ROMPORTL, D., SKOŘEPOVÁ, I., VACEK, V., VYSKOT, I., ČERNÝ, K., HESSLEROVÁ, P., BUREŠOVÁ, R., PROKOPOVÁ, M., PLCH, R., ENGSTOVÁ, B., STARÁ, L. (2010): Hodnocení funkcí a služeb ekosystémů České republiky. Fakulta životního prostředí, Univerzita Jana Evangelisty Purkyně v Ústí nad Labem, Czech Republic, 197 p.

SIEGEL, S., CASTELLAN, N.J. JR. (1988): Nonparametric statistics for the behavioral sciences. 2nd edition. McGraw Hill, New York, USA.

STATE NATURE CONSERVANCY OF THE SLOVAK REPUBLIC: www.sopsr.sk/natura.

STROBEL, D. (2010): Guidelines on the Valuation of Ecosystem Services of Protected Areas (draft version). WWF Danube-Carpathian Programme, Vienna, Austria. 35 p.

TIRU-TESSEMA., B., JUNGMEIER, M., HUBER, M. (2012): The relocation of the village of Arkwasiye in the Simien Mountain National Park in Ethiopia: an intervention towards sustainable development? Eco.mont Journal on Protected Mountain Areas Research and Management 4 (2): 21–28.

TOLE, L. (2002): Habitat loss and anthropogenic disturbance in Jamaica's Hellshire Hills area. Biodiversity and Conservation 11 (4): 575–598.

TWINOMUGISHA, D. (2000): The Status and Ecology of the Golden Monkey (*Cercopithecus mitis kandti*) in Mgahinga Gorilla National Park, Uganda. M.Sc. Thesis, Makerere University, Kampala, Uganda.

TWINOMUGISHA, D. (2007): Conservation Status and Determinants of the Golden Monkey's *(Cercopithecus mitis kandti)* abundance in Mgahinga Gorilla National Park. Doctoral Thesis, Makerere University, Kampala, Uganda.

UBE (UNESCO BIOSPHÄRE ENTLEBUCH) (2002): Das Modell Entlebuch. Grobkonzept Biosphärenreservat Entlebuch. Berichte aus der Region Entlebuch 2.

UBE (UNESCO BIOSPHÄRE ENTLEBUCH) (2011): Jubiläumsbericht 10 Jahre UNESCO Biosphäre Entlebuch. 60 p.

UN (2012): The Future we want. Available at: http://sustainabledevelopment.un.org/.

UNESCO MAB (1996): Biosphere Reserves – Seville Strategy, and the Statutory Framework of the World Network. Report of the International Conference of the UNESCO Man and the Biosphere (MAB) Programme, 20–25 March 1995, Seville, Spain. UNESCO, Paris, France.

UNESCO MAB (2002): Seville +5. International Conference of Experts of International Co-ordinating Council (ICC) of the Man and the Biosphere (MAB) Programme, 23–27 October 2000, Pamplona, Spain. MAB Report Series 69. SC-2002/CONF.201/CLD.4.

UNESCO MAB (2008): Madrid Action Plan (MAP) for Biosphere Reserves 2008–2013. UNESCO, Paris, France.

WERIKHE, S.E.W. (1991): An Ecological Survey of the Gorilla Game Reserve (GGR), Southwestern Uganda. MSc. Thesis, Makerere University, Kampala, Uganda.

WILD, R., MCLEOD, C. (eds.) (2008): Sacred Natural Sites – Guidelines for Protected Area Managers. IUCN, Gland, Switzerland. 106 p.

WILSON, E.O. (1988): The current state of biological diversity. In: WILSON, E.O., PETER, F.M. (eds.) (1988): Biodiversity. National Academy Press, Washington D.C., USA: 3–19 p.

WYMANN VON DACH, S. (2001): Interview with Engelbert Ruoss: The Biosphere Reserve as Living Space – Linking Conservation, Development and Research. Mountain Research and Development 21: 128–131.

6.3 Tables

6.4 Figures

6.5 Photo credits

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She has gained over 10 years of experience working in protected areas and indigenous communities in cooperation with Ecuadorian NGOs, the public sector with the Coordinator Ministry of Social Development and international organizations such as IUCN, which has prepared her for a wide range of responsibilities that involve spatial information management and participatory approaches for managing natural and cultural heritage. She is a WCPA and SG SCVPA member and expert in mountains ecosystems. She obtained academic training as a geographer and holds an MSc. in "Management of Protected Areas" at Alpen-Adria-University Klagenfurt.

Jan Cernecky (Slovakia)
He holds a diploma in environmental sciences with focus on environmental education (University of Mathias Belli in Banska Bystrica, Slovakia, Faculty of Natural Sciences) and an MSc. in "Management of Protected Areas" at Alpen-Adria-University Klagenfurt with focus on management planning in Natura 2000 sites. Since 2007, he has been working in the field of nature protection for the State Nature Conservancy of the Slovak Republic, which is an expert organization established by the Ministry of the Environment for the management of protected areas in Slovakia. He is mainly dealing with the the reporting for the habitats and birds' directive, data collection, monitoring, Natura 2000 sites establishing, Natura 2000 and national sites management planning. He actively works in several international working groups established under the European Commission and their expert organizations.

Christian Diry (Austria)
He was educated as a biologist and then found an interest in nature interpretation. He worked at the Museum of Natural History in Vienna, before he extended his freelancing work to other museums as well as national parks. He has been working for the Danube Floodplains National Park in Austria as a national park ranger for about ten years. In 2004, he started to work for the Biosphere Reserve Wienerwald. His responsibility in the Biosphere Reserve Wienerwald management varied from the planning to general management. At the moment, he is responsible for education and international cooperation. He works in several international working groups regarding education for sustainable development and marketing biosphere reserves and holds an MSc. in "Management of Protected Areas" at Alpen-Adria-University Klagenfurt.

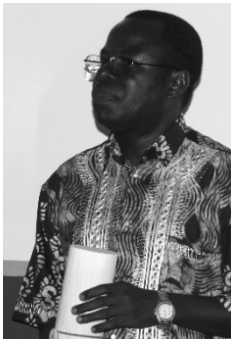
Ayele Kebede Gebreyes (Ethiopia)
He started his professional career 22 years ago as a biology instructor at a rural high school in Gambella, Ethiopia, where he mobilized the youth in his community through a very dynamic and successful environmental club. When he became Deputy Director in January 2004 at the Forum for Environment (FfE), an environmental advocacy and communication organization, his passion for educating both himself and the community pushed him to attend and organize awareness-raising skill trainings and initiatives. He also took the lead in the establishment and consolidation of regional environmental activist groups to create a nationwide green movement. He procured a scholarship to gain an MSc. in "Management of Protected Areas" at Alpen-Adria-University Klagenfurt along with the help of the JWH initiative grant and the Ethiopian Wildlife and Natural History Society. He says that, "Honestly speaking, the programme was the foundation for me to the build confidence and passion to apply the acquired theoretical and practical knowledge with the aid of specific planning and management tasks in the real world. I now have the courage to say I found my niche in protected area management." Immediately after graduation, Ayele became a Programme Coordinator for Ecology and Climate Change at the Heinrich Boell Foundation in Ethiopia where he continues to educate people at all hierarchical levels about factors involved in sustainable resource management with a focus on strengthening local voices to shape policy-making.

Eva-Maria Heigl (Austria)
She holds a diploma in Environmental Engineering (Technical University of Leoben, Austria) and an MSc. in "Management of Protected Areas" at Alpen-Adria-University Klagenfurt. She used to work for a research institution in the field of energy efficiency and CO_2 reduction in the industry sector and holds now the position of an EHS manager (environment, health, safety) for a producing company. She also worked in a project for the government of Lower Austria concerning the development of a concept for protected area management in Lower Austria. Eva-Maria Heigl is treasurer of the Alumni Club of the international MSc. Programme "Management of Protected Areas."

Alina Ioniță (Romania)
She holds a diploma in Geography and Environmental science, an MSc. in Present Environment and Sustainable Development and a PhD in Environmental Geography from Alexandru Ioan Cuza University of Iași, Romania. Starting from the doctoral studies, she focused her research and work on participatory management of protected areas, governance and the socio-economic dimension of nature protected area management in Romania and in the Eastern European countries. At the same time, she earned an MSc. in "Management of Protected Areas" at Alpen-Adria-University Klagenfurt and is now involved in the field of ecotourism development. She started her work in the public sector in the field of environmental protection but during the last five years, she gained expertise in the field of protected area management while working as a specialist for several organizations on a local, national and international level.

Muhammad Shariful Islam (Bangladesh)
He is an environmentalist and founder of the environmental NGO (Nature and Biodiversity Conservation Society), which is working for biodiversity conservation and sustainable development in Bangladesh since 2005. He holds a BSc. in Forestry with Focus on wetland biodiversity (Shahjalal University of Science & Technology, Bangladesh) and an MSc. in "Management of Protected Areas" with focus on biodiversity and livelihood at world heritage sites and at the Ramsar site of Sundarbans Mangrove Forest (Alpen-Adria-University Klagenfurt). He is currently a PhD student (Social and Economics Sciences) at Vienna University of Technology, Austria, and his research field is economic valuation of ecosystem services and sustainable management. He has almost six years of experience in organizing environmental conservation programmes and research work as well as experience in cooperating with national and international organizations (GOs and NGOs) and institutions for environmental issues.

Hailu Menale (Ethiopia)
He holds a BSc. degree in Biology (Ecological and Environmental Science) at Jimma University Ambo College, Ethiopia, and an MSc. in "Management of Protected Areas" at Alpen-Adria-University Klagenfurt. Since he received his first degree in 2006, he has been working in the field of biodiversity conservation. Prior to that, he had worked as community development for sustainable biodiversity conservation and protected areas protection and development expert in Alatish National Park in Ethiopia for three years. After completion of his MSc., he joined Simien Mountains National Park in Ethiopia as their wildlife and habitats monitoring expert. Since February 2012, he has been working as a manager for Alatish National Park of Ethiopia.



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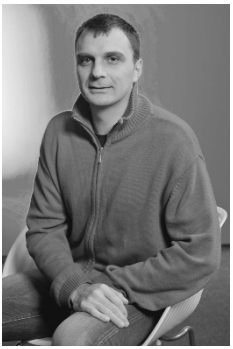
He is a graduate of the MSc. programme "Management of Protected Areas" at Alpen-Adria-University Klagenfurt, majoring in "An Ecological Assessment of Biodiversity Pressures in Mgahinga Gorilla National Park South-Western, Uganda." He has been working at the Uganda Wildlife Authority in the field of conservation of biodiversity for almost ten years. After that he has been at the Centre of Natural Resource Management and has been trained in natural resources and conservation biology. He authored documents and presented papers in conferences among many others, e.g. Emerging Dilemma of Global Climate Change, University of Natal Durban, South Africa, September 2004; Protecting Critically Endangered Mountain Gorilla Populations, Goma, DRC, July 2003; History of Conservation and Land-Use in Uganda, Port Elizabeth South Africa, October 2001; Protected Area and Climate Influence, Uganda, June 2001.

Ovidiu Pîrv (Romania)
He holds a degree in forestry with focus on forestry management (Transilvania University Brasov, Romania) and an MSc. in "Management of Protected Areas" at Alpen-Adria-University Klagenfurt with focus on ecosystem services evaluation. After obtaining the forest engineer degree, he worked in this domain, first in forest management planning (one year), then in the forest management proper, at two forest districts from Arad County both in hill and plain areas. For almost ten years, he was involved in the management of protected areas in the same part of the country coordinating the elaboration of numerous management plans for protected areas (nature reserves, Natura 2000 Sites and protected landscape). During this period, he was the coordinator of two European funded projects which laid the basis for establishing a newly protected area in Romania (Mures Floodplain Natural Park), which became a protected landscape in 2005, Ramsar Site in 2006 and Natura 2000 Site in 2008. At present, he works at the Administration of the Mures Floodplain Natural Park; between 2005–2010, he was also the manager of this protected area. Since 2010, he has been the president of the NGO Asociatia Voluntarii Lunca Muresului, which is involved in environmental conservation. They set activities as watchdogs and advocacy and try to attract volunteers interested in protecting the environment carrying out several projects with local and national financing.

Radoslav Považan (Slovakia)
He graduated in Environmental Ecology (2005) and Biology and Ecology (2006) with focus on ecology and management of grasslands (Matej Bell University, Slovakia). He also holds an MSc. in "Management of Protected Areas" with focus on valuation of ecosystem services (Alpen-Adria-University Klagenfurt). He has been working at the headquarters of the State Nature Conservancy of the Slovak Republic in Banská Bystrica since 2006 where he deals with issues concerning botany and non-forest habitats. He is a national coordinator for Natura 2000 (plant species) and a national expert for plant species issues within the CITES agreement. After his studies in Klagenfurt, he became a member of the expert working group of the Ministry of Environment of Slovakia for economic tools in nature conservation with focus on ecosystem services. He is a co-founder of the environmental NGO Tymián. He has experience with workshops, lectures and project management in the field of nature conservation.

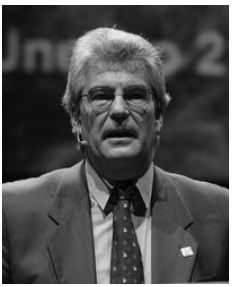
Peter Puchala (Slovakia)
He holds a diploma in biology with focus on zoology (Comenius University in Bratislava, Slovakia), a PhD in ecology with focus on animal ecology (Comenius University, Slovakia), especially in bird ecology, and an MSc. in "Management of Protected Areas" (Alpen-Adria-University Klagenfurt) with focus on wilderness areas and PAN Parks. For almost ten years, he has been working in field of protected areas and nature conservation at the State Nature Conservancy of Slovak Republic. He works as a zoologist at the administration of the Protected Landscape Area Malé Karpaty . He contributed to the establishment of the Natura 2000 network in Slovakia and the monitoring and management of Natura 2000 areas and species. He is a member of the Scientific Council of Convention on Migratory Species and participates in working groups within the Convention. He is a member of several environmental NGOs (e.g. Birdlife Slovakia, WOLF – forest protection movement) and has participated in the designation of some privately owned protected areas in Slovakia.



Goran Sekulic (Serbia)
In 2001, he graduated from the Faculty of Biology, University of Belgrade (Serbia). He found his interest in biodiversity research and conservation already during his high-school period. Focusing on bird research and conservation issues, he participated in many research programmes and initiatives within the country as well as abroad (Spain, Germany, UK). After his graduation, he took a position as associate ornithologist at the Institute for Nature Conservation of Serbia where he still works today. Due to the institute's scope of work, he moved his focus to conservational issues and especially to protected area establishment and management. Since 2011, he has held an MSc. in "Management of Protected Areas" at Alpen-Adria-University Klagenfurt where he graduated with a thesis focused on the analysis of the national system of protected areas and IUCN system. Currently, he is working on the establishment of newly protected areas in Serbia such as the Danube floodplains near Belgrade and nature reserves along Morava and Drina River. Furthermore, he is involved in the planning of the national ecological network. He is a member of IUCN WCPA and of the board of the Alumni Club of the international MSc. Programme "Management of Protected Areas".

Olena Slobodian (Ukraine)
She holds a diploma in biology with focus on forest mountain ecosystems (Vasyl Stephanyk National Precarpathian University, Ukraine), an MSc. in "Management of Protected Areas" with focus on strategic planning (Alpen-Adria-University Klagenfurt) as well as a PhD in Ecology with focus on evaluation antropogenic pressure on the beetle population (Vasyl Stephanyk National Precarpathian University, Ukraine). For almost six years, she was mainly involved in monitoring and evaluation of population dynamics of forest ecosystems. Since 2008, she has been working in the field of biodiversity conservation and sustainable development with particular focus on conducting faunal researches, developing methods of research, management and planning processes in protected areas. She is also head of an ecological NGO.

Berihun Tiru Tessema (Ethiopia)
Born in 1963, he is educated in business administration and a graduate of the MSc. Programme "Management of Protected Areas" at Alpen-Adria-University Klagenfurt. He works for the Amhara Regional State Government, North Gondar Zone, Gondar, Ethiopia.



Engelbert Ruoss

He was born in Switzerland. He took up his duties of Director of the UNESCO Venice Office in 2006. Until 2012 he led a team of 37 people in Venice, Sarajevo, Tirana, Ankara, Skopje and Podgorica. Ruoss is a Licentiate and holds a PhD in Biology, as well as a diploma in Museology. From 1986 to 2001, he held the position of Curator and Vice-Director of the Natural History and Archaeology Museum in Luzern Kanton, Switzerland. 1998-2005, he led the establishment of the Entlebuch Biosphere Reserve in Switzerland. From 2001-2006, he also consulted for EU and SDC regional sustainable development projects. His other accomplishments include membership in the Swiss National Commission for UNESCO 1995-2006, being the President of the Natural Sciences Section and chairing the Task Force on Quality Economies of UNESCO's MAB. Further, Ruoss has been a board member of numerous national and international scientific committees and organizations, including the Swiss Academy of Sciences as well as lecturer at several universities in Europe.

Violeta Orlović-Lovren

She lives in Belgrade, Serbia, and teaches at Department for Adult Education, Faculty of Philosophy, University of Belgrade . With extensive experience in capacity development and environmental awareness raising activities, she is being involved in international cooperation and projects in environmental and adult education areas for more than 15 years now. Joining the Institute for the Conservation of Nature of Serbia (1995-2003), she was deeply involved in international cooperation (IUCN, ECNC, Europarc, REC, etc.), remaining active in IUCN Commissions (CEC, WCPA, CEESP) as individual member up to now. Since 2001, Violeta is involved in various international projects, funded by USAID, EU or UN agencies/funds - either as the training expert, team manager, project leader, as well as institutional or local capacity development expert. Becoming the fellow of the LEAD International (since 2005) as well as the Hubert H. Humphrey Fellow (since 2007), she improved her competences in sustainability, environment and development issues, extending significantly her professional network. Violeta is Executive Board Member of the Association of Adult Education Experts of Serbia (since 2010). She holds a PhD on adult education and capacity development for sustainable management of protected areas from the Faculty of Philosophy, University of Belgrade.