EUROPE´S WILD HEART

Conference Report

January 2009, Srní, Czech Republic

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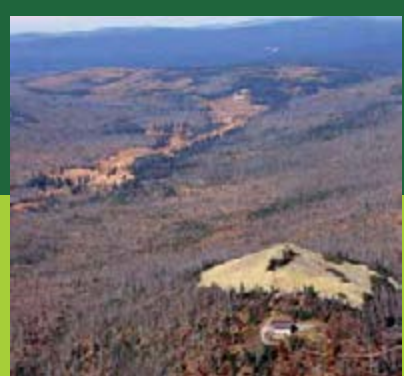

The appropriateness of non-intervention management for protected areas and Natura 2000 sites

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Nationalpark Bayerischer Wald

Národní park Šumava

Photo: Zdenka Křenová

Photo: Karl Friedrich Sinner

Foreword

today a visit to wilderness is usually connected to traveling to other continents, or limited to the reading of books about the old past. Many people still do believe, that wilderness is something bad and dark, dangerous, that should be "civilized". But it is exactly the population of the most "civilized" parts of the world, which now more and more wants to escape and looks for the wilderness as a place to visit. After an almost total liquidation of wilderness from our surroundings, we suddenly found that we miss it. Some people do, because they simply would like to experience how nature can work by itself, how breathtaking the action of natural powers can be, which maintained this planet sustainable for hundreds of million years, long before humans started to intervene. Some others miss it, because some plants, animals, natural habitats or processes may be seen only there. And we become more and more aware that natural forces of wilderness are, at least in parts, absolutely necessary even for the most modern human society: they regulate our climate, serve to supply us with clean water, protect us against floods, offer clean air. Remnants of wilderness are home to life evolution - and we should not forget, that we humans are also a product of this evolution. These forces are our point of reference, where we can check how good or how bad our solutions are; they create a very valuable laboratory for scientists for the study of ecosystems, research of new medicaments or new solutions, say in energy efficiency or other fields. Therefore it is good, that we do not need to go and see the natural powers of wilderness only in the Amazonian forests, in theforests of Siberia or New Caledonia, but we can also see them here - in the middle of Europe, where Europe's Wild Heart – an area of natural forest development - is born.

Questions of appropriate management for wild natural locations, natural areas with only soft human impact and areas historically managed but with high potential for renaturalisation are recently discussed by protected areas' managers, researchers, politics, and many others. The EC Presidency conference on 'Wilderness and Large Natural Habitat Areas', which will take place in Prague on May 27-28 2009, is organized to improve the discussion.

Public interest to protect the last fragments of pristine areas as well as large natural or nearly natural areas grows all across Europe. Areas, large enough for a natural development without direct human intervention do still appear in historically managed cultural landscapes too. Non-intervention management practices are applied in many locations and it is not an experiment any more. Results of various monitoring and research projects offer important knowledge for an appropriate management of these last fragments of pristine areas in Europe, nearly natural areas with a high potential for renaturalization, as well as for locations strongly affected by the industy waiting for the reconstruction of natural conditions and the resulting stability.

Working conferences and workshops of protected areas' managers and researchers offer opportunities to exchange information, share knowledge, and discuss many questions. Multidisciplinary discussions are very important to find appropriate management strategies and follow our responsibility to protect our European natural heritage.

The colloquium of researchers and protected areas' managers which took place in Srní in January 2009 was held to discuss questions about the appropriateness of non-intervention management for Protected areas and Natura 2000 locations. I believe that the Srní colloquium outputs can be accepted as an important background document for the EC Presidency conference on 'Wilderness and Large Natural Habitat Areas' ,and that managers of Natura 2000 locations all over Europe will use this Conference Report for their everyday work.

I also support the idea to continue with this kind of workshops, seminars or colloquia and bring both, researchers and practitioners together in the field to find the best management solutions.

Ladislav Miko
Director of Directorate B,
Protecting the Natural Environment
European Commission
and
Minister of Environment
Czech Republic

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Photo: Hans Kiener


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Oostvaardersplassen (NL)
Šumava NP (CZ)
Tatra NP (SK)
arian Forest NP (D)
Kalkalpen NP (A)
Hortobágy NP (HU)
TRIGLAV NP (SL)

INTRODUCTION

Words of Welcome from the Directors of the Šumava and Bavarian Forest National Park

Dear Ladies and Gentlemen!

We cordially welcome you to our workshop in Srní.

We are very pleased about the fact that this meeting takes place in the heart of the Bohemian Forest where our two national parks, Šumava and Bavarian Forest, have achieved a new quality in cooperation by starting the project 'Europe's Wild Heart'.

Europe's Wild Heart is the common core zone of the high/elevated Bohemian Forest including its unique habitats of mountain spruce forests, its wide bog landscapes, heads and headwaters of the plenty of mountain brooks.

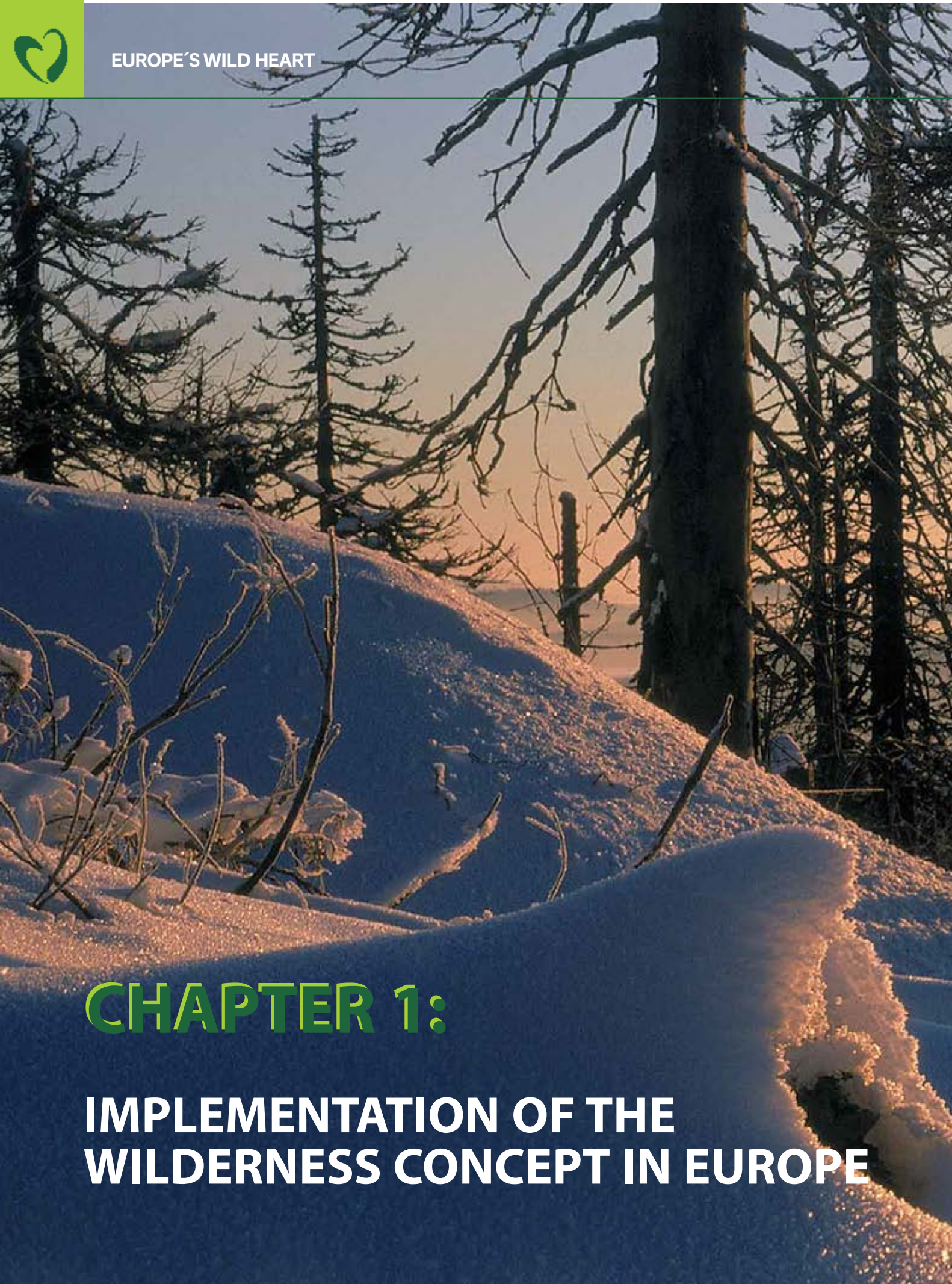
The basic principle of the protection of processes, let nature develop independently -due to the large area of the two national parks and their wild heart , the shaping and directing power of nature - offers a never-ending variety of possibilities to develop forests into multi-variable succession mosaics managed only by chance and to ensure natural biodiversity without any human influences.

For this exceptional path of the two national parks in the frame of the Natura 2000 areas, we wish you interesting lectures, good and purposeful discussions in order to address the issue of wilderness in Europe and to advance this issue as one of the basic ideas of European nature conservation.

František Krejčí
Director of Šumava National Park
Czech Republic

Karl Friedrich Sinner
Director of Bavarian Forest National Park
Germany

Photo: Martin Milfort



CHAPTER 1:

IMPLEMENTATION OF THE WILDERNESS CONCEPT IN EUROPE

Photo: Hans Kiener

Photo: Zdenka Křenová

Connecting Practice and Policy for Wilderness in Europe

Welcome to this international colloquium on "The appropriateness of non-intervention management for protected areas and Natura 2000 locations", an event that brings together a distinguished group of protected area managers, researchers, representatives of government agencies and NGOs from across Europe and many from the network of the EUROPARC Federation.

As ever the exchange of expertise will form a central part of this event, however there is another important dimension: to connect the experience and practice of nature conservation in protected areas with questions of current policy development relating to nature conservation in the European Union. Over the past two years the issue of wilderness and large natural habitat areas has – in the context of and advocacy by the partners of the Wild Europe initiative – increased in importance as a policy issue. Indeed most of you are aware that there will be a major international conference held under the auspices of the Czech EU Presidency on behalf of the European Commission in May in Prague. It is hoped that this will mark the start of greater promotion and enhanced protection of wilderness in Europe. The results of this colloquium will feed directly into the preparations for the EU Presidency conference.

One of our key aims is to clarify the management approach to wilderness and Natura 2000 and to examine the role of natural processes in meeting conservation aims. This is important to the managers of many national parks and other nature reserves looking to maintain habitats and species in favourable conservation status under the Natura directives whilst preserving the wilderness characteristics and natural dynamics of their areas. Clarification on this issue will be of help across Europe.

In broader terms it is also vital that we illustrate the value and benefits of maintaining and expanding wilderness areas, not just in ecological terms but also from a social and economic perspective. Also important is the generation of a stronger European dimension and identity to the concept of wilderness.

To do this we will be looking generally at the implementation of the wilderness concept in Europe, before looking – from a scientific perspective - at wilderness as a concept and scene of natural dynamics. We will then hear from Germany, the Czech Republic and Finland on how these countries are applying the non-intervention principle within the context of Natura 2000 and without. A number of case studies – from Germany, the Czech Republic, Slovenia, Austria, the Netherlands, Hungary and Slovakia – will provide further insight into how protected areas with Natura 2000 sites are pursuing non-intervention management.

I wish you interesting and enjoyable reading!

Richard Blackman
Deputy Director
EUROPARC Federation

Martin Šolar

The New Wilderness Model

in the European Context

Photo: Martin Šolar

Taking into account the clear definition of wilderness as set forth in the IUCN management category Ib, we can conclude that outside the parks of the Nordic region, Europe generally lacks in large wilderness areas. Such areas can only be found in those parts of Europe that are scarcely suitable for any type of utilisation and have thus remained uninhabited. As a result, there is virtually no tradition of this type of protection in the protected areas system of Europe. As a term, wilderness includes human experiences and is not defined in strictly ecological terms. In fact, wilderness may include areas which were exploited for a limited period in the past, without their natural diversity of habitats and species being significantly altered, and which have been returned to natural succession. Small-scale wilderness areas in Europe – with the exception of arctic habitats – have yielded to the pressures from intensive land use across almost the entire continent. On the other hand, there is a potential to create new wilderness, e.g. on former military areas where productive forms of land use have been halted. Such areas, provided they are of considerable size and depending on the type of habitat, should be protected and natural succession should be allowed to continue without direct human influence.

Apart from this definition, wilderness can also be understood as a non-intervention zone within a protected area where all management objectives are directed towards ecosystem protection and enhancing of natural processes in the area. If we take into account this objective, the potential new wilderness areas can be defined as non-intervention zones where both IUCN management categories Ib and the "pure" II are considered.

In many cases even today the word *wilderness* conveys some negative connotations, stemming from prehistoric times when people were rather insensitive to the beauties of the nature. They were aware of the nature and afraid of it, wilderness in particular. Many natural phenomena were interpreted as acts of gods. In the new era, humanism in particular stirred a yet undefined interest in man to acquire knowledge of nature. At the turn of the 18th century, during the Protestant Movement and Romanticism, more and more attention was being devoted to nature and landscape. Nature became a challenge for scientists, discoverers and even artists, nature studies became extremely important for research work and scientific findings in natural science. The idea to protect certain species or areas was spurred by the threat to natural values, and on the other hand protection was motivated by their outstanding value or rarity.

We must not exclude the North American approach – in 1964 an Act to establish a National Wilderness Preservation System was passed. This act describes wilderness as the natural area where natural process run without human influence, where man is a visitor who does not remain and where pristine natural conditions have been preserved to allow exploration of nature.

IUCN developed a system of management categories for protected areas which have been modified three times: in 1984, 1992 and 2008 when the existing *Guidelines for Applying Protected Areas Management Categories* were adopted. Wilderness protection is incorporated in the system of classification for protected areas: a wilderness area is recognized under protected area management Category I b. Wilderness is defined as an area of unmodified or slightly modified area, retaining its natural character and influence, without permanent or significant habitation, which is protected and managed so as to preserve its natural condition.

In 2000 *Guidelines for Protected Area Management Categories – Interpretation and Application for Protected Areas in Europe* were adopted. It was recognized that pursuant to the IUCN Ib category, Europe, except its Nordic regions, lacks in large wilderness areas. It was also found that no tradition in wilderness protection had been established in the framework of protected area management. As a term, wilderness includes human experiences and is not defined in strictly ecological terms. In fact, wilderness may include areas which were exploited for a limited period in the past. Anyway, some examples of wilderness and its management can be found in Northern Europe, the Alps, Central Europe and the Balkans region.

PAN Parks is a new network. The network consists of protected area management with stress on wilderness quality and preservation as well as development of sustainable tourism and improving livelihood. The PAN Parks fundamental criterion for inclusion of an area is that it includes at least 10.000 ha of wilderness.

Wilderness is also understood as a non-intervention zone located within a protected area where all management objectives are directed towards ecosystem protection and enhancing of natural processes in the area. We can define new wilderness as a non-intervention zone where management objectives of the IUCN categories I b and II meet.

However, European protected areas offer plenty of experience and good practice examples if we understand wilderness as a non-intervention zone inside protected areas. The importance lies in the content and clarification of management objectives in areas where the non-intervention concept is carried out!

The initiative has been signed by all important nature conservation/protected area networks (Europarc Federation, IUCN WCPA, Eurosite, PAN Parks etc.) and several individual protected areas. EC and EU member states are invited to take urgent action to protect Europe's remaining large areas of natural habitat with non-intervention management.

Vision, Challenges, Reality

There is a clear vision to develop a network of wilderness protected areas in Europe and pay utmost attention to protecting the wilderness areas which are the crown jewels of Europe's nature.

A challenge to be addressed is to find out how wilderness relates to the Natura 2000 network considering that parts of Natura 2000 network have wilderness characteristic and other parts are favorable with regard to conservation or enhancing status quo through active management and interventions. There is also a challenge to work on the wilderness concept in the frame of transboundary cooperation.

Wilderness in the sense of the new wilderness paradigm is reality! Europarc Federation in 2007 submitted to EC DG Environment a document titled *Examples of Wilderness in the Europarc Network*, in which it showed and proved that the *non-intervention or wilderness concept* works.

Throughout the human history a number of extremely novel ideas sprang up, many of them becoming reality and as such the basis for the progress of mankind. The wilderness initiative may become a milestone in the nature conservation movement, policy and work and can ensure existence of the Earth for the future generations.

Mag. Martin Šolar
Triglav National Park – Slovenia
IUCN /WCPA Member

Photos: Martin Šolar

Vlado Vančura

The Wilderness Initiative in Europe

from the PAN Parks Point of View

Photo: Simon Kertys

PAN Parks is an innovative initiative to create a network of Europe's best wilderness areas stretching from the Arctic to the Mediterranean. Founded by the WWF, the non-profit PAN Parks Foundation aims at raising awareness of and help protect some of the most important natural areas in Europe.

A growing number of people is now starting to value Europe's natural heritage as much as its cultural heritage. Wilderness has been missing from the image of Europe–until recently. The vision of wilderness is a concept that reaches deep into the heart and emotions of most people. It is well known throughout the globe, but most Europeans still do not realize, that they can still find exceptional remnants of wilderness on their own continent. These places are the PAN Parks.

During the second half of the 1990s, the World Conservation Union (IUCN) expanded its categories for protected area management. This, in turn, increased the number of protected areas listed; however, it did very little to increase the management effectiveness of these areas.

There was growing evidence suggesting that the value of many of the world's protected areas was under threat and that a significant number of these areas were degrading and suffering significant biodiversity loss. Recognizing this as a major problem, the World Commission on Protected Areas stepped in and developed Management Effectiveness Guidelines.

They highlighted strategies to help protected areas that had insufficient funding, internal management issues, and social/community problems. Witnessing all this, the World Wide Fund for Nature (WWF) decided to give protected area management effectiveness a key priority in their already well-established Forest Programme.

To address this priority, WWF devised Protected Area Network Parks (PAN), and since its early beginnings, the wilderness concept became integral to this project. WWF's first priority was to align themselves with a partner that shared their vision for improved management of Europe's wilderness protected areas.

Following the IUCN's category expansion and a redefinition, most protected areas had to incorporate education and recreation into their regular activities. This made partnering with a tourism company an obvious choice.

The WWF found the perfect partner in the privately owned Dutch tourism company, Molecaten. In August 1999, two years after the initial launch of the project, the PAN Parks Foundation was legally registered.

The backbone of the foundation is its transparent certification process. If a protected area wants to become a certified PAN Park, it must meet each of PAN Park's strict principles and criteria. This process is aimed at defining the quality standard that both protected areas and local business partners must maintain in order to become

and remain certified. The verification process is a transparent third-party audit, and if a candidate is successful, the process provides stakeholders (i.e., donors and visitors) with a guarantee that the protected areas management objectives and activities are compatible with biodiversity protection and sustainable tourism.

The goal identified at the beginning was very clear: to create a network of the well-managed wilderness protected areas in Europe. Wilderness protection became a driving force behind PAN Parks despite the fact that, for political and historical reasons, the concept of wilderness has been a bone of contention in Europe. The assumption at the beginning was that most Europeans do not know that they can still find remnants of wilderness on their continent. An important element of the concept was to make it possible for people to see primeval forests or visit mountains where wolf, lynx, or brown bear still roam freely.

The idea was to create certified PAN Parks in Europe so people would not need to travel to distant places. Today 11 such certified parks are dispersed throughout Europe from the Arctic Circle to the Mediterranean and are providing very different opportunities for recreation and tourism. A decade ago the first steps were taken to realize a marriage between conservation and the tourism industry in the most important wilderness areas of Europe.

This initiative, implement by the PAN Parks Foundation, awards protected areas that meet the quality standards of conservation management, the PAN Parks quality seal. In this project, tourism is seen as an opportunity rather than as a threat, and it is a means to give economic value to wilderness-protected areas and to create support for conservation.

The key conservation concern of PAN Parks is to contribute to the goals of the Convention on Biological Diversity through:

- developing a verification scheme that evaluates and improves the effectiveness of protected area management;
- providing a method to measure the costs and benefits of protected areas from a social and economic point of view; and
- providing communication tools to improve the capacity and skills of protected area managers.

Ironically, some of Europe's biodiversity is dependent on human activities and past or current impacts on ecosystems. Some protected areas are intensively managed (e.g., animal grazing, cutting vegetation), but some protected areas are not intensively managed. PAN Parks works with this second group of protected areas where ecosystems are based on both structure and function, instead of overemphasizing structure and local biodiversity at the expense of function. PAN Parks looks to the opportunities presented by natural succession and ecosystem dynamics to protect global biodiversity.

Protection through Awareness

A core aim of PAN Parks is to raise awareness about European wilderness areas and generate support for them through stimulating sustainable nature-based tourism. PAN Parks works with local businesses in rural areas, and by doing so creates support for conservation, community involvement, and commitment to sustainable tourism development of the region. The PAN Parks Foundation works to promote the certified parks as destinations to the European travel market.

A related goal of PAN Parks Foundation is to apply the wilderness concept in marine protected areas, such as the Archipelago National Park in Finland that joined the PAN in late 2007. The successful PAN Parks certification process in Peneda Geres National Park in Portugal in 2008 demonstrated that wilderness is playing an important conservation role in the Mediterranean region and ongoing certification in Soomaa National Park, Estonia create an opportunity to link the PAN Parks concept with the first freshwater protected area.

However, the ultimate challenge is to explain the benefits of being certified as a PAN Park and develop additional support to make PAN Parks a sustainable, self-financing organization that is recognized as the premium European wilderness/ecotourism brand and serves as a global role model for conservation and economic benefit for protected areas, and their local communities and business partners.

Vlado Vančura
Conservation Manager
PAN Parks Foundation

Pavol Polák

Biologically Important Forests:

Megacorridors of the European Wilderness? Outputs of the Workshop in Podbanské/Slovakia October 29-31/2008

At the end of October 2008 BirdLife's European Forest Task Force (FTF) held its 7th annual seminar, a three-day international event including seminars, workshops and field excursions, in Podbanské, High Tatra National Park, Slovakia , having Europe's wilderness as a main topic. The BirdLife approach to wilderness is based on the project carried out by the FTF: mapping of Europe's Biologically Important Forests (www.forestmapping.net). A Biologically Important Forest (BIF) is "a forest that has remained in natural or close to natural state and that is considered a key area for the protection of forest-dependent species that need a certain amount and quality of suitable habitat to survive and maintain favourable population status". European BIFs are identified by using a set of criteria each comprising country-specific indicators. The identification of BIFs can play a fundamental role in the delineation of the large high value natural landscapes offering the biggest potential for wilderness restoration, where major conservation efforts should be allocated. BIFs mapping is completed in the Baltic States Poland and Belarus and is carried out in Bulgaria and Romania. The results of the BIFs mapping have a wide range of different applications whose main objective is to increase natural characteristics of European forests. One of the applications could be used for the establishment of European wilderness and a possible European mega corridor of European wilderness areas in Europe. The FTF notifies that the European wilderness could be established only by a close cooperation with institutions and organizations, which are working on this issue. For this purpose we organized the workshop in the High Tatras together with several leaders and experts of initiatives which are working with wilderness in Europe as well.

The first day of the workshop was determined by presentations of initiatives related to wilderness in Europe and by examples of wilderness areas from all over the world. The second day was spent with work in two working groups. The first working group was working on ecology and philosophy of wilderness in Europe and the second group was working on policy and protection issues, which are important to be included into the process of the establishment of wilderness initiatives in Europe. The groups decided on several important clarifications and findings which are substatial for the following work. At the beginning it was discussed on the topics: "why is wilderness important?" and "the reasons to care about wilderness". Wilderness is deeply rooted in European history. It is reflected in myths and fairy tales. In early history civilization was limited and wilderness was vast and appeared threatening. Today this has changed: wilderness itself is threatened. During history the valuation of wilderness has changed.

Based on discussions during the workshop the participants selected and prioritized several reasons showing the importance of wilderness preservation:

1. Value for inspiration and experience, emotion (intrinsic)
2. Reference areas, natural laboratories, evolutionary processes and genetic diversity
3. Science and education
4. Home for biodiversity
5. Diversity and sustainability, resilience
6. Potential for soft economic development
7. Ecosystem services
8. Home for many people

Photos: Pavol Polák

Photo: Pavol Polák

Another important discussion was about the question, if there is enough space for wilderness in Europe. Except for the northernmost, the least productive areas of Fennoscandia and Western Siberia (thus mostly outside EU) and the least accessible parts of mountain ranges, Europe did not preserve any truly wild areas of a scale comparable to the American wilderness areas, though some remnants of natural wilderness areas in the European context (prevailing unmanaged forests in medium scale – several national parks) exist and some other areas have the potential for restoration. To choose from the examples of wilderness remnants in Europe we have to consider that there are big changes taking place concerning land use , but on the other hand Europe needs less land to feed the people, which is a very disputable finding.

Considering the capacities for the protection of wilderness is also an important factor. Threats to the last remnants of natural forests increase the capacities, initiatives and cooperation on their knowledge and preservation. On these capacities the whole scope of wilderness in Europe.has to be build up

The process of establishing and implementing European wilderness areas will be very difficult,so analyzing the policy was important too. By the discussions during the workshop a basis for an analysis was defined: the factors impede successful restoration and preservation of wilderness in Europe:

- Conservation institutions (legal and administrative) are too dispersed, with their own non-harmonized programs and agendas;
- European legal conservation tools are too weak, with only slight power of execution;
- Lack of mandatory management/conservation guidelines to be followed by Member States;
- Lack of clear distinction between forestry and conservation missions – the fuzzy concept of *sustainable use of forests* often seems to serve as a surrogate of conservation;
- National agencies managing potential wilderness areas, such as state forest services, operating on the commercial basis and missing clear conservation mission;
- Lack of adequate financial mechanisms encouraging restoration and preservation of wilderness.

A possible way to an establishment of wilderness in Europe could be reached by the definition of a model for wilderness conservation in Europe. The participants of the workshop tried to define such a possible model. Although space is limited for large scale natural landscape dynamics, an adequate management of landscapes, based on thorough identification of their most important natural features, can lead to the restoration and optimization of their ecological functions. Larger working landscapes will secure harmony between various forms of human activity (including family farms, small-scale forest businesses and tourism) and successful restoration and preservation of large natural habitats or wilderness. Such landscapes will also play a function of living sanctuaries of rural European cultures, traditions and skills, providing resistance to negative side-effects of the high speed city life. Working landscapes with the substantial component of wilderness will provide to European citizens an indispensable space for their physical restoration, intellectual inspiration, and spiritual renewal.

These conclusions of the workshop in Podbanské 2008 are inspiration and introduction for the following work concerning wilderness in Europe, which is one of the main objectives during the Czech European Presidency in the field of nature protection.

Pavol Polák
Slovak Ornithology Society/ European Forest Task Force

Till Meyer

Wilderness as a Duty of Culture

Outputs from the Seminar in Freising, December 08/09

This is to summarize the seminar "Wilderness as a Duty of Culture", which took place in Freising, December 8 to 9, 2009 and which I chose to rename "The Cultural Values of Wilderness". I argued first that the English translation of the German title , which was given to me, is misleading. The word "duty" suggests that there is an *obligation* for culture to somehow take in the idea of wilderness. I don't think that this possible. Culture *cannot* adopt a new topic, if this topic does not already address cultural values of some sort. The seminar in Freising was conducted by the ANL (Academy for Nature Conservation and Landscape Preservation) and gave a very good overview of these various cultural aspects of wilderness as they have already existed for quite a while. Indeed the good news is: wilderness is an established cultural issue with a long tradition. Even more than that, wild nature has been a strong motivating force within the various manifestations of culture, particularly in the arts and humanities. My point is this: scientists and landmanagers, who work with wilderness and the protection of natural processes need to be familiar with these cultural aspects of wilderness in order to communicate effectively with the public.

I have selected the following presenters from the seminar in Freising and rearranged the order of appearance slightly, in addition to interpreting their contributions and placing them within a larger context of the historic genesis of wilderness perception and, ultimately, of wilderness preservation.

1) Wildnis als Kulturaufgabe

Ursula Schuster (Academy for Nature Conservation and Landscape Reservation) gave an overview of the widely perceived dichotomy between natural and cultural landscapes. She showed that the history of protecting natural processes is closely linked to cultural based value judgments of landscapes.

Karl Friedrich Sinner (director of the Bavarian Forest National Park) is often confronted with these different values of judging nature and landscapes. He frequently conducts guided tours through areas where natural processes are in effect. In defending hands off management decisions, Mr. Sinner regularly uses a cultural toolkit with arguments out of the aesthetic, emotional, social and historic realm over scientific i.e. ecological arguments.

Susanne Hauser (University of Arts, Berlin) talked about the aesthetic perceptions of wild places in nature. To give an overview, she was quoting from the Dictionary of the German Language of the Grimm Brothers, where definitions and usages of the word "Wildnis" (Wilderness) are given in five columns. Quite a few negative connotations prevail in the dictionary such as wilderness being synonymous for conditions described as being creepy, repulsive, filthy, sickening, mad, disastrous; but also of *profuse abundance*. However, one entry recognizes that, "….early on, milder notions allow the use of the word wilderness for attractive parts of the landscape…. such as, lately, romantic forests and mountainous areas of our homelands… that beautiful and populated cities such as Passau and Linz are interspersed with lovely

Schmadribach Falls

Lake Tahoe

Rocky Mountains, Landers Peak. Pictures: Albert Bierstadt 1866

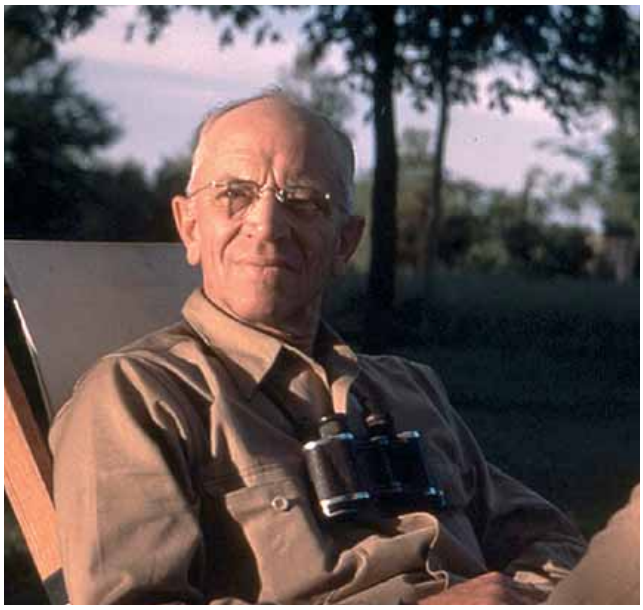


Photo: Aldo Leopold Foundation

wildernesses." Another source in the dictionary even recognizes the value of wilderness for biological diversity. Also the value of wilderness was identified as "a refuge for the sad and dreary".

Gisela Kangler (Technical University of Munich, Department of Landscape Ecology) looked at the different approaches to wilderness in Bavaria. As an outstanding representative of historic wilderness attitudes, she chose Emerenz Meier, a female author and poet, who loved the wilderness of her home in the Bohemian Forest. „I grew up as a child of the free forest. Wild animals were my friends … and as I embraced the breast of the earth, I swore that I would never ever tolerate the shackles of a master … I am the free child of the free forest!"

Much like many of her contemporaries, Emerenz Meier immigrated to the US during the 19th and early 20th century. Between 1820 and 1920 about 5,5 million Germans and 30 million Europeans immigrated to America. The quote above identifies Emerenz Meier as a true child of her times. The 19th and early 20th centuries were to a great degree marked by repression and social and political unrest. Also however, during the same period the fascination with nature and landscape rose distinctly. Often the longing for freedom and wild nature were expressed in one breathe.

Thorsten Kathke, University of Munich, Institute for American Studies, points out, that the idea of wilderness was playing an important part in forming the national identity of the United States. However, by looking at the 19th century wave of immigrants to the USA (and its artistic representatives such as Albert Bierstadt), it becomes clear that the American idea of wilderness is rooted to a great extent within European culture.

Anne Haß, publicist in Berlin, looked at three American philosophers who especially stood for the modern idea of wilderness in the United States: Ralph Waldo Emerson (1803 – 1828), Henry David Thoreau (1817 – 1862) and Aldo Leopold (1887 – 1948). All three men were considerably influenced by the fledgling evolutionary science of their times and in particular by Charles Darwin (1809 – 1882). Darwin's outstanding finding was of course the notion that man is part of the network of nature and not the earthly ambassador of some divine wanton (or planning). All three, Emerson, as well as Thoreau and Leopold attempted with some success to redefine mans attitude towards nature on the basis of modern scientific and/or moral understanding. It is this intellectual heritage out of which modern environmental ethics and wilderness policy developed. The new, more humbled role of man toward nature was clearly expressed in the National Wilderness Preservation Act of 1964.

Vera Vincenzotti (Technical University of Munich, Department of Landscape Ecology) showed that the American Wilderness Preservation Act influenced the forming of the IUCN protected area category, Ib, "wilderness area" in 1984. Both approaches to wilderness assign high value to the protection of natural processes, while at the same time they leave room for traditional life styles of indigenous people as well as for tourists, who continue to seek freedom and solitude "away from it all".

To illustrate the importance of human dimensions, i.e. "culture", in international wilderness perception, I initiated the project "Ballet and Wilderness" in 2003. This project is a cooperation of the Bavarian State Ballet and the Bavarian Ministry for Health and Environment. A statement of Bettina Wagner-Bergelt (Vice-Director of the Bavarian State Ballet) gives a clue to the aspirations shared by both dancers and wilderness enthusiasts: "Dancing", she says, "often is rebellion against the constraints of civilization."

The message is clear: Not only do wild animals and plant communities suffer if the constraints of civilization become too tight. If the governance of people (indigenous and tourists likewise) by wilderness managers too often turns into rigid patronization, the acceptance of the protection of natural processes will become even more difficult, if not impossible.

Till Meyer
Journalist
Munich, Germany

Hans Kiener & Zdenka Křenová

Europe`s Wild Heart

and Lecture after Kyrill

The face of Central Europe has been shaped by civilization. Since the settling of our ancestors in the New Stone age, their natural surroundings have continuously been changed into cultivated landscapes, expanding human settlements, sometimes exploited and devastated areas that leave practically no more space for wilderness.

As Aldo Leopold, one of the North American pioneers of the wilderness protection, stated correctly in 1935 at the end of a study trip through Europe: "wilderness did not only vanish from the continents surface but also from humans` minds and experiences." - And we can add: for hundreds of years.

It was in August 1983, when a thunderstorm within few minutes has uprooted and put down spruce trees on 175 hectares of the Bavarian Forest National Park. By the decision not to clear these areas but to leave them to their natural development without human interference, a new concept of protection has been established. Thanks to the courage of Hans Bibelriether, the first Director of the Bavarian Forest National Park, and Bavarian State Minister Hans Eisenmann, who has given his backing with the remark "a premeaval forest for our children and childrenschildren", the direction of thinking regarding this quite new concept of the protection of dynamic processes in ecosystems has begun to change gradually.

As a consequence these dynamic processes are in the focus of protection efforts, being a basic characteristic of vivid systems and essential to biologic evolution, and not certain species or stages of development. If we think this matter through consequently, the non-intervention concept directs us to wilderness protection.

In this context I would like to mention that both Germany and the State of Bavaria have recently passed a "National respectively Bavarian Strategy for Biodiversity" pointing out, that "In Germany there will again be wilderness areas (e.g. in National Parks) with natural and undisturbed processes of development." It is intended that "Nature can develop according to its own laws on at least 2% of Germanys territiory by 2020." And the State Development Programme for Bavaria is supplementing regarding the location of wilderness areas: "Areas, which are close to the border, are of special importance to the further development of the system of protected areas under consideration of areas worth being protected in the neighbouring countries and states."

Do we suddenly realize that something is missing, after having eliminated wilderness almost completely from our environment?

For 15 years now, the idea of wilderness has occurred in different places of our cultivated continent.

A piece of wild nature has also returned to the core of the old, civilized continent of Europe. Here in the neighbouring national parks Šumava and Bavarian Forest, where the Iron Curtain used to separate the political power blocs as well as humans and the nature for half a century, a clearly perceivable pulsation of reawakening wilderness beats again:

- Forests are allowed to grow on nearly 15.000 hectares as in ancient times, only complying with the laws of nature without any exploitation or management.

  Thus within short time something has come what the former President of the Federal Republic of Germany has stated in his speech on the occasion of the 25th anniversary of Bavarian Forest National Park: "I truly hope that it will be possible to experience a real primeval forest here and that the people, despite all their suspicions of the National Park, which I fully understand, will learn again that nature cannot only be used, but can also be left alone, even if this goes against all traditional teachings of German forestry."

- Natural spruce forests on mountain crests and high-altitude plateaus are characteristic features of this landscape. As relicts from the Ice Age with a very specific adapted flora and fauna they are closely related to the northern Taiga forests. At first sight, the autocratic spruce tree provides them with a monotonous and gloomy appearance. However, on closer inspection they turn out to be an army of snow broken and deformed disabled trees which mutate into wood ghosts with their widely spread out and gnarled branches in the fog.

Encompassing a combined total area of roughly 22,500 hectares in both parks this natural growth of spruce trees – which were literally ennobled by Karel Klostermann and Adalbert Stifter – in the Bavarian and Šumava National Parks we find the most significant relict forests in Central Europe outside the Alpine region.

These forests are meanwhile well-known throughout Europe. A distinctive feature is that these forests have been able to develop and regenerate in a region extending across almost 15,000 hectares since the middle of the nineties – as was the case in previous centuries – without any human interference.

Allowing natural bark beetles cycles, which are as typical for these forests as wildfires in the North, both national parks have broken with the tradition of a forestally preserved managed forest. And so they have initiated the development back to conditions which are similar to primeval forests. The rich forest regeneration that grows up below old trees, which were killed by the bark beetles, disproves all fears and worries of critics, saying that here no forest could ever grow again.

In Europe`s Wild Heart myriads of spruce seedlings use the large natural stock of rotting wood as germination bed and grow into impressive trees.

A number of species, which were extinct in former times have returned to the newly developing wilderness. The lynx, this beautiful spotted cat returned to roam through the spacious open wood- and boglands and on ancient tree skeletons, broken by the wind, the impressive Ural Owl breeds again.

In the not too distant future the wolf`s howling might be heard again and the impressive silhouette of the moose might be gazed on again.

The joint core area of the Šumava and Bavarian Forest National Parks, currently comprising an area of about 15.000 ha, an area which cannot be passed through on a single day, definitely has the quality of a wilderness area according to international standards. Both National Park administrations have committed by common guidelines to preserve and manage this unique common core area as a common wilderness heritage for future generations according to the principle "leave it as natural and wild as possible".

However, the new wilderness is not only an El Dorado for rare species and habitats.

Wilderness is an important matter for humans. Coming from a manipulated, mostly disenchanted natural environment they once again will be able to learn how to be astonished about a nature that returns to its original state.

Further on wilderness allows us a very special quality of nature experience, mental inspiration and spiritual renewal.

The brilliant composition "Vltava" of the Czech composer Bedřich Smetana contains passages on the mighty powers and dynamics of a stream that has its source in the Šumava mountains and that had partly been a wild river until the end of the 19th century.

Please try to imagine, what would have become of this masterpiece, if well tended commercial forests and regulated rivers would have worked as models, as we know them from our present cultivated landscapes.

Hans Kiener
Head of Department for Nature Conservation
Bavarian Forest National Park, Germany

Photo: Wolfgang Lorenz

Photo: Rainer Pöhlmann

Photo: Hans Kiener

Photos: Zdenka Křenová

The project "Europe's Wild Heart" does not only provide our recent composers, writers, and many other artists with inspiration, but it also is a great opportunity to demonstrate our common interest and responsibility for an appropriate management of our common European natural heritage.

This new born wilderness area located on the border of two Central European states is shared by two national parks – the Bavarian Forest National Park and the Šumava National Park. The same ecosystems, the same habitats and the same species have occurred on both sides of the border for centuries. We believe that fences, which separated this beautiful piece of nature, the people and the human minds for decades, will never return in the history of this region. We hope that Europe's Wild Heart will forever be a common core zone of both national parks ,where nature can develop without human intervention and people can visit the area to learn more about nature and our lives.

Different forest management strategies were applied along the borders during the last decades. Fighting the bark beetle and cutting infected trees were standard management measures on the Czech site at a time when a non-intervention strategy had already been adopted in the Bavarian Forest National Park. Long lasting discussions about an appropriate management of the forests in the Šumava NP graduated after the windstorm Kyrill in January 2007. Mountain spruce forests were strongly affected and thousands of spruce trees were rooted up. Especially open growths, where the cutting of active bark beetle infected trees was applied in previous years, were highly damaged. We got a lesson. The situation in the upper part of the mountains along the Czech-Bavarian border was crucial and cooperation and coordination of the management measures became necessary. The beginnings of a common management strategy for both National Parks appeared in this post-Kyrill period.

Cooperation has improved during the next months and currently common management guidelines for Europe's Wild Heart are prepared. We are sharing the common core zone of both National Parks with the same management regime and the following basic principles are applied:

- No intervention and utilization of resources are allowed in forests of this wilderness area.
- No intervention and harvesting of grasslands are applied in the wilderness area; only the regulation of natural succession on a few special sites with high species diversity (Schachten) is allowed.
- No game (deer) management is applied; protection of reproduction areas of endangered species is asked for.
- Temporally restricted restoration measures of natural water-regime in disturbed bogs and temporally restricted restoration measures of formerly changed mountain brooks are possible; neither the construction of new water dams nor the restoration of old ones are allowed.
- For public access guided tours are preferred; tracks for new trails or ways have to avoid sensitive biotopes; passages across boggy ground have to be crossed over by wooden runways to avoid stepping-damages; vehicle traffic is controlled and strictly limited.

Europe's Wild Heart is a very important area for research as well as for the education of the public. A large number of field trips, school excursions, and interpretive trails are organized into this area to offer people more information about nature. Various publications, audios and movies are published to support our motto "better knowledge for better understanding". Understanding nature helps to understand our life on this Planet.

Many scientists are interested in the research of mountain ecosystems existing under different historical conditions, different kinds of land use, and under different management practices that have been applied in this area for decades. Others welcome the unique opportunity to set up permanent plots for monitoring of global and ecosystem changes in an area without direct human intervention.

People are following nature and cross the borders (country borders as well as those in our minds) more and more year by year. Our cooperation is still getting closer and stronger. The new Research and Training Centre is going to be established in a former military base in Kvilda, a village in the centre of the Šumava National Park. Scientists and students not only from Czech and German Universities are going to accommodate places where soldiers kept iron curtain fences twenty years ago. Young interest and enthusiasm replace militancy and war-anxiety. Common visitors, local people and school kids will be highly welcome in this Research and Training Centre to meet researchers and experience wild nature, wilderness and learn about research projects that are operated here.

Europe's Wild Heart is a new born wilderness area in a cultural landscape of Central Europe. We have a chance to let nature be nature, wild nature, maybe wilderness, at least in this small area. Probably nature is more ready for this than we are. There are many challenges lying in front of us. There are many opportunities for both of us, humans and nature.

RNDr. Zdenka Křenová, Ph.D.
Head of Department for Research and Nature Conservation
Šumava National Park

CHAPTER 2:

WILDERNESS AS A CONCEPT AND SCENE OF DYNAMICS

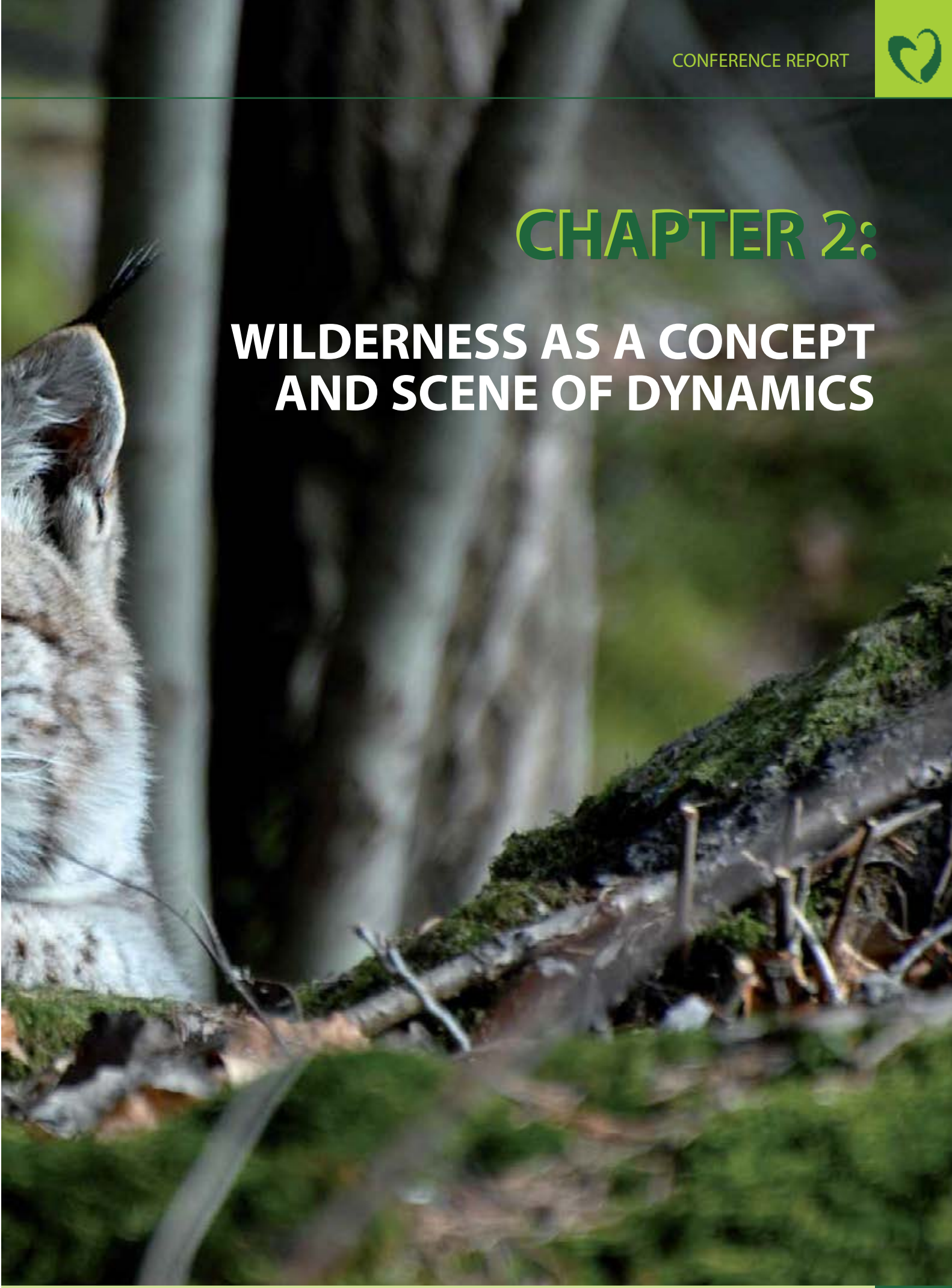


Photo: Hans Kiener

Miroslav Svoboda

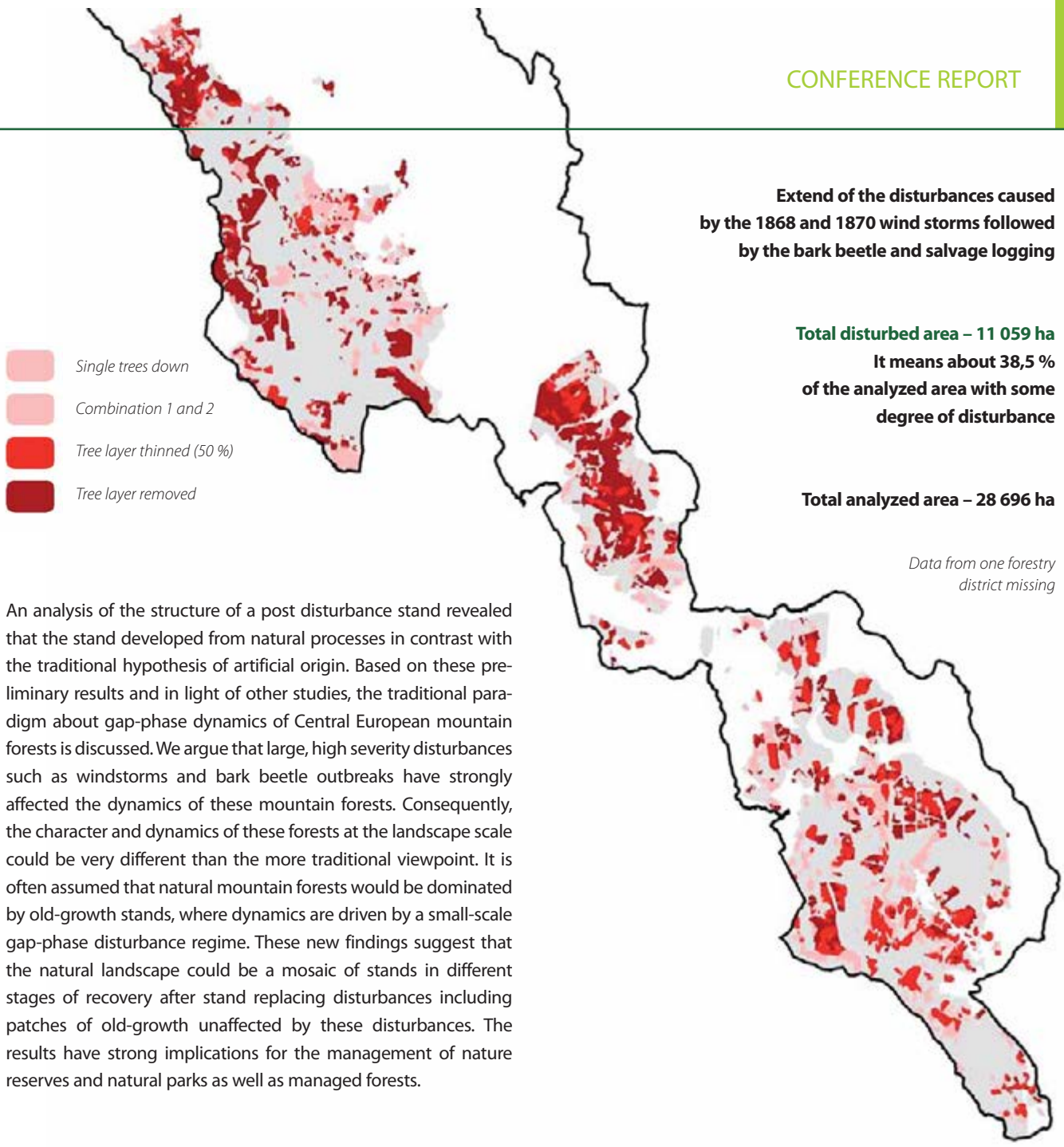
Dynamics of the Spruce Dominated Mountain Forests

in Central Europe

Forest ecosystem	Type of management	
	Zero management	Salvage logging
Tree regeneration	positive	negative
Vegetation	positive	negative
Soil and humus layer	positive	negative
Dead wood	positive	negative
Biodiversity	positive	negative
Hydrology	positive	negative
Bark beetle dynamics	probably negative	probably positive
Effect on surrounding forest stands	long term positive short term negative	short term positive long term negative
Economy (wood)	negative	positive

The objective of this study was to reconstruct the history of disturbances and examine their effects on the dynamics of a mountain spruce dominated forest in the Šumava Mts., Czech Republic. Historical evidence documenting the occurrence of strong windstorms and bark beetle outbreaks in the Šumava Mts. region during the last several hundreds years was analyzed and assessed in terms of the disturbed area and disturbed wood volume. Special attention was paid to a devastating windstorm followed by a large-scale bark beetle outbreak at the end of the 18th century, when a significant part of the mountain forests was disturbed in the region. The extent of the forest disturbed by these two subsequent disturbances was analyzed by using historical forestry maps. The recent stand structure of a post disturbance stand was also analyzed on one site.

Based on the historical evidence, several devastating windstorms, often followed by bark beetle outbreak, occurred in the region during the last several hundred years. Windstorms from the middle of the 17th century and the end of the 18th century were especially devastating and affected large areas of forest stands in the region. The combined windstorm and bark beetle disturbance that occurred at the end of the 18th century affected a majority of the remaining untouched old-growth forests in the mountain belt of the Šumava Mts. Followed by large scale salvage logging, the old-growth forests almost disappeared from the landscape at this time.



Extend of the disturbances caused by the 1868 and 1870 wind storms followed by the bark beetle and salvage logging

Total disturbed area – 11 059 ha
It means about 38,5 % of the analyzed area with some degree of disturbance

Total analyzed area – 28 696 ha

Data from one forestry district missing

An analysis of the structure of a post disturbance stand revealed that the stand developed from natural processes in contrast with the traditional hypothesis of artificial origin. Based on these preliminary results and in light of other studies, the traditional paradigm about gap-phase dynamics of Central European mountain forests is discussed. We argue that large, high severity disturbances such as windstorms and bark beetle outbreaks have strongly affected the dynamics of these mountain forests. Consequently, the character and dynamics of these forests at the landscape scale could be very different than the more traditional viewpoint. It is often assumed that natural mountain forests would be dominated by old-growth stands, where dynamics are driven by a small-scale gap-phase disturbance regime. These new findings suggest that the natural landscape could be a mosaic of stands in different stages of recovery after stand replacing disturbances including patches of old-growth unaffected by these disturbances. The results have strong implications for the management of nature reserves and natural parks as well as managed forests.

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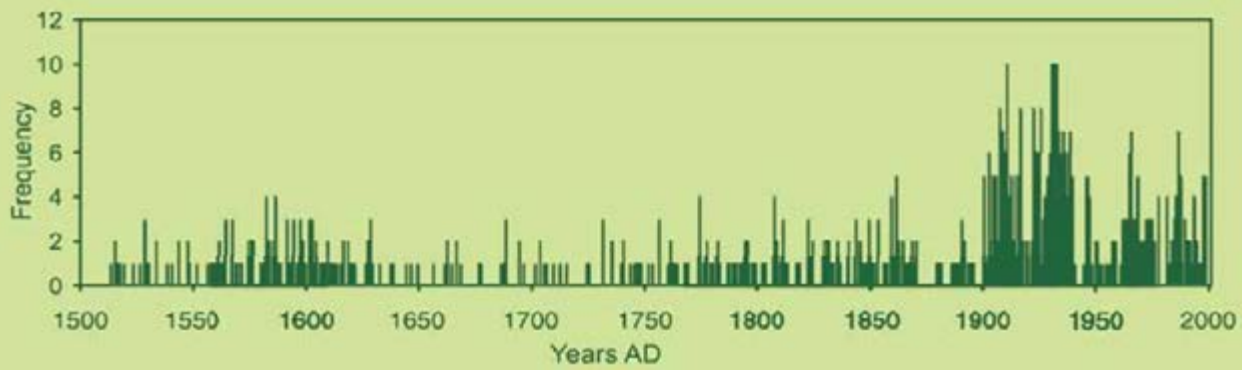
Šumava famous 1868 and 1870 wind storm



Historical reconstruction of the strong wind occurrence in Czech (from year 1500 till 2000)
Source: Dobrovolný a Brázdil, 2003, Atmospheric research

Wojciech Grodzki & Rastislav Jakuš

Management of Bark Beetle Outbreaks

in Mountain Spruce Forests under Nature Protection – Controversies, Effects and Possible Issues.

Bark beetle outbreaks are an immanent element of Norway spruce stands, regardless its location and nature protection status. The management of bark beetle populations in protected areas, requesting human intervention in the ecosystems, is often a subject of controversies. This presentation contains the results of investigations done in three case studies: 1) Tatra National Park 1993-1998 – passively (TPN, Poland) and actively (TANAP, Slovakia) protected areas, 2) Tatra National Park (TPN) 2002-2005 – active protection zone, and 3) Gorce National Park (Poland) 2002-2008 – passive protection zone.

Case study 1: An intensive bark beetle *Ips typographus* (L.) outbreak occurred in 1993-1998 in the Tatra mountains between Slovakia and Poland. In the Slovak part of the outbreak area practices consisted of: no action prior to 1994, intensive pest control management (trap trees, insecticides, salvage cutting) from 1995-1996, active differentiated approach (control measures according to the zonation of attacked stands) combined with intensive use of pheromone traps from 1997-1998. In Poland, the outbreak was mostly located in reserve areas where pest management or other activities were prohibited. Natural factors such as site and stand characteristics and weather conditions were found as being of crucial importance in the development of bark beetle outbreak in old Norway spruce stands. Human activity could contribute to the premature decline of such stands. Tree mortality in the Slovak portion of the study area was not significantly lower than in the un-management area in Poland. The area of clear-cuts in Slovakia was nearly equal to that of the outbreak area in no-management zones in Poland.

Case study 2: In late 2002 in the eastern part of the Tatra National Park, the trees of the volume estimated to 50 thous. m^3 of wood have been broken or blown by the wind, mainly in the area under active protection. In the first vegetation season (2003) the bark beetles infested the broken and fallen trees left in the forest, the number/volume of infested standing trees was negligible and the frequency of *I. typographus* – relatively low. In the second year (2004) the volume of infested standing trees and I. typographus frequency increased significantly, the tree mortality increased in 2004 and 2005 in the majority of wind-damaged stands, especially on open stand edges. The mitigation of the spruce decline was justified there by the protection goal – the conversion of secondary spruce stands in the lower mountain zone, with a maximum use of microsites.

Photo: Wojciech Grodzki

Case study 3: In November 2002 the Norway spruce stands in the Kudłoń massif (upper montane zone) have been heavily damaged by the hurricane. Since 2003 observations concerning the infestation of trees by the bark beetles *Ips typographus, I. amitinus* Eichh. and *P. chalcographus* (L.) were undertaken. The frequency and infestation density of 3 species, captures in monitoring pheromone traps and sex ratio of *I. typographus* varied according to changing breeding conditions offered by lying spruces. In 2003 there was no increase in the infestation of standing trees surrounding the wind-damaged areas – mainly lying trees were colonised. The intensive bark beetle attack on open stand edges started in 2004 and continued in 2005. A high percentage of females indicated a dynamic growth of *I. typographus* populations. In the following years the outbreak further developed – the intensive tree infestations were still observed in 2008.

Recommendations:

- The outbreaks of bark beetles in protected areas open an excellent opportunity for the research on their populations and on forest dynamics in natural, not disturbed conditions.
- The outbreaks in this case should be considered as natural processes related to the Norway spruce vitality and resistance to insects and diseases. The forest protection approach in such cases should be diversified, according to the nature protection status in individual areas.
- This status should be defined based on deeply recognized natural features of stands and protection goals, and should not be modified due to the actual processes, such as wind damage or insect outbreaks.
- As the strict nature reserves are established for the long-term observation of natural processes (including tree mortality and regeneration), no change in their status towards human intervention in such areas can be recommended, even in extraordinary situations (e.g. insect outbreaks). Intensive monitoring and research should be the only way of human activity.
- In order to protect the stands adjacent to the strict reserves, classic forest protection measures against bark beetles need to be applied in buffer zones under active nature protection. No insecticides should be used in protected areas.
- It concerns especially secondary Norway spruce stands, susceptible to root diseases and bark beetle attacks, where conversion is needed. The control measures can not stop the outbreak, however may mitigate its spreading, which is needed in case of planned conversion of stands towards close-to-nature forests.

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Rotation of silver Fir and European Beech

– Developmental Cycle or linear Trend?

Carpathians in 50`s. Photos: Rudolf Janda

A detailed historic survey was made to assess the impact of humans on fir-beech forests in the northern Carpathians. Research findings are compared with results from repeated tree layer measurements in eight of the most well-preserved reserves of fir-beech stands in the region. Documentary evidence is provided showing that the historic and contemporary spontaneous development of fir-beech stands throughout the northern Carpathians is identical. The replacement of beech by fir occurred predominantly in the period from the 15th-18th centuries, primarily due to grazing and litter raking. Starting in the 19th century, fir was replaced predominantly by beech under the influence of changing social conditions, since the dieback of the "grazing" fir generation had not yet been completed. Air pollution damage and other factors in the fir dieback were only accompanying accelerating phenomena. These tree species changes cannot be interpreted as the natural rotation of two beech generations within the life cycle of one fir generation, as has been the previous explanation. The development is rather a linear trend induced by man, which has occurred simultaneously throughout the northern Carpathians. The current dynamics of the spontaneous development is affected by the high stock of hoofed game and by the absence or reduced numbers of predators.

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Siegfried Klaus

Forest Grouse and Wilderness

– Survival without Management Impacts

According to the IUCN rules, natural development i.e. natural ecological processes should be allowed to occur on 75% of the area of a national park. Here we are asking the question: how do sensitive forest grouse species like capercaillie *Tetrao urogallus* and hazel grouse *Bonasa bonasia* respond to "non-intervention management"? Members of the subfamily Tetraonidae are regarded as very "successfully" in unmanaged boreal forest ecosystems occupying large areas throughout the Eurasian and North American taiga and representing a large part of the biomass of vertebrate animals. For this reason national parks should fulfil the habitat requirements of this species. Nevertheless, there are differences between both species depending on body size and –as a consequence – depending on home range size and extension of the area needed for the long-term survival of a population.

As shown in figure 1, capercaillie, black grouse (not described here) and hazel grouse are adapted to different stages of succession in primeval as well as in managed forests. After wind fall or forest fire, a typical event in the boreal forests, the black grouse starts to inhabit the youngest stages of forest succession, followed by the hazel grouse which prefers forest stands of an age between 10 and 50 years. If the forests becomes 100 and more years old and gaps caused by windfall or insect calamities become more frequent in the forest canopy the capercaillie who is adapted to old growth forest finds its preferred habitat but also hazel grouse can live there if gapes will allow rejuvenation of a mixture of trees containing conifers, pioneer and other deciduous as well.

Hazel grouse, the smallest (350-400 g) of our forest grouse, is well adapted to young stages of forest succession following catastrophic events like fire, bark beetle attacks or other kinds of natural disturbances, and dense understory in multilayered old growth forests. Natural development instead of management activities, the main goal in national parks therefore is most favourable to hazel grouse. The home range size (10-50 ha, depending on habitat quality in mountain forests) is small and a national park of 10.000 ha has space enough for 200 to 1000 individuals. A rough estimate for both the Šumava and Bavarian Forest national parks was about 2000 pairs – a vital population which is by no means endangered. One necessary precondition for long-term survival is the protection

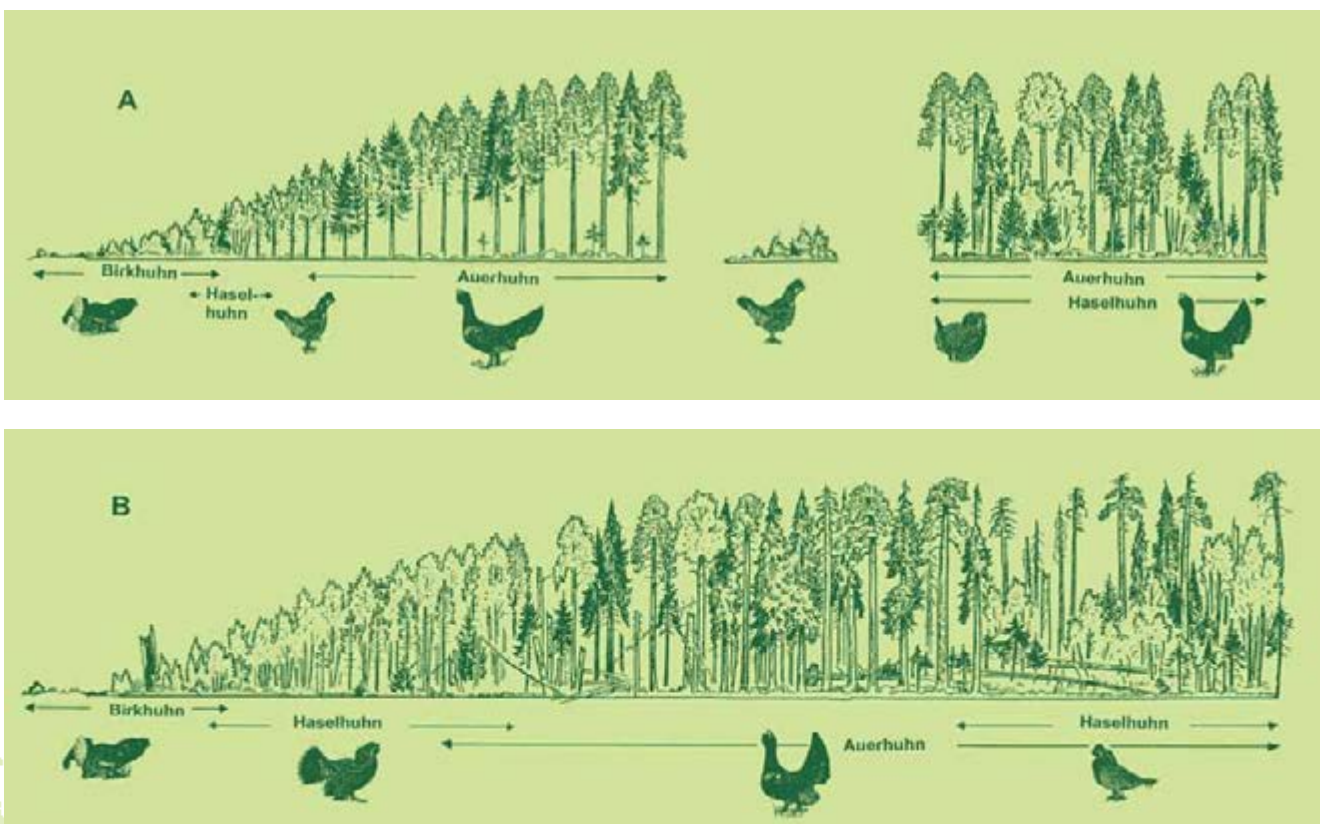

Figure 1: Graphic illustration of the different succession stages used by capercaillie, black grouse and hazel grouse according to Swenson & Angelstam (1993). A –managed forest: left – age –class forest resulting from plantations, right – farmers forest resulting from selective cutting, B – primeval forest.

of natural succession processes after wind fall bark and beetle attacks, followed by the undisturbed development of pioneer trees like birch, willow, aspen, mountain ash and other deciduous trees together with the high diversity of ground vegetation. The removal of dead down laying trees after wind fall has negative impact on hazel grouse: valuable ground cover is reduced and the protection of pioneer tree succession from the impact of ungulates is diminished. Examples are well shown in the Bavarian Forest national park.

The capercaillie (*Tetrao urogallus*), the largest and most dimorphic grouse (males 3.5-5 kg, females 1.6-2 kg), inhabits boreal coniferous forests across the northwestern and central palaearctic region. In most of its range the capercaillie is declining dramatically. In the complex of negative factors (wet climate, predation, human disturbance, air pollution ect.) habitat loss and habitat fragmentation are the dominating ones.

The capercaillie inhabits a continuous range in large parts of the palearctic boreal forest, but is patchily distributed in temperate Europe. Rolstad (1989) and later Storch (1991, 1993) have shown that the decline of the area and fragmentation of old closed forest landscapes by large-scale clear-cutting have dramatic effects on capercaillie populations. The number of displaying cocks on the lek is depending on the size of old growth forest blocks and fragmentation has in addition serious impact on genetic variability and on survival of capercaillie populations. As pointed out by Storch (1997) the population of the Alps can be regarded as a metapopulation. As found by Segelbacher et al. (2003) in the small isolated populations of central Europe genetic diversity was significantly reduced as compared with the metapopulation of the Alps and of the boreal taiga forests. Anthropogenic habitat deterioration and fragmentation thus not only lead to range contractions and extinctions but may have also significant genetic and evolutionary consequences for the survival chances of populations. To maintain high levels of genetic variation in species living in fragmented habitats, conservation should aim at securing or restoring connectivity between spatially distinct subpopulations Segelbacher et al. (2003).

Photo: Siegfried Klaus

There is also evidence that predation increases heavily in fragmented forest landscapes resulting in reduced reproduction. The linking of suitable habitats should be therefore one of the main management activities in favour of capercaillie. As shown in table 1, the decline as indicated by "half-life-times" is more pronounced in smaller populations.

In large parts of the area, capercaillie does well in the wilderness, in old growth forests structured by gaps, openings caused by natural events, dead trees and islands of rejuvenation.

Area	Population size (year)		tH	Reference
Swis Alps [a]	1 100 (1970)	600 (1986)	16	Marti (1986)
N Black Forest [a]	250 (1971)	125 (1983)	12	Roth and Suchant (1990)
Bohemian Forest	300 (1975)	150 (1985)	10	Kučera (pers. comm.)
Thuringia	300 (1970)	150 (1978)	8	Klaus at. al. (1985)
Thuringia	80 (1985)	40 (1989)	4	Klaus (1991b)
Saxonia [b]	32 (1960)	16 (1963)	3	Klaus and Augst (unpublished)

a Displaying cocks b Saxonia Switzerland only

Table 1: Half life times (tH) of isolated and declining capercaillie populations in central Europe (Klaus 1994)

Photo: Siegfried Klaus

Photo: Günter Moser

If we consider the situation in our national parks in central Europe, in most cases the area is too small for the long-term survival of an isolated population of capercaillie. One positive exception is the complex of Šumava and Bavarian Forest national park covering together an area of 72.000 ha. If we take in account a medium size of the capercaillie home range of about 500 ha (800 ha per cock, 400 ha per hen as a rough mean) we could expect space for about 150 birds. This corresponds well with the estimate for the existing population at present. This very simple calculation has to be corrected by the fact that capercaillie inhabits only the highest parts of the mountains, prefers bogs and their surroundings and lost large parts of the spruce –dominated forests along the mountain crest due to bark beetle attacks and forest decline.

At the other hand, male and female home ranges can overlap and the population could grow higher depending on habitat quality and positive developments in the future. In addition, both national parks are surrounded by large tracts of mountain forests including landscape reserves and nature parks. In this managed forests the habitat demands of capercaillie could be fulfilled also by adequate forestry management. Many experiences for this were published. One necessary precondition – and this should be a central part of the national park management – is the reduction of human disturbation in areas needed for the reproduction (preferred lek and brood areas and their surroundings).

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Jörg Müller

Passive Management and Natural Dynamics

– Allow Recovery of Saproxylic Beetles in a Former Commercial Forest

Natural forests, in comparison to intensively managed forests, are characteristically dynamic and heterogeneous as a result of natural disturbance regimes operating on a range of spatial scales and supplying an abundance of "biological legacies" such as standing and downed dead wood. Biological legacies enhance biodiversity by allowing species to persist in disturbed areas, modifying or stabilizing environmental conditions in recovering stands, providing essential habitats and sources of energy for organisms, and influencing recolonization patterns. In Central Europe, after hundreds to thousands of years of intensive management, the volume of dead wood has been reduced to less than 10% of that in primeval forests, resulting in the loss of organisms dependent on dead wood from many commercial forest landscapes.

Assessment of the effects of a protected area on ecological dynamics is often complicated by insufficient spatial or temporal replication and control. To separate habitat-type effects from reserve effects we selected the Bavarian Forest National Park, established in 1970 in the southeastern corner of Germany. The cool temperate montane forests of around 24,000 ha are dominated by spruce (*Picea abies*) from 1150-1430 m, and at lower altitudes above 650 m by spruce, beech, and fir (*Abies alba*), both on acidic soils. Although logging occurred in these mountains to produce charcoal for furnaces for glass manufacture and to create pastures, the influence of humans was low up to the mid 19th century. Then, after some large windthrows and subsequent damage by bark beetles, modern forestry led to major changes in tree species composition. Nevertheless, in 1900 primeval forests with old beech and fir trees were still widely distributed in the region, along with some now-extinct beetles associated with old forests. During the first half of the 20th century this pristine forest was intensively logged and species composition was altered as spruce, a favored commercial tree species, increased significantly. Old-growth stands remained only as small patches. Despite this alteration, of the 14 Urwald relict species of beetles recorded in the national park, 12 have been reported recently. Due to infestation by bark beetles, mainly Ips typographus, starting in the early 1990s, large areas of forest have died back in the southern part of the park. The resulting forest structure varies widely from stands with little dead wood to stands with 300 - 700 m^3/ha dead wood.

Photos above: Ingo Arndt

To get representative data from the entire National Park, we established 293 0.1-ha plots spanning the altitudinal gradient. Strictly protected zones have increased in area over the history of the Park through stepwise enlargement. This spatial distribution enables us to separate the effects of formal protection, tree age, and an increase in dead wood. At intervals of 100 m along transects, we randomly selected 125 plots distributed equally along the altitudinal gradient for beetle sampling. We investigated the effect of a rapid increase in dead wood, generated by natural forest dynamics, on saproxylic beetles within a national park in Germany. Based on trapping data from 125 sampling plots, combined with data from direct searches, we analyzed the responses of assemblages, species richness, and functional substratum guides to an increase in dead wood.

We found no difference between assemblages in the core and management zones, but found a significant relationship between assemblages and habitat attributes of dynamic natural forests, especially dead wood abundance and canopy openness. The number of all saproxylic beetle species, critically threatened species, and Urwald relict species increased with increasing dead wood in a nonlinear fashion, with a strong increase from zero to 100 m^3/ha. A similar pattern of increase was found for dead wood diversity. For four rare species we found a striking increase in population density along the dead wood gradient.

Our results highlight the ability of passive forest management, where natural dynamics are permitted to operate within large areas protected from salvage logging, to restore the heterogeneity of dead wood and associated fauna typical of primeval forests. Although commercial forests are unlikely to retain sufficient dead wood on a landscape scale, our results show that even a small increase in dead wood (between 10 and 100 m^3/ha) will improve habitat quality for saproxylic species within logged forests.

Our study supports the view that formal protection that excludes natural dynamics, which is often a consequence of small reserve size, may fail to meet biodiversity conservation objectives. Conversely, given sufficient reserve size, natural dynamics can increase habitat diversity, as exemplified by dead wood, within decades, even within former commercial forests. Natural forest dynamics have evoked debates about "dead forests" and prompted calls for salvage logging. In our study region, natural dynamics have demonstrably improved habitat quality for many organisms, with a particularly steep increase in richness of critically threatened and Urwald relict species of saproxylic beetles and in population density of rare species. Even if such forests appear damaged or decadent to the general public, they are important stages of development or recovery from a human modified to a more natural state. For commercial forests, our finding that a steep increase in species richness occurs with increasing dead wood volume up to 100 m^3/ha can be used to guide restoration-oriented silviculture. Almost any increase in dead wood in these forests will benefit rare species.

Moreover, our results demonstrate that passive management or "benign neglect" can be quite successful in restoring natural forest dynamics, associated structural diversity, and the organisms dependent on forest structures. Such management is considerably cheaper than intensive management and has the additional advantage of creating the forest wilderness aesthetics of great interest to many human visitors. On the other hand, we acknowledge that active management to accelerate development of forest structural diversity and other old-growth conditions is sometimes needed to rescue declining populations of species that depend on such structures. In addition, forest types historically characterized by frequent, low-severity fire often suffer from fire exclusion and can benefit from active restoration and management. The optimal course may be to actively restore and manage forests where needed, but where possible, to aim for an ultimate target of large natural forests that are capable of restoring and managing themselves.

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Photo: Heiner M.-Elsner

Photo: Thomas Stephan

Photo: Jörg Müller

CHAPTER 3:

MANAGEMENT PLANS FOR NATURA 2000 SITES

Photo: Rainer Pöhlmann

Sandra Balzer

Non-intervention Management

in Natura 2000 Sites in Germany

By approving the European Habitats and Birds Directive, all Member States of the European Union have agreed to preserve Europe´s natural heritage. The implementation of these European directives in Germany was a joint effort of many actors (federal government, federal states/Länder, local authorities, but also nature conservation and land owners/land-users, NGO´s) with a respectable result: Germany's contribution to the European network of protected areas „Natura 2000" includes 4,622 SCI's (Sites of Community Interest under the Habitats Directive, as of September 2008) and 736 SPA (Special Protected Areas for birds, as of November 2008). Since both types of sites overlap, the total German contribution to Natura 2000 comprises 15.3 % of the terrestrial area brought under the EU-wide special protection regime. 258 species of the annexes II, IV and V and 91 habitats of annex I of the Habitats Directive are known for Germany.

The compilation of the site lists for Natura 2000 has now been completed and a national report with an assessment of the conservation status of species and natural habitat types of Community interest under the Habitats Directive has been prepared in 2007 (period 2000 – 2006). It is one of the key obligations of the Habitats Directive for member states to report every six years on the status of the Natura 2000 network sites. These national reports must provide information on the conservation status of species and habitat types occuring on their respective territories. In Germany, an assessment frame for each habitat type and species on site level was developed and the German assessment of the conservation status of species and habitats take the natural development stages and the habitat continuity into account, which is higher in non-intervention areas (see table 1).

Photo: Federal Agency for Nature Protection

Under the habitats directive, the biodiversity of cultural and natural landscapes is protected. In Germany, the majority of the terrestrial Natura 2000 sites consist of forests or grasslands. Marine and tidal areas, including estuaries, amount to 37 % of the total area of all SCI's in Germany. Many Natura 2000 sites are, entirely or in parts, already legally protected e.g. as nature reserve. National parks in Germany are almost fully covered by Natura 2000 (98.9 %), biosphere reserves are covered up to 73.6 % by Natura 2000.

Germany as one of the most forested countries in Central Europe has a particular responsibility for the protection and preservation of beech forests. Overall, 50 % of the total area of the Natura 2000 sites in Germany is composed by all types of forests. More than 40 % of the mesophile beech forests are located in Natura 2000 sites (see table 2). As they are at the same time habitats for species with demand on sizable areas, it is necessary to conserve large-scaled and richly structured habitats. However, only 0.2 % of the natural beech areas in Germany are actually unmanaged.

The proportion of farmed land within Natura 2000 sites in Germany amounts to approximately 40 % of the terrestrial Natura 2000 area. Habitat types like heathlands, dry grasslands, species rich hay meadows in lowland and mountainous regions, and alluvial grasslands were created by extensive farming activities. Continued and suitable use is thus required for the maintenance of favourable conservation status at these sites.

German habitat types which do not need regular use are the wadden sea, marine areas, rocks and screes, forests, bogs and fens, large water bodies and streams. However, if the conservation status is unfavourable, it is necessary to do active management. Most of the forest habitat types and species need non-intervention management to reach a favourable conservation status. But forest types like 9160 "Sub-Atlantic and medio-European oakhornbeam forests (Carpinion betuli)" and 9170 "Galio-Carpinetum oak-hornbeam forests" whose occurrences are partly man-made i.e. developed by historical management techniques therefore need regular management to insure the conservation status.

habitat structures	A excellent	B good	C medium - unfavourable
forest development phases (space structure)	minimum 3 development phases: maturity phase on minimum area	Minimum 2 development phases: maturity phase on minimum area	If A or B can not be applied
biotop- and old trees	≥6 individuals/ha	≥3 individuals/ha	<3 individuals/ha
dead wood	>3 individuals/ha lying or standing dead wood	>1 individuals/ha lying or standing dead wood	≤1 individuals/ha lying or standing dead wood

Table 1: Asperulo-Fagetum beech forests (EU-Code 9130): Example for the german assessment frame for forest habitat types - parameter habitat structures

Forest in Germany	Area / Percentage
forest in Germany	11,100,000 hectares
forest habitat types in Germany	1,748,390 hectares
forest habitat types within Natura 2000 sites	800,000 hectares
Percentage of German forest habitat types in Natura 2000 sites on the total german forest area	7 %

Table 2: Area und percentage of German forests

In general, there is a high potential for wilderness areas in protected sites like core areas of national parks, biosphere reserves and natural forest reserves. Together they cover 470,000 hectares or 1.4 % of the German terrestrial area. Other Natura 2000 sites with natural processes are on former military training areas or in protected areas on rivers and streams which include the whole water body, e.g. the Elbe river system.

Some ecosystems like rivers could be developed into natural dynamic systems under a non-intervention management regime. While in such sites really rare habitat types are expected to develop and increase, some occurrences of more widespread species and habitat types might simultaneously get lost.

Focussing on the results of the national report 2007, the highly endangered Riparian forests and some fish species of cold rivers must receive higher management priority than the more common habitat types on secundary stands or areas. The possible conflict between the conservation objectives in Natura 2000 sites and wilderness areas is especially valid for open landscapes. However, this may only be a problem in small sites lacking enough space for dynamic development or grassland sites with the need of maintainment by grazing or mowing.

Summarizing, there is a need to maintain and develop the conservation status of most of these habitats and sites by non-intervention (=no use) management. However, restoration management (e.g. removing dikes from rivers, changing water conditions in bogs) is often needed before implementation of non-intervention management can take place, depending on the habitat types or species. Presently, non-intervention management in Germany is only implemented by a few national parks and this percentage of unused or non-managed core areas also needs to be significantly increased. The re-establishment of completer natural biocoenosis of large herbivores and carnivores can be an important management step to restore natural dynamic processes in wilderness areas. The German government has pointed out that on 2 % of the German territory wilderness development areas have to be established by 2020 (National strategy for biological diversity; BMU 2007). The core areas of national parcs and biosphere reserves and additional areas of the Natura 2000 network could be a good basis to achieve this aim.

A solid knowledge about the conservation status of habitat types and species is needed in order to define priorities for nature conservation, to initiate well targeted measures, to steer site management and for an effective reaction to changes

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Franz Leibl

Non-intervention Management

in Bavarian Natura 2000 Sites beyond National Parks

Along the East Bavarian lowlands of the River Danube and adjacent slopes, the nature conservation authority of the Lower Bavarian government works on the organization of a linear network of strict forest reserves in various sizes.

In this connection forest areas of different dimensions are bought and removed from exploitation (smallest area currently 3 ha, largest area 130 ha).

In these locally restricted natural forest plots naturally dynamic processes should be able to proceed without any human influences.

On the other hand the protective objective of maintaining or developing habitat traditions (e.g. insects occupying dead wood) is aimed at.

Finally, the organization of these natural forest stepping stones serves to meet the ideas of Natura 2000 by purchasing adequate forest areas to maintain and strengthen the Natura 2000 protected goods concerning quality and quantity.

The following forest habitat types according to appendix I and the target species according to appendix II of the habitats directive in this connection are considered and supported.

- Forest Habitat Types

Luzulo-Fagetum, Asperulo-Fagetum, Cephalanthero-Fagetum, Galio-Carpinetum, Tilio-Acerion, Alno-Padion, Salicion albae.

- Animal Species

Lucanus cervus (Stag beetle), *Osmoderma eremite* (Herbit beetle), *Dryocopus martius* (black woodpecker), *Picus canus* (grey-headed woodpecker), *Dendrocopus medius* (Middle spotted woodpecker), *Ficedula albicollis* (Collared flycatcher)

From 2000 to 2015 a minimum of 400 ha in total of forest area is to be purchased. Therefore an amount of approximately 5-6 million Euros has to be raised. For the realization of this project the following conservational sponsorships will be required:

- Life-Nature (EU funding project): Life project "Forests of slopes, screes and ravines in the upper Danube valley", Life project "Forests of slopes and alluvial forests along the River Danube between Neustadt and Bad Abbach".



Oak-Hornbeam Forests shape the valley of the River Danube from Passau to Jochenstein (scenery of the Life-Nature-Project "hillside and gorge forests in the upper Danube valley").

The BayernNetzNatur (Bavarian nature network) "Rainer Wald" protects large-scale Alno-Padion alluvial forests by purchasing them.

- Purchasing support by the Bavarian nature conservation fund (for BayernNetzNatur (Bavarian nature network) projects as "Donaurandbruch in the area Straubing-Bogen" and "Rainer Wald").
- Introduction of compensatory and deficiency payments
- Bavarian program for landscape management and nature parks

After the purchase, the ownership of the acquired natural forest plots passes to the project institutions, which are communities participating in the project or non-governmental organisations for nature conservation, e.g Birdlife international - Bavarian section (LBV)

Until December 2008 approximately 245 ha of forests were purchased, mainly in the lowlands of the River Danube near Straubing and the slopes of the Danube near Passau and Straubing.

The largest natural forest plot comprises approximately 130 ha and is situated in the "Rainer Forest". On the river slopes of the Danube near Passau about 55 ha, mainly oak-hornbeam stands, and on the slopes of the Danube north of Straubing and east of Regensburg approximately 45 ha are available for this nature conservation project.

The implementation of the currently approved Life-Nature-Project "Hillside and alluvial forests on the River Danube between Neustadt and Bad Abbach" will start in 2009 and for the BayernNaturNetz (Bavarian nature network) project "Rainer Wald" negotiations on the purchase of another 100 ha of forest proceed currently.

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National Parks in the Czech Republic

– Conservation of Biodiversity versus Protection of Processes

Currently, two fundamental concepts co-exist in conservation of national parks: (i) conservation of biodiversity/geodiversity, (ii) protection of natural (spontaneous) processes. There is a need to clarify compatibility of both concepts, including compliance with national law, EC nature conservation law (Natura 2000) and IUCN management categories system. In the Czech Republic, governmental decrees for Krkonoše, Šumava and Podyjí national parks (but not the act establishing České Švýcarsko National Park) focus on both, protection of functions (processes) and conservation of biodiversity. All four Czech national parks as sites of Community interest are part of the Natura 2000 network. Therefore, both habitats and species, included in the annexes of the Habitats Directive and simultaneously listed in these sites of Community interest as subject of conservation, have to be maintained or restored at a favourable conservation status. On the other hand, at least Podyjí and Šumava national parks are listed in the World Database on Protected Areas (WDPA) under the IUCN management category II that means that at least 75 % of the national park area should be managed in order to protect large-scale ecological processes (Dudley 2008). As there are no guidelines for interpretation of the favourable conservation status in case of various natural habitat types yet, there is a clear need to discuss different interpretation of the favourable conservation status in case of primary and secondary habitats, respectively.

When focusing on the dilemma between conservation of habitats in favourable conservation status and protection of processes, three basic groups of habitats can be distinguished: (i) habitats, in which non-intervention management is not only not in contradiction with the favourable conservation status, but is actually the best way how to achieve the favourable conservation status; therefore, in case of e.g. montane spruce forests (such as in the Bavarian/Bohemian Forest national parks) even dramatic changes in the structure and species composition of these habitats should never be interpreted as a decrease of favourable conservation status; (ii) habitats, in which the conservation in favourable conservation status explicitly exclude application of the non-intervention management (e.g. meadows, but also some types of lowland forests); (iii) habitats that can be managed in wide range of management types – from non-intervention regime to very intensive disturbances (e.g., alluvial forests) – the choice of the management type in this case can be influenced by further conservation requirements (protected species, national category of a protected area, etc.).

Photo: Zdenka Křenová

Conclusions:

- In general, there is not a contradiction between biodiversity conservation and protection of natural processes. Biodiversity conservation includes also protection of the processes. Therefore, the wilderness concept should not be understood as a new paradigm being in contradiction to the biodiversity concept but as its integral part. Similarly, wilderness (non-intervention) areas should be integrated into the Natura 2000 network because non-intervention management in primary habitats is not in contradiction to Natura 2000 management requirements.

- In practical conservation, however, it is not possible to avoid decision making about the priorities at a particular site (protected area) between conservation of species and protection of processes. Significant conflicts between both management objectives are situated in those national parks (protected areas) where the high species diversity is at least partly determined by previous (historical) management practices.

- Spontaneous processes can often lead to a decrease in species diversity (alpha diversity, Whittaker 1960, 1972). This should not be automatically interpreted as a decrease in biodiversity and as a negative impact from the nature conservation point of view.

- However, prior application of non-intervention management in national parks (protected areas) should not lead to a loss of the gamma diversity (diversity at large geographical scale, Whittaker l.c.), i.e. to a loss of species with high importance, significantly overreaching particular regions (endemics, globally rare and threatened species).

This statement raises a question: To what extent must a species be threatened / rare to justify an exception (i.e. management area) within a non-intervention area (e.g., national park)? Therefore, one of the most important challenges for conservation researchers and managers today is to find the balance between both, wilderness and species/habitat conservation concepts. It is obvious that both approaches have to be understood as complementary, not competitive concepts and that considering preferences (species/habitats or processes) strongly depends on the time perspective of such considerations: a short-term perspective will tend to put emphasis on conservation of each single species at each site while the long-term perspective will prefer to protect natural processes by establishing large wilderness (non-intervention) areas.

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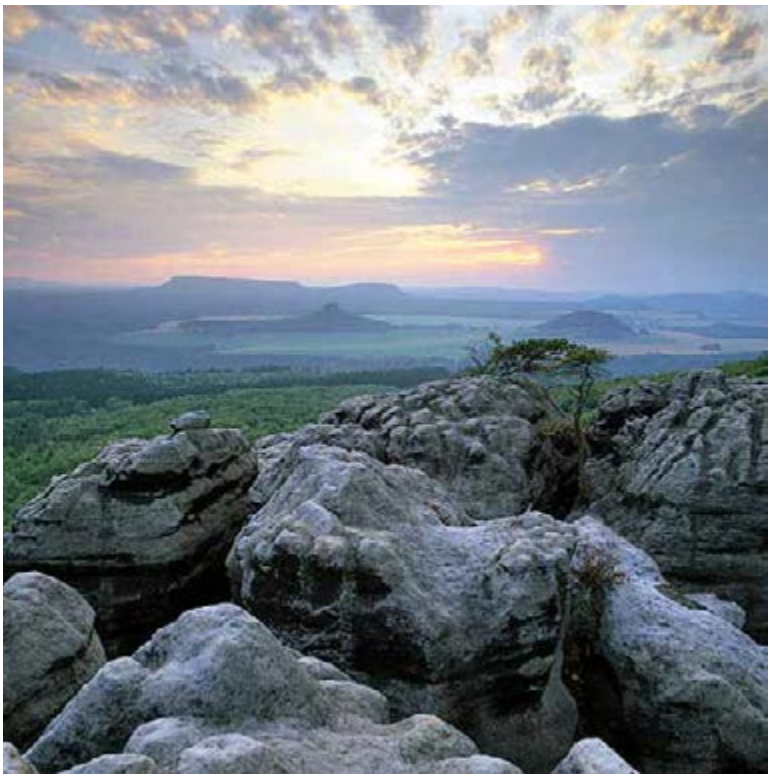

Photos: Handrij Härtel

Kari Lahti

Intervention and Non-intervention Measures

in Protected Areas and Natura 2000 Sites in Finland – Special Emphasis on Wilderness Areas

Finland's protected areas are generally situated on state-owned lands and waters. Metsähallitus Natural Heritage Services (NHS) manages the state-owned protected areas including northern wilderness areas and national hiking areas.

Main objective is to safeguard biological diversity and the survival of threatened species. Most of the protected areas are suited also for recreation thus NHS provides also infrastructure and services to promote sustainable tourism.

Nature reserves, wilderness areas and hiking areas are the central parts of the protected area system in Finland. Almost all of these are included in the European Union's network of Natura 2000 areas. Protected areas on private lands can be included to the national network of protected areas since many of these are also part of Finland's Natura 2000 network.

Management and establishment of Finnish protected areas in many cases need no intervention measures. However there are number of cases where intervention is needed in order to secure the natural values and to achieve the protected area management objectives.

Intervention measures can be divided to:

- **One-time – time-limited intervention;** to undo past damage or alter the course of ecological processes for instance by a) restoring the original hydrological state in ditched mires and b) conducting prescribed burning to restart the natural succession of the habitat or c) adding decaying wood and d) making small-scale gaps.
- **Continued, long-term intervention;** should be applied in cases when for instance some valuable species or habitats (e.g. cultural) have disappeared and need active management to return and/or thrive.
- **Occasional intervention**, such as control of invasive species

There are various ways to determine whether there is a need for intervention measures within protected areas. One option is to draw conclusions of the subsequent assessments: inventories, gap analyses, threats analyses and taking in to account the socio-economic dimensions. After deciding whether to carry out active intervention measures or to take non-intervention approach there has to be continuous monitoring methods in place. Adaptive management tools are also crucial in changing the course if monitoring outcomes show threats towards the objectives of protection.

Examples of Intervention at Oulanka National Park

In Oulanka National Park in Northeastern-Finland there are intervention activities carried out in form of continuous and one-time interventions. The majority of the park's area belongs to non-intervention zone excluding the traditional uses like low impact reindeer herding and subsistence picking of berries and mushrooms.

Photos: Kari Lahti

Fertile riverine meadows along the meandering Oulankajoki River have offered the local people important hay making properties. Today these meadows are not only important from the cultural point of view but also for their biodiversity conservation values. They are listed as threatened habitats harbouring a number of threatened plant species.

One-time intervention example of Oulanka National Park is prescribed burning of commercial forests that were later added to National Park. This is done in order to accelerate the natural ecological processes since after burning there is a considerable potential for development of natural succession. It also secures the continuum of suitable habitats for species that are dependent on burned and decaying wood.

Examples of intervention at Olvassuo Protected Area, Natura-2000 site

The site is a complex of different categories of protected areas, c. 30.000 ha in size. Natura 2000 has been the driving force to combine these areas to form one entity. After the process of evaluation of the gaps, threats and socio-economic pressures, the intervention plan was completed. There are few areas that already had gone through one-time intervention activities and some that still need further activities. They include mire restoration by restoring the hydrological state of the aapamire complexes, prescribed burning to increase the potential for natural succession and forest restoration by altering the forest structure by for instance increasing the amount of decaying wood.

Non-intervention Wilderness areas in Finnish Lapland

Finland has given a specific Act (1991) on wilderness areas as one category of protected areas, thus defining wilderness conservation as one special means to achieve national nature conservation goals. Wilderness areas are located in Lapland, beyond arctic circle.

The Finnish Wilderness Act is based on the concept that has its roots in ancient hunting and fishing culture. In earlier days men made long trips to what they called "erämaa" (wilderness), a vast uninhabited area abounding in game. At present there are 12 wilderness areas covering 1,5 million hectares, 5 % of Finland's area.

Wilderness areas were established to protect the wilderness character of the areas, to safeguard Sámi culture and traditional subsistence uses and to develop the potential for diversified sustainable use of nature.

Photo: Kari Lahti

The Wilderness Act prohibits heavy development that would change nature significantly, yet it aims at improving possibilities for traditional uses of nature. Wilderness legislation explicitly prohibits: mining; building permanent roads; and giving or renting land for purposes other than reindeer herding, fishing, hunting or picking berries and mushrooms. In addition to the Wilderness Act, numerous other laws and statutes relating to hunting, fishing, reindeer herding, off-road traffic etc. regulate the management and use of wilderness areas.

The major challenge to Finnish wildernesses is to find a balance between conservation and the intensity and the sustainability of use and other human impact.

To categorize the Finnish wilderness areas is not easy but with flexible interpretation of IUCN management categories they would – however – fit in to Wilderness category Ib. Tight interpretation places them in Management Resource Protected Area, category VI. The debate, whether for instance infrastructure for visitors or permission for subsistence and restricted use of natural resources should be interpreted as intervention by managers, is relevant. In this light in the Finnish wilderness areas the low impact human interaction, as a fundamental part of the rationale of the establishment of the areas, may or may not be considered as intervention. At least the governing body, Metsähallitus NHS, currently does not carry out active intervention measures but rather applies non-intervention management in practice in the wilderness areas.

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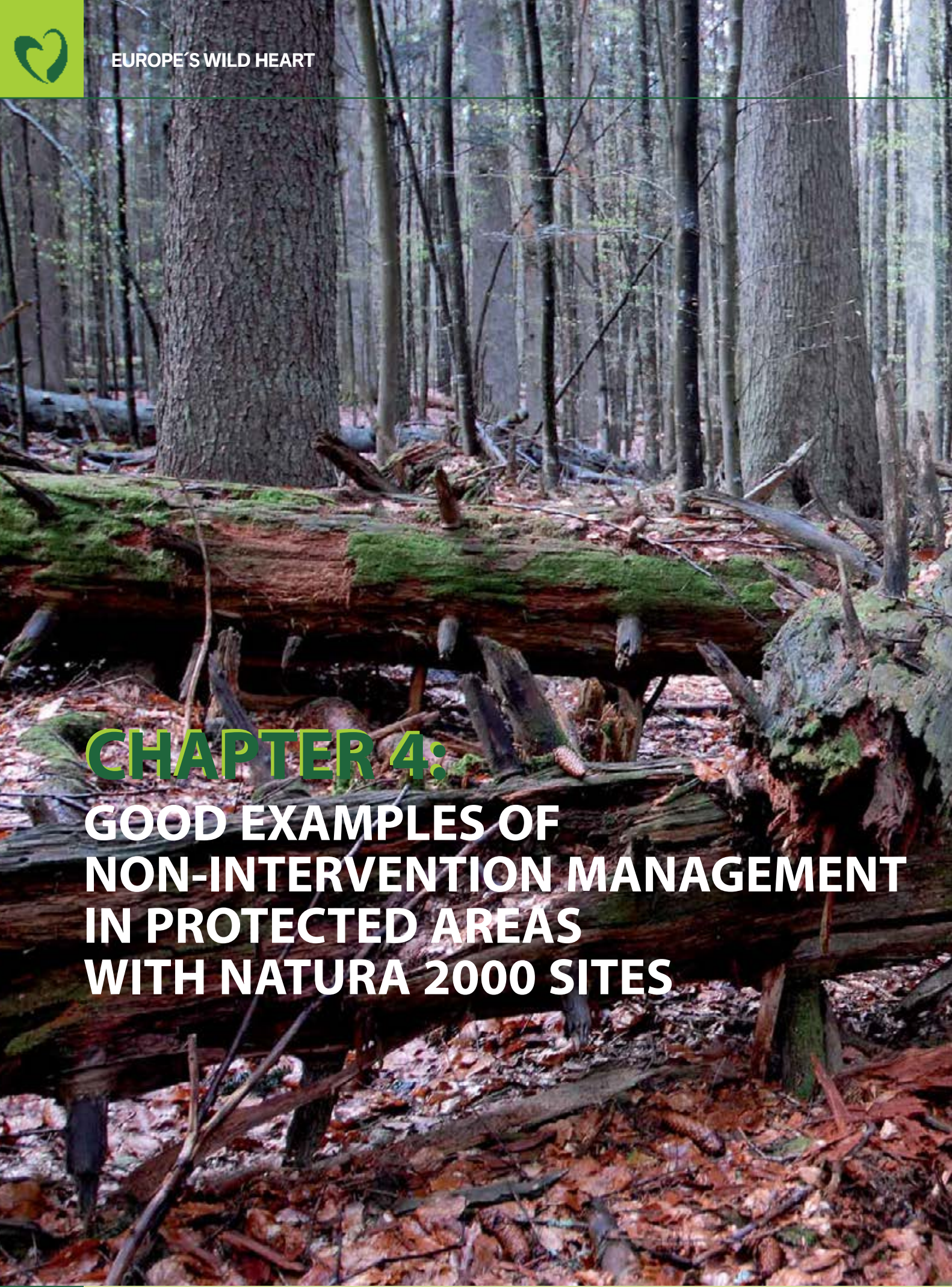

CHAPTER 4:
GOOD EXAMPLES OF NON-INTERVENTION MANAGEMENT IN PROTECTED AREAS WITH NATURA 2000 SITES

Photo: Hans Kiener

Karl Heinz Englmaier

Natura 2000-Management

in the Bavarian Forest National Park

The Bavarian Forest National Park is situated in a middle mountain area on the Czech-German border, opposite to the Czech Šumava National Park. Germany's first national park, founded in 1970, comprises 24.000 ha of almost entirely woodland and represents a national park category II according to IUCN-regulations with a large non-intervention zone. The main focus of nature protection lays on the protection of natural processes. Such natural processes are for example wind throws and resulting from them, bark beetle outbreaks in old stand spruce forests. To protect adjacent private forests from the effects of these natural processes, a management zone has been set up along the park-border, especially to control bark beetle expansion.

The Bavarian Forest National park is a Natura 2000-protected area. It has a double status, as it is protected area according to the Habitat's Directive as well as to the Bird's Directive.

Within the framework of Natura 2000 the Bavarian Forest National Park shelters 21 habitats of annex I and 11 animal and plant species of annex II of the Habitat's Directive and 13 bird species of annex I Bird's Directive. In this article we only give a rough overview of the largest and priority habitat types in order to understand the interactions between the Natura 2000-protection approach and non-intervention regime.

The largest Natura 2000-habitat type of the Bavarian Forest National Park is 9110 Luzulo-Fagetum beech forest. It is the beech-association typical for nutrient-poor, acidic soils, here in middle-mountain conditions taking the shape of mixed mountain forests, originally being composed of beech, silver fir and spruce in similar percentages. From all important habitat types in the national park this is the one that had experienced the most far reaching changes in its feature by man in the past, especially by forestry. Today

Assessment of the conservation status of Natura 2000-habitat types in the Bavarian Forest National Park

Habitat-types	Size		Assessment			
	area ha	percentage	structure	species	endangerment	total
Luzulo-Fagetum beech forests	10 045	41,5	A-B	B	B	B
Asperulo-Fagetum beech forests	1 232	5,1	B	B	C	B
Medio-European subalpine beech woods with Acer	6	<0,1	A-B	A	B	A
Tilio-Acerion forests of slopes, screes and ravines	10	<0,1	A-B	B	B	A-B
Bog woodland	1 273	5,3	A	A-B	A-C	A-C
Alluvial forests with Alnus glutinosa and Fraxinus excelsior	16	<0,1	B	B	B-C	B
Acidophilous Picea forests of montane to alpine levels	4 138	17,1	A-B	A	B	B
Acidophilous Luzulo-Abietetum forests of valleys	1 704	7	A	B-C	A-C	A-C
Bushes with Pinus mugo	2	<0,1	A	A	A	A
Natural dystrophic lakes and ponds	5		A	A-C	A	A-B
Water courses of plain to montane levels (Ranunculion fluitantis)	60	0,2	A-C	B-C	A-C	B-C
European dry heaths	5	<0,1	A-C	A-C	A-C	B-C
Species-rich Nardus grasslands, on siliceous substrates in mountain areas	36	0,1	A-C	A-C	B-C	A-C
Molinia meadows	13	<0,1	B-C	A-C	B-C	B-C
Hydrophilous tall herb fringe communities	4	<0,1	A-C	C	B-C	B-C
Mountain hay meadows	25	0,1	A-C	A-C	A-C	A-C
Active raised bogs	6	<0,1	A-B	A-B	A-C	A(-C)
Degraded raised bogs still capable of natural regeneration	1	<0,1	B-C	B-C	C	C
Transition mires and quaking bogs	44	0,2	A-B	A-B	A	A
Alkaline fens	1	<0,1	A	A	A	A
Siliceous scree of montane to snow levels	6	<0,1	A	A	A	A
Siliceous rocky slopes with chasmophitic vegetation	3	<0,1	A-B	A-C	A-B	A-B

Photo: Karl-Heinz Englmaier

Photo: Karl-Heinz Englmaier

Photo: Ernst Lohberger

spruce is the dominating tree species in this habitat type, but bark beetle attack in conjunction with non-intervention diminishes spruce shares in favour of beech again. The herb layer is everything but exciting, but the richness in biodiversity is hidden in its dead-wood with its enormous numbers of wood-dwelling insects and fungi. Today there are about 10.000 ha of these beech forests left in good conservation status. Second in importance is the habitat type 9410 acidophilous spruce forests occurring in elevations above 1.150 m asl. with an extension of 4.300 ha and 1.700 ha on wet, mineral soils in the valleys . Along with the beech forests, acidophilous spruce forests define the feature of this landscape and national park. As already mentioned, bark beetle events in non-intervention zones essentially changed the familiar image of this habitat type in the course of the past two decades. Today almost all old stand spruce forests in nature zones have succumbed bark beetle events. Consequently, the re-generation stage is more or less the only developmental stage of this spruce forest, which exists at the moment. Closely related to these acidophilous spruce forests is the priority habitat type bog woodland, here splitting up in 1170 ha of spruce bog woodland, mostly prevalent in valleys on peaty substrate, and in 100 ha of Pinus mugo bog woodland on forested transition mires and raised bogs. Furthermore there are half a dozen rather small spaced prior-ity habitat types, mostly in good to favourable conservation status: 4070 *bushes with Pinus mugo, 9180 *forests of slopes, screes and ravines, 91E0 *alluvial forests with Alnus glutinosa and Fraxinus excelsior, 7110 *active raised bogs and *Nardus grasslands on siliceous substrates in mountain areas. The last mentioned habitat type is of secondary origin, created by age-long agricultural grazing activities, whereas all the rest are natural habitats.

In Bavaria - similar to other German states - an assessment system for forest habitats is in effect based on three criteria:

- completeness / quality of habitat-typical structures
- completeness of characteristic species-assemblages
- negative human impacts

The quality-stage of the conservation-status resulting from this evaluation is expressed in a three-membered scale: A for "favourable", B for "good" and C for "unfavourable".

The completeness / quality of habitat-typical structures is determined by the subsequent parameters:

Ecological evaluation of structures in forest-habitats in Bavaria / example

Structure	Quality	weighting
Tree species	A favourable	35%
Deadwood	C good to inadequate	20%
Biotop-trees	B good	20%
Development-stages	C good to inadequate	15%
Vertical tree strata	C good to inadequate	10%

In general this assessment system works quite well for most situations found in the Bavarian Forest National Park. In the precise case of large spaced old stand spruce forests killed by bark beetle however an assessment according to the above scale leaves room for discussion. In this habitat type the set of developmental stages at the moment is only represented by the regeneration stage, and in the vertical tree strata therefore there is only one stratum. This is qualified as inadequate, although caused by a natural event. But can natural processes, which are inherent to the ecosystem create an inadequate status of conservation?

The traditional park management emphasising the non-intervention principle as main guideline is based on the National Park Ordinance. The Natura 2000-Management Plan now proposes some new approaches to park management problems. Altogether we can see both, convergencies as well as divergencies of Natura 2000-Management Plan and National Park Ordinance.

Converging positions of Natura 2000-Management Plan and National Park Ordinance:

Most natural processes perfectly meet the demands of guaranteeing or developing a favourable conservation status for primary habitat Natura 2000-objects! As for example natural regeneration in mixed mountain forest usually preserves, sometimes even improves the con-servation status of this habitat type. Non-intervention management also increases the natural stock of dead wood and biotope trees and thereby promotes biodiversity of insects, birds and xylobiotic fungi in the system.

Some Natura 2000-objects have seriously been affected by man in the past. Examples are draining systems in bogs, channelising of moun-tain brooks or reduction - in the worst case even eradication - of wild animals. Their conservation status today is inadequate. Natura 2000-Management Plan and National Park Ordinance fully agree that restoration measures - and in some cases reintroduction of extinct autochthonous species - is required.

Diverging positions of Natura 2000-Management Plan and National Park Ordinance:

In some cases natural processes do not meet the demands of guaran-teeing or developing a favourable conservation status for Natura 2000-objects. An example is the decline and loss of important ad-mixed tree species due to heavy browsing by hoofed animals. Their huge population size results from unnatural feeding during winter time, insufficient population control and the lack of predators. Here the Natura 2000-Management Plan demands more intervention measures than the traditional park management is ready to put forth. The same applies for the fighting of neophytes or the preservation of the traditional vegetation type of small spaced old cultural landscapes in the centre of the park by grazing.

Conclusions

Concerning conservation assessment and deduced management measures the Natura 2000-Management Plan for the Bavarian Forest National Park comes to the following conclusions:

- Conservation status of most Natura 2000-objects, which are primary forest habitats, under non-intervention regime is good to favourable.
- No measures required on 75 % of the area.
- Some opposed points of view concerning management under the Natura 2000-Management Plan on the one hand and national park management based on non-intervention regime on the other hand remain incompatible.

Karl-Hainz Englmaier
Department for Nature Conservation
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Assessment of the preservation status of Annex II-species of Habitats Directive in the Bavarian Forest National Park

Species of Annex II of Habitats Directive	Assessment			
	Population	habitat	Endanger-ment	Total
Lynx lynx - Lynx	B	A	B	B
Barbastella barbastellus - Barbastelle	?-C	B	A	?
Myotis bechsteinii - Bechstein's bat	C	C	B	C
Myotis myotis - Greater mouse-eared bat	B	C	B	B
Carabus menetriesi pacholei	B	B	B	B
Buxbaumia viridis	-	A	A	-
Dicranum viride	B	B	A	B
Drepanocladus vernicosus	-	A	A	-
Lutra lutra - Otter	A	B	B	B
Cottus gobio - Bullhead	B	A-C	A-C	B
Leucorrhinia pectoralis	C	C	B	C

Assessment of the preservation status of Annex I-species of Birds Directive in the Bavarian Forest National Park

Species of Annex II of Habitats Directive	Assessment			
	Population	habitat	Endanger-ment	Total
Ciconia nigra - Black Stork	C	A	C	C
Tetrao urogallus - Capercailie	C	B	C	C
Bonasa bonasia - Hazel Grouse	C	B	B	B
Tetrao tetrix - Black Grouse	-	-	-	-
Glaucidium passerinum - Pygmy Owl	B	B	B	B
Aegolius funereus - Tengmalm's Owl	B	B	A	B
Strix uralensis - Ural Owl	C	C	B	C
Picus canus - Grey-headed Woodpecker	C	C	B	C
Dryocopus martius - Black Woodpecker	B	A	A	B
Dendrocopos leucotos - White-backed Woodpecker	C	C	AC	
Picoides tridactylus - Three-toed Woodpecker	B	B	B	B
Ficedula parva - Red-breasted Flycatcher	C	B	A	B
Falco peregrinus - Peregrine Falcon	B	B	B	B

Iva Bufková

Restoration as Pre-Non-intervention Phase

of Mire Management

Photo: Iva Bufková

Mires, and especially ombrotrophic peat bogs, have been traditionally protected in the Šumava Mts. as Nature Reserves or recently as the first zones of the Šumava National Park. Non-intervention management strongly limiting almost all human activities by legislation was preferred in such protected areas. However, the conservation approach is changing at present due to the large proportion of mires found to be influenced by various human impacts. Current inventory revealed, for example, that almost 70% of the mires have been influenced by surface drainage in the past and exhibit the scale of degradation changes. They include mostly sinking and higher fluctuation of the water table and increased peat decomposition which are followed by vegetation changes like the expansion of graminoids, shrubs and trees, which have a higher drought toleration level. So, interventions into hydrology generally represent crucial problem of mire conservation in this area.

As a consequence, a more active approach in mire conservation has been adopted in the Šumava National Park at present. Non-intervention management remains to be optimal for the majority of primary (naturally developed) mires in any case. But on sites with disturbed abiotic conditions (hydrology, etc.), non-intervention management often prevents degradation processes and gradual loss of valuable habitats. A short, limited phase aimed at the re-establishment of natural conditions and processes seems to be very important and useful for such sites. Restoration measures implemented within this pre-non-intervention phase have to be temporarily restricted and after that, habitats can be left to spontaneous development.

Photos: Iva Bufková

In accordance with this approach, the long-term programme „Peat land Restoration in the Šumava Mts. " has been implemented in the area since 1999. It is primarily focused on restoration of disturbed mire hydrology. However, restoration of industrially cut peat bog, removal or rebuilding of improper roads and even restoration of small regulated streams are also involved.

Main goals and priorities of the restoration programme:

- Rescue of degraded mires and maintenance of mire diversity in the area
- Restoration of disturbed hydrology and enhancement of water retention in the landscape
- Involvement of local communities and stakeholders in mire conservation

In 2003, a „Restoration Committee" working within the Administration of the Šumava National Park was established. The conception of the Restoration Programme was elaborated including priority statement, restoration methods and monitoring scheme. Experience from restoration of other European mires was analysed and used.

The main restoration technique used is the blocking of surface drainage ditches by the setting of dams. The aim is to rise and stabilise the groundwater table on the site and slow down the surface outflow artificially accelerated due to drainage. This restoration method is based on a target water tables corresponding to water table in undisturbed mires of a distinct type. The target water table determines the number and distribution of dams along the ditch. It can be expressed as minimum water level in front (downstream) of the dam. Detailed vegetation maps determining mire type and surface gradient (sloping) are therefore necessary to judge the spacing of dams along the ditch segments.

Two basic types of board dams are generally used in the area. Solid wooden plank dams hammered vertically into the bottom of the ditch are best for damming large ditches on sites of ombrotrophic bogs with a sufficient peat layer. Dams built from two layers of rough boards installed horizontally into the ditch and sealed up by geotextiles are commonly used in other mire habitats. Due to the high vulnerability of restored habitats, all works including the transport of materials are done manually without heavy machines. Damming represents the first very important step of restoration. However, it has to be followed by measures enhancing tterritorialisation of new developed water bodies between dams. They include insertion of various natural materials like peat, woody branches, stems or bunches of *Sphagnum* into the ditch segments.

All mires under restoration are viewed in relation to the surrounding landscape. That means, not only separated mire sites but whole hydrological units including distinct small sub catchments were restored. Headwaters as well as upstream catchments are given priority.

The location of restoration projects implemented in the area of the Šumava National Park until 2008 is shown in figure 1. The total area restored comprises almost 500 ha and includes more than 30 km of blocked drainage ditches at present.

In relation to the restoration programme, selected drained and intact mires are monitored with the aim: i) to characterise degradation changes induced by disturbed water regime, and ii) to evaluate the success of restoration. Water table fluctuation, hydrochemistry of groundwater, peat soil chemistry, surface water outflow, amount of precipitation and vegetation on permanent plots (98) have been monitored since 2004.

Results of a three-years pre-restoration monitoring showed clear differences between drained and intact sites. On drained mires, the water table was maintained in a lower position and showed high fluctuation and a sensitiveness to the amount of precipitation as compared with undisturbed control sites. The expansion of *Molinia caerulea* and trees (mostly *Picea abies*) towards bog expanse were recorded on drained sites as well as dwarf shrub vegetation prevailing at the expense of *Trichophorum caespitosum* lawns and hollows with *Sphagnum*-sedge vegetation.

In 2008, two sites monitored in detail were restored. First preliminary results of post-restoration monitoring showed increasing and stabilization of groundwater table in a position which is near to natural conditions even in larger distances from blocked ditches.

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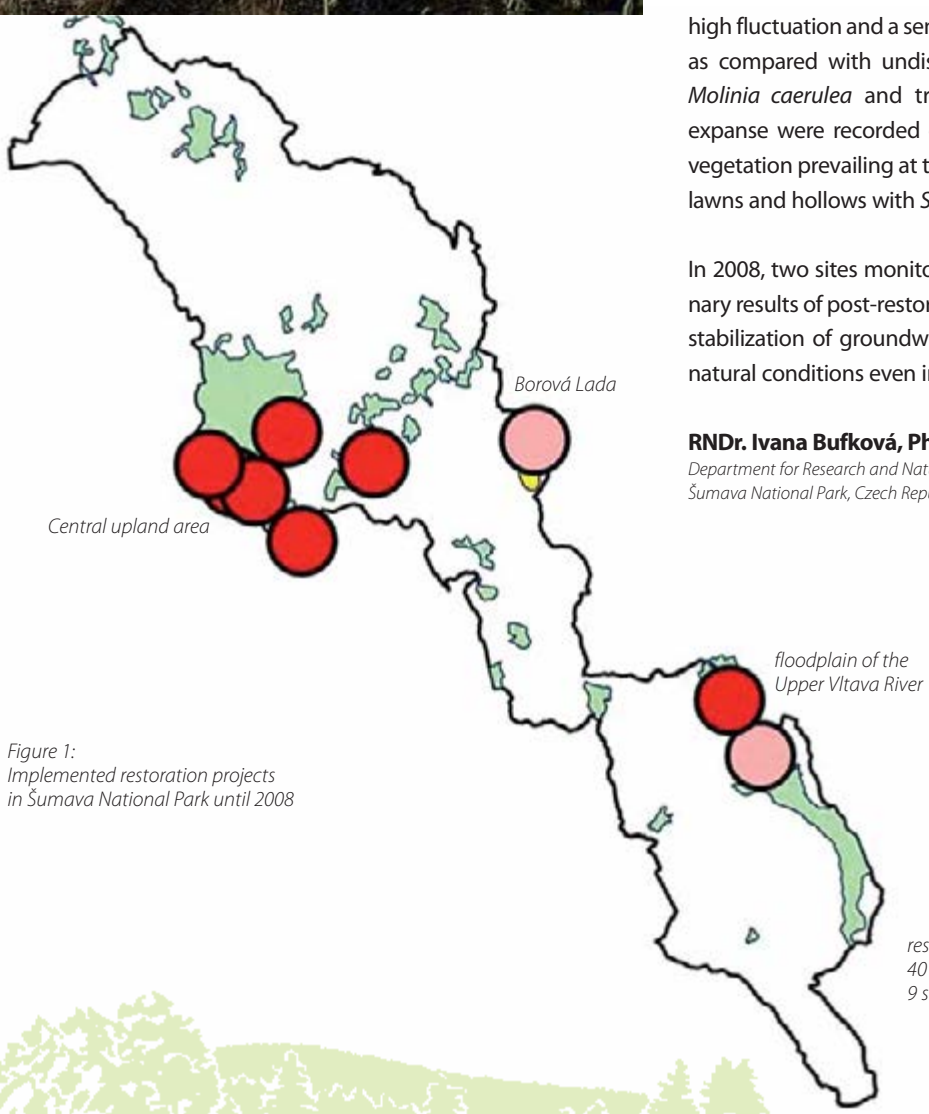


Figure 1:
Implemented restoration projects in Šumava National Park until 2008

Martin Šolar

Management objectives

of Triglav National Park in the Light of Achieving Non–intervention Management

Protected areas play a crucial role in the preservation of nature, biodiversity and cultural landscape. As regards the management of national parks, many different approaches can be observed (adopted). What are the proper management objectives for the protected areas? Is there any common denominator for the overall goals being pursued?

In the Triglav National Park (TNP) we have decided for a strategy of implementation and enforcement of IUCN protected area management categories. The concept provides a step-by-step implementation and allocation of TNP areas to IUCN Category II and Category V, each of them with a different set of objectives..

According to the law of 1981, the definitions of the core and buffer zones differ considerably from proper and modern management objectives pursued by the national parks. The following listed activities - hunting, commercial use and felling of forests, intensification of agriculture, unregulated grazing, fishing, energy utilization, exploitation of mineral components, permanent settlements in the core zone, possibility of new buildings in the core zone, traffic load, air transport, all forms of visitation including mass events - are permitted or not explicitly prohibited, which is diametrically opposed to the provisions of IUCN Category II. Statements and demands as to what needs to be preserved in the core zone are without merit if the subject matter is not properly defined nor reflected in the wording of the articles. What is the use of a core zone as a line on a map if the wording of the act fails to meet the objectives of international environment standards. It goes without saying that TNP Authority would be more than happy to have a large core zone with subject matter appropriate to Category II if this was at all feasible.

From 1992 to 1993 we carried out a detailed analysis and devised the already mentioned strategy of implementation of IUCN management categories objectives. The main management objectives in the core (non – intervention) zone independent of its size include:

- nature protection
- ecosystem and biodiversity protection
- natural processes
- temporary limited extensive and traditional pasturing at strict allocated alpine pasture areas
- environmentally friendly recreation

On the basis of the data compiled in 1992, the TNP Authority has prepared a document titled "Triglav National Park – Conservation Concept 2000". The document contains the strategy of implementation and enforcement of IUCN protected area management categories. The Concept provides for a step-by-step implementation and allocation of TNP areas to Category II. We have planned and achieved the following:

- 1994 – 16,700 ha of land set aside (first true IUCN Category II area) – implemented in 1994,
- by 2000, another 25,000 ha of land was to be set aside as Category II area – implemented in 1998,
- 2000 - 2008, through negotiations with other sectors and all stakeholders Category II area (a non intervention zone) was enlarged within the possibilities and arrangements with the land owners or users concerned – provided a new system of zonation is included in the new TNP Act, the »pure« Category II area measures 33,000 ha.

The Conservation Concept prepared almost 15 years ago was approved by the IUCN Commission. The results and practical experience show that the concept is feasible and will work in practice. If we are to continue the implementation of the Concept, a new national park act is required. Without it, gradual implementation of internationally accepted management categories for protected areas cannot continue.

Photos: Martin Šolar

New zoning without proper content of the "non-intervention principle" is useless. Parallel to designing new zones, the protection regime and measures were created. And what have we achieved? In the field of areas of non-conformity I have mentioned in the beginning of this paper, the progress is clear. Although smaller in size, the new core zone fully complies with the objectives and guidelines of the IUCN Category II protected area.

- In the core zone hunting is forbidden.
- In the core zone there is no forestry – tree felling is prohibited except when and to the amount required for maintenance of the existing forest road network.
- There is no intensive agriculture and unregulated grazing, the only exception being occasional extensive use. Pasturing is only allowed on the pastures allocated to this purpose in the Management Plan.
- Fishing is forbidden.
- There is no energy use, except for a few self-suppliers (e.g. mountain huts or a single farm outside the settlements)
- No sand removal in the core zone, except if urgently required to solve the problem of erosion spots.
- In the core zone there are no permanent settlements and no new constructions, rare exceptions limited to pastures and constructions intended for environmental recovery near mountain cabins.
- For the first time, the Act provides for traffic restrictions and road closures regardless of the managing body.
- Air transport above the core zone of the TNP is explicitly prohibited (not merely on account of noise).
- Visitation, recreation and events are limited, and further limitation options are given through the instruments of the management plan.
- In certain aspects, mountaineering is also limited – construction of new mountain huts and trails is prohibited.

The main support of the described approach has been given by Slovene Ministry of the Environment and Spatial Planning, Slovene Nature Conservation Act (1999), IUCN WCPA, UNESCO – MAB programme, Council of Europe, the EU and Natura 2000 instruments, staff and different stakeholders. The described management approach has been recognized and awarded with:

- Designation of the Biosphere reserve Julian Alps in 2003
- European Diploma awarded in 2004

It is evident that new zonation and the appropriate wording of the new concept represent a decisive step forward in the implementation of IUCN Category II. What we have achieved may be the result of what is actually possible in the given situation, but we would nevertheless like to have a larger core zone of the subject matter described above. The main positive result of management of the Triglav NP is well preserved nature and cultural landscape in this part of Slovenia.

Mag. Martin Šolar
Deputy Director
Triglav Natinal Park, Slovenia

Erich Mayrhofer

Wilderness and Biodiversity

– Dynamic Processes in a Site of Learning

Photo: Erich Mayrhofer

5,000 years ago the "Ennswald" forest was sparsely settled. Until AD 1200 an impenetrable wilderness prevailed in the Hintergebirge and Sengsengebirge ranges between the River Enns and the River Steyr. Over a period of 800 years the mountainous region between 385 and 1,964 metres was marked by mining, iron processing, hunting, forestry and alpine-meadow farming. The remains of primeval forest, uncultivated fluvial topography, forested gorges and a high diversity of species characterise the Kalkalpen National Park today in the southeast of Upper Austria.

Since the founding of the National Park in 1997, natural processes have been permitted in broad areas of forest and wilderness is the clearly recognisable principle target. Untouched in an atmosphere of calm, trees can reach an age of over 400 years in Austria's largest National Park forest. Metre-deep snow and storms splinter them, mouldering branches and trunks foster young tree seedlings, woodpeckers and owls to new life. Wilderness shows nature as it really is.

In the heart of the 209 km² National Park, 75 % of the area (156 km²) is reserved for natural processes and thus for the wilderness.

Wilderness creates diversity and has a positive effect on the quality of life and well-being of humanity. The Kalkalpen National Park provides considerable contributions for the:

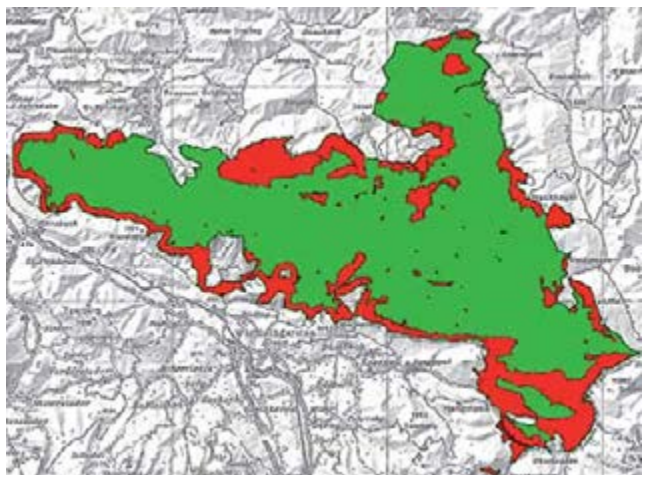
- maintenance and restoration of the biological diversity for coming generations,
- protection of species and their habitats,
- lasting development of the National Park region and
- humanity's respectful handling of nature.

The basis and area-specific influence of the geological and ecological factors are recorded and documented in respect of their ecological effect. All information of the area is integrated into the overall picture of the natural development and spatial processes, and is processed for information and educational purposes.

Wilderness is the normal and natural state in 75 % of the area of the Kalkalpen National Park. Apparent "catastrophes", such as windfall, flooding, damage caused by game or bark beetle infestation are elements of the natural dynamics.

Wilderness requires non-intervention management, which is hardly compatible with the human urge for action. A new educational culture comprising attentive unobtrusiveness and a school of perception of careful listening and smelling is developed through wilderness. Perception teaches us not to disturb, not to damage and not to intervene. Wilderness tolerance must be trained. Moreover, the protection of pure wilderness dynamics requires research with observation and description made at a distance. Thus, **wilderness is a site of learning for the respectful handling of nature.**

Together with 15 adjacent reserves, such as the Haller Mauern Nature Reserve, Eisenwurzen Nature Park, Gesäuse National Park and the Dürrenstein Wilderness Area, the Kalkalpen National Park offers, on



75% Wilderness 25% Management

more than 2000 km², the spacious **"freedom for wild animals"**, such as deer, roe, chamois, lynx and the eagle in the heart of Europe. **Become an eyewitness yourself of the return of wilderness!**

Characteristic features of the National Park:

Opened: 25th of July 1997
Size: 20,850 ha
Zone: 89 % natural, 11 % managed
Ownership: 88 % state, 11 % private, 1 % local community
International recognition: IUCN category II, Ramsar site and Natura 2000
Elevation: 385 to 1,963 m (Hohe Nock)
Main rocks: limestone, dolomite.

The Kalkalpen National Park is part of one of the most unspoilt wooded areas in Austria. So far it has not been affected and destroyed by public transportation routes or settlements.

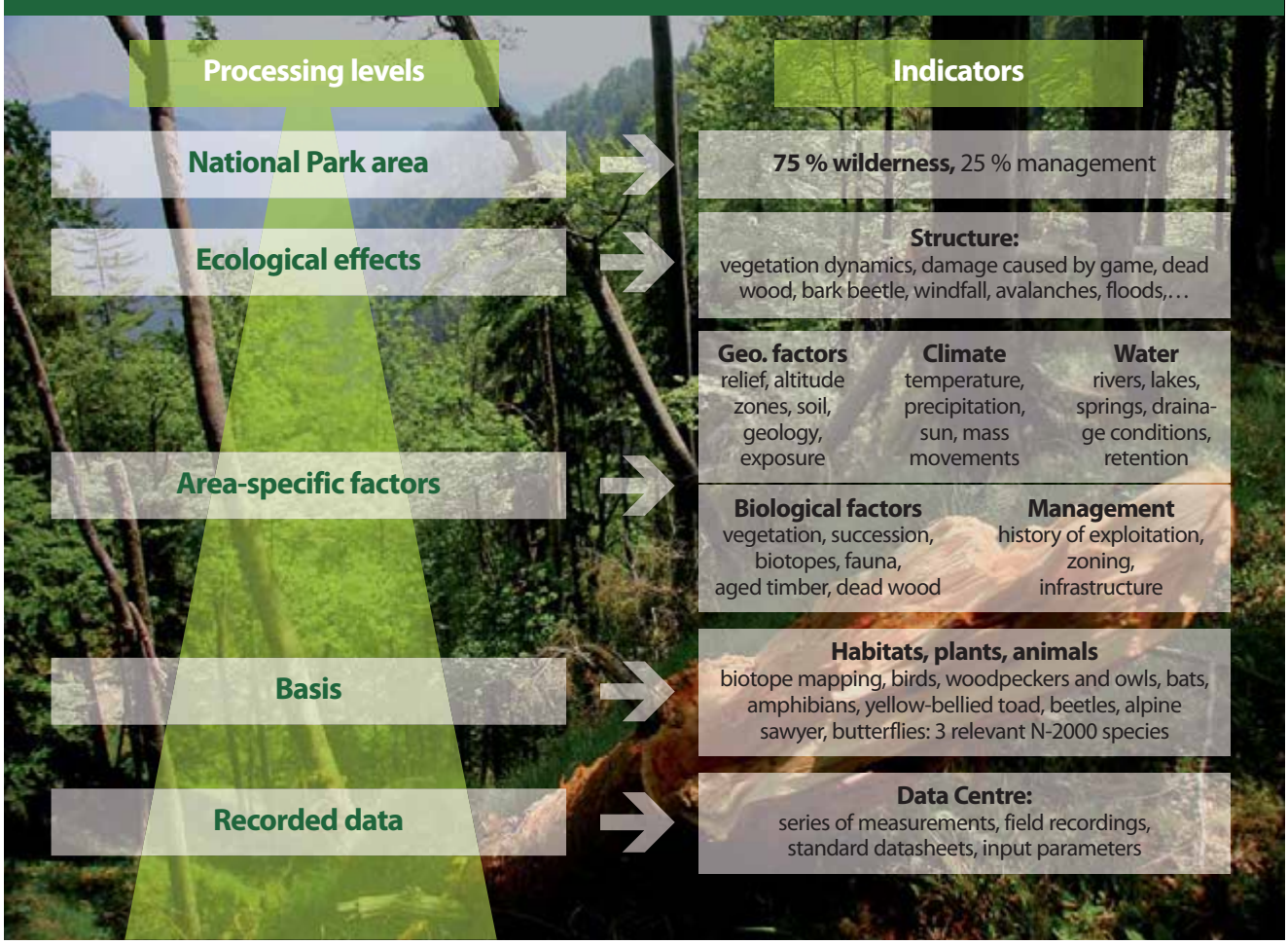
You will become an eyewitness by observing the intact and unbroken system of streams containing water of high quality.

4/5 of the National Park's total area is made up by forest. There are 30 different forest types – fir, spruce and beech trees dominate the landscape. The great diversity of different natural habitats in Kalkalpen National Park is home to species of animals and plants that are rare or extinct elsewhere. You can find 30 different species of mammals (lynx, brown bear), 80 species of breeding birds, 1,600 different species of butterflies, 1,000 flowering plant, moss and fern species.

The conservation, protection and preservation of nature are a higher priority than any other aims of the National Park. The realization of this aim demands continuous observational processes of areas of unspoilt nature. Investigation and analysis are considered to be a permanent part of the National Park's management. It helps them to base their future decisions and therefore their success on it. Our management takes it for granted to pass on any relevant information to the visitors of the National Park.

Dr. Erich Mayrhofer
Director of Kalkalpen National Park
Austria

Area information of the Kalkalpen National Park



Frans Vera

The Oostvaardersplassen

– Wilderness 4 Meters below Sea Level

The Oostvaardersplassen is a nature reserve of 6,000 ha in the polder South Flevoland, that was reclaimed in 1968. It consists of a wet, marshy part of 3.600 ha and a dry part of 2.400 ha. The marshy part consists of shallow open waters, extensive areas of Reed (*Phragmitis australis*) with Common Bulrush (*Typha latifolia*), Marsh Fleawort (*Tephroseris palustris*) and scattered groups of White Willow (*Salix alba*). The area is famous for its breeding birds. Spoonbill (*Platalea leucorodia*), Great Bittern (*Botaurus stellarus*), Marsh Harrier (*Circus aeruginosus*) and Bearded Tit (Panuris biarmicus) breed there, as well as Greylag Goose (*Anser anser*), Great White Egret (*Casmerodius alba*) and White-tailed Eagle (*Haliaeëtus albicilla*). All three latter species disappeared in past centuries in the Netherlands as breeding species, and returned to the Oostvaardersplassen.

About 30.000 non-breeding Greylag Geese (*Anser anser*) moult their primaries there during May and June. They cannot fly then for 4 to 6 weeks. During that period they graze vast monotonous reed beds and change them into a mosaic of open water and vegetation, which facilitates many bird species. The geese proved to be instrumental to the succession of the vegetation. They do so in interaction with water table that fluctuates during wet and dry years. In dry years parts of the marsh become drained. Then the geese seek out to other areas to moult, and the vegetation regains the area that it lost because of the grazing.

Adjacent to the marsh is a dry part, where wild cattle, wild horses and Red Deer (*Cervus elaphus*) create grasslands that offer the Greylag Geese the possibility to congregate before and after they moult in the marsh. Without these grasslands moulting Greylag Geese would disappear permanently and plant and animals species that depend on their grazing in the marsh will disappear in their wake.

The wild cattle (Heckcattle) and horses (Koniks) act as proxies of their wild ancestors Aurochs (*Bos primigenius*) and Tarpan (*Equus przewalski gmelini*), that became extinct respectively in 1627 and 1887. Their numbers are regulated naturally, that is by the amount of food that the nature reserve offers them. A part of the animals dies off during winter. From a point of animal welfare they are shot a few weeks before they are going to succumb. The regulation by the amount of food results in the surviving animals not to graze the reserve equally intensively in the following growing season. Parts are intensively grazed, where Greylag Geese, Barnacle geese, and breeding meadow bird species like Lapwing (*Vanellus vanellus*) are facilitated. In parts that are not or hardly grazed during the growing season grasses and herbs grow tall and flower. This benefits insects, mice and mouse, that offer food to birds species, such as the Red-backed Shrike (*Lanius collurio*), Great White Egret (*Casmerodius alba*), Hobby *(Falco subbuteo*) Hen Harrier (*Circus cyaneus*) and Buzzard (Buteo buteo). These parts are visited during the winter, when the growth of the plants has stopped and the animals spred to seek for food. This prevents the accumulation of dead plant material, which would prevent the germination of many plant species.

Photos: Frans Vera

Photo: Frans Vera

In Europe Aurochs (*Bos primigenius*), Tarpan (*Equus przewalski gmelini*), Red Deer (*Cervus elaphus*), Wild Boar (*Sus scrofa*), European Bison (*Bison bonasus*) and Elk (*Alces alces*) once roamed European wilderness and were instrumental to the succession of the vegetation. With different feeding strategies, they created in concert a park-like vegetation consisting of grasslands, scrubs, trees and groves, which offered a rich diversity of plant and animals species a favourable state of conservation. Specialised grass eaters like Aurochs and Tarpan and their proxies Heckcattle and Konikhorses will facilitate the establishment of thorny and spiny shrub species like Sloe (*Prunus spinosa*) and Hawthorn (*Crataegus monogyna*) in the grazed grassland. These shrubs act as naturally erected fences against the large herbivores, which enables palatable young trees to grow up successfully. In the Oostvaardersplassen, Oak, Ahs and Elm established themselves spontaneously in spiny Sloe scrub that was planted in some areas that were only later added to the reserve. They do with winter densities of 3 Red deer per ha. However some seedlings of Sloe and Hawthorn were recently discovered in the parts where all three large ungulates roam freely. On the other hand, Red deer will browse and debark trees when they have grown up. In this way the different species constitute a system of checks and balances, which prevents any single type of vegetation from becoming totally dominant.

Like the Oostvaardersplassen, modern analogues of the European wilderness can be brought alive again by restoring the condition for it, like the high trophic level of the large herbivores in the food web. They are key species in natural processes that enable species that disappeared because of cultivation to return, as well as species like geese and meadow birds that are nowadays supposed only to survive in semi-(un)natural habitats.

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Wageningen University Research
The Netherlands

Erik Baláž

Tichá Valley

– Wild Nature under Pressure in the Tatra National Park

Right now, only 1.8 % of the total area of the Slovak Republic is classified in the fifth (highest) degree of protection in which logging, hunting and commercial activities are prohibited. There is only a minimum of restrictions concerning forest management in the national parks, landscape protected areas, as well as in the NATURA 2000 areas.

The fifth degree of protection is scattered to several hundreds small nature reserves. Usually, the areas of particular nature reserves do not reach 500 hectares. Furthermore, every year more than 3,000 of exceptions from prohibited activities are accorded, including logging, hunting and pesticide usage. Therefore, no areas remain for a real wilderness in Slovakia.

Tichá and Kôprová valleys, which comprise an area of 8500 hectares, are the biggest non-intervention areas in Slovakia. This is where the remnants of pristine forests, many different habitat types and endangered species occur. Tichá and Kôprová are home to about 40 bears. There are no synanthropic food sources, so the bears live in a natural way. Hunting ban allowed a natural social population structure to develop in the valleys. It is the ideal place for comparisons of bears living naturally with bears living in environments disturbed by men.

In the past, this area was also strongly affected by man. Before the establishment of the Tatra National Park in 1949, the forests were intensively logged, and approximately 1800 livestock grazed in the alpine meadows as well as in the forests. Although Tichá and Kôprová valleys were declared as national nature reserves, local forest activities were done during decades after the national park establishment.

During the last 10 years, the Forest Protection Movement Wolf has tried to reach a real protection of both valleys. Non-intervention management in the whole area started in 2002. After a windstorm calamity in 2004 a pressure pressure to salvage logging in Tichá and Kôprová valley increased. Thanks to a support from a former administration of the national park, non-government organizations, scientists and other authorities there were no logging until April 2007. At that time, a new government and new administration of the national park agreed with salvage logging. Logging was stopped after few days thanks to direct action, adjudication of the Slovak Environmental Inspection, wide public support, and consecutive legal processes.

Ten years of experiences with the protection of Tichá and Kôprová valleys show us that we can not protect wild nature without wide public support and understanding of natural processes.

Photos: Erik Baláž

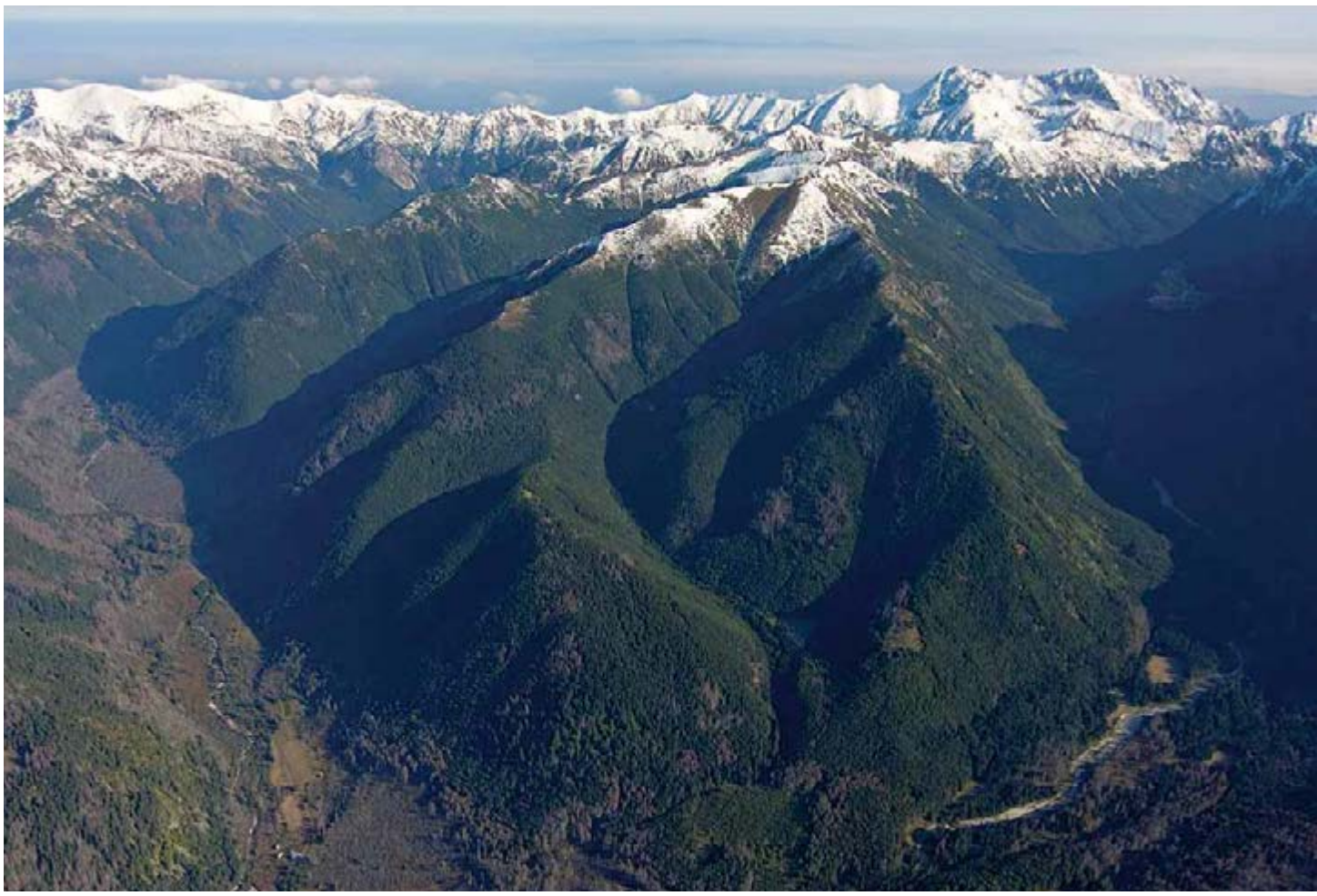

Photo: Erik Baláž

Therefore, we started to realize a film-photo project through which we want to show to Europeans that wilderness is not only a domain of Alaska, but it is still present in Central Europe, and it deserves our attention, respect and protection.

The outcomes of the project will include:

- a 50 minutes emotional documentary film (a short sequence was shown at the conference).
- a coffe-table book of fine print photographs

The second lesson from Tichá and Kôprová valleys is that the natural processes can recover wild nature very fast also to the places which were strongly affected by man in the past. It is mostly about public agreement in which we decide to leave nature for re-wilding. Nature itself will do all rest.

Ing. Erik Baláž
VLK, Association for the Protection of Forests
Slovakia

CHAPTER 5:

THE PROJECT BALLET AND WILDERNESS

Photo: Berny Meyer

Photo: Hans Kiener

Till Mayer

Ballet and Wilderness

The project *Ballet and Wilderness* started in Summer 2003 as cooperation between Bavarian Forest National Park administration and the Bavarian State Ballet. As I My idea behind bringing these unlikely partners was to expose dancers and choreographers to wild nature, so that wilderness might eventually become a topic of a ballet performance. Thus, I thought, the idea of wilderness could gain recognition among sections of society, which have so forth paid little to no attention to the nation' s wild lands. Also, to my mind, the artists of *national* Ballet of Bavaria were perfect agents to advertise the *National* Parks of Bavaria. As they mostly performed in the National Opera of Munich, this international renowned stage would be an appropriate showroom for the jewels of Bavaria's natural heritage.

Shortly after the state elections in October 2003 the Bavarian Forest National Park administration (which had been previously under the auspices of the Ministry of Forests and Agriculture) came under the management of the Bavarian Ministry of Environment and Health. First hesitatingly and then wholeheartedly, the ministry supported the project *Ballet and Wilderness*. With the support of the ministry, the project gained significant momentum. Notably, a traveling exhibition, a performance of "wilderness choreographies" in the Bavarian Forest National Park and a short movie highlighted the year 2004. The exhibition was shown in the Munich State Opera and in the lobby of the Opera of Prague.

Photos: Berny Meyer

Researching the background information for the exhibition-texts, interviewing the artists and talking to ministry personnel, the many aspects of the project emerged.

Wilderness, I learned to my surprise, was something, which the majority of the artists in the ballet could somehow relate to. Even though only a few of the dancers practiced outdoor sports such as canoeing or mountain climbing, most had a pretty good idea of the value of wilderness for conservation and for personal development.

While interviewing the artists about their ideas of wilderness, it dawned on me that some aspects of wilderness appreciation probably were universal, independent from nationality. As there are about 30 nations represented in the Bavarian State Ballet, I had the chance to interview dancers that came from Ireland, New Zealand, the Philippines, France, Netherlands, Germany, the Czech Republic, Slovenia and China. After being exposed to wilderness for a little more then 30 hours, all who I talked to expressed that they especially enjoyed the sharp contrast of wilderness to their daily lives. Some even acknowledged that wilderness to them had a liberating effect.

Most the interviews with the dancers (and the company's administrative staff) I conducted just after the group had experienced a day of hiking and after having spent a night at the Bavarian Forest Wilderness Camp. Many of the answers were pensive references to wilderness as a place one could experience freedom and at the same time learn lessons of humility and restraint. Some artists also stated that wilderness was a place where they were subjected to a feeling of closer kinship to plants, animals and even to rocks.

One aspect of wilderness, which came up in the interviews was new to me: wilderness as memory to childhood. Two examples: Lisa-Maree Cullum, First Soloist of the Bavarian State Ballet says: "I grew up in Papua New Guinea until I was nine. The old-growth forest of Bavaria reminded me of the jungle I got to know during my childhood. As kids we brought all kinds of interesting critters home with us. As often as I could, I ran around barefoot, also in the rainforest. Wilderness also reminds me of the liberties of my childhood. Ivan Liska, the Ballet company's Artistic Director (who was born in Prague and who got to know the Bohemian Forest during his early days) says: "Wilderness is a journey back to my childhood. In my youth I have seen, experienced and hiked a lot of wilderness. Then I was on stage for some thirty years. And now – the confrontation with wilderness is like déjà vu and a recharging of my batteries."

In 2005, the exhibition and the short movie about the project were shown at the 9th World Wilderness Congress in Anchorage, Alaska. One reaction in was particularly noteworthy: Fran Mainella, then director of the US National Park Service, pointed out to the audience the simple and evident fact that these photos (in the exhibition) depicted people in wilderness settings. This she took as being symbolic for the American idea of wilderness, which makes a point of *not* excluding people from wilderness areas.

It was during this congress that about 1200 delegates resolved to award the title "International Ambassador for Wilderness" to the Bavarian State Ballet. However, it also was during this congress that my idea of bringing dance and nature together somewhat lost its originality as I met a representative from the IUCN initiative "Dance for the Earth and for her People" (DEP). This initiative, I learned, "uses dance as a flagship of culture…to strengthen the links between conservation of nature and the preservation of culture". Evidently, this applies to the "ethnic" dances of Native Americans and Native Africans. But how does the classical, romantic ballet fit into this?

One of the answers to this question can be found in the ballet Giselle. This particular ballet was performed as part of *Ballet and Wilderness* on an open-air stage at the Berchtesgaden National Park in summer of 2007. Giselle is considered the epitome of all romantic ballets and stands out as a kind of beacon of the romantic era in Europe. This period lasted from the end of the 18th to the beginning of the 20th century and is often considered a reaction to the notion of the age of enlightenment that man has now become able to control everything in nature. Contrary to this, the ballet Giselle (just as many other ballets, poems and paintings of the romantic era) conjured up the intangible and the sublime aspects of nature. These popular conceptions of nature in the 19th century laid the foundation for the beginnings of the conservation movement in the early 20th century.

This connectedness between the arts of the romantic era and early conservation was mentioned frequently in the oratories of various politicians in the Bavarian Environmental Ministry. But it was not until the end of 2008 that Hans-Dieter Schuster, a spokesman of the ministry, acknowledged that *Ballet and Wilderness* had some effects in the administration itself. One was that in the course of the project, initiatives to save wilderness found their way more easily into Bavarian environmental policy and environmental legislation.

Indeed it seems that the imagery usually connected with ballet somehow takes the sting out of wilderness. Wilderness has hardly ever been a term that politicians felt comfortable with. *Ballet and Wilderness* clearly has changed this.

Till Meyer
Journalist
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FINAL CONCLUSIONS

Photo: Hans Kiener

Final Conclusions

from Srni Colloquium

At the Colloquium of researchers and managers of protected areas and Natura 2000 sites on 25-28th January in Srní/ Czech Republic 60 participants from 12 EU member states unanimously agreed on the following conclusions on "The appropriateness of non-intervention management for protected areas and Natura 2000 sites".

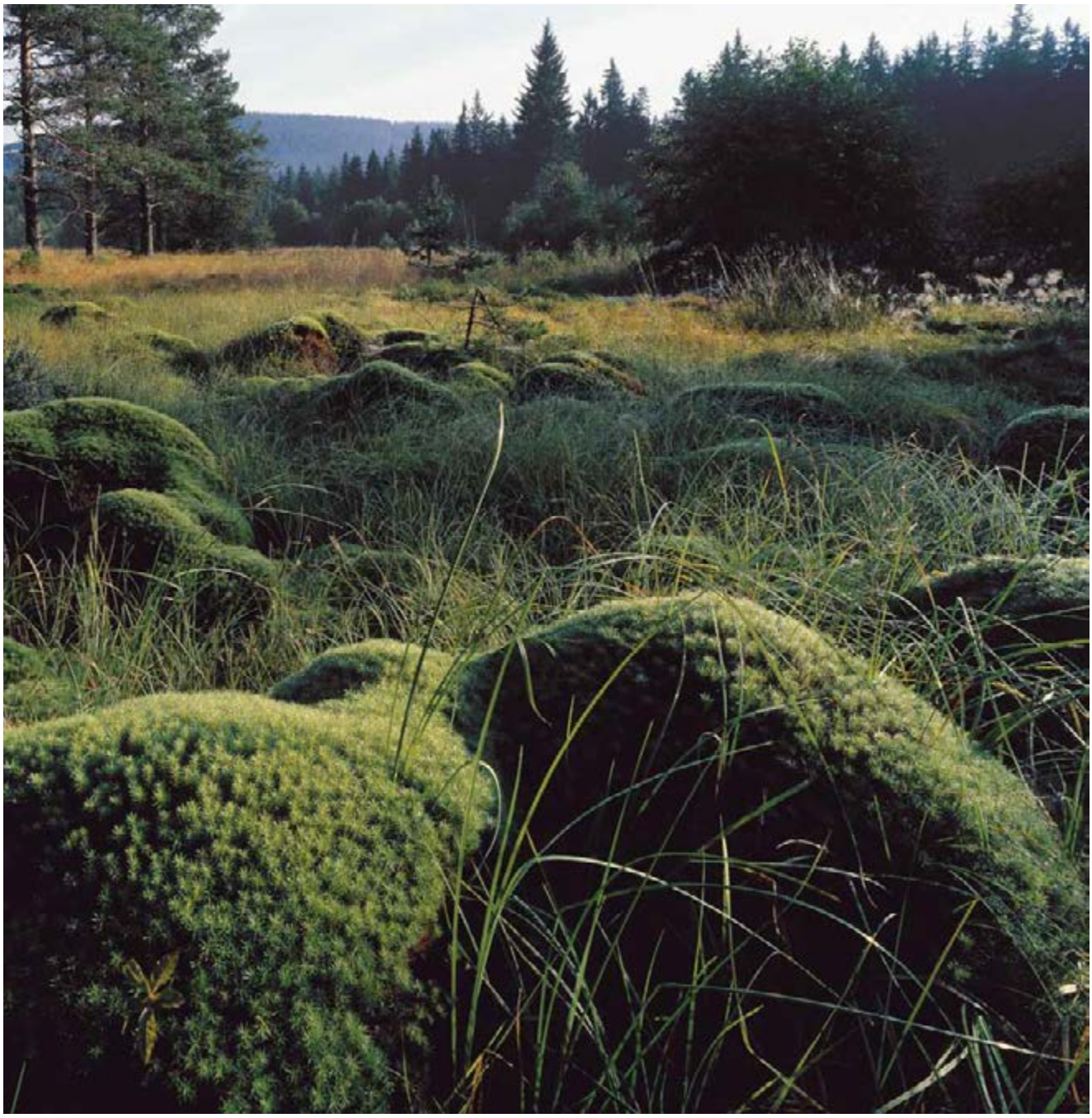

Photo: Martin Milfort

1.
We are not at the beginning of a process of wilderness initiative – we are already deep in the process. This idea, its new model and management objectives " de facto" take place in a nowadays nature conservation field of work in Europe.

2.
Some best praxis models show and prove that vision and challenge concerning wilderness have become a successful reality and there is potential as well as the wish to have more wilderness areas in Europe. We have to comply with arising social and political demands.

3.
There is no contradiction between Natura 2000, biodiversity conservation and non-intervention management, since Natura 2000 management and biodiversity conservation also include the protection of natural processes.

4.
There might be a dilemma between species conservation and wilderness concept at particular site. It is necessary to find a balance between both concepts and to integrate them. Such balance can be established only at a large geographical scale, such as within bio geographical regions.

5.
There is a need to have an expert task group to develop basic principles and criteria for the implementation of the wilderness concept in Europe.

6.
There is no need to create a new category of protected areas but there is a need to aim at

- clarifying the terms used in accordance with wilderness: non-intervention management, passive management, non-extractive use, let nature be nature,
- creating basic principles and criteria for new wilderness,
- finding an agreement on the main management objectives in the wilderness areas including allowed uses,
- setting a framework for further development of the European wilderness initiative,
- requesting EU member states to adapt national laws (e.g. Forest laws) and regulations competing with Natura 2000 demands and wilderness preservation requirements

7.
There are more benefits than limits and obstacles from wilderness - challenges for interpretation

Photos: Hans Kiener

Main benefits

a) Ecological values

- For millions of years, nature has developed independently from human influence, and even today it can exist without being managed. Dynamic processes including evolutionary processes are constantly at work in natural ecosystems.
- Protected areas and Natura 2000 sites sufficient in size with non-intervention management significantly improve habitat quality and living conditions of species depending on undisturbed dynamic processes (e. g. all primary forest habitats in Central Europe) and therefore provide a decisive contribution to saving biodiversity.
- Non-intervention (passive) management including natural disturbances (e. g. wind throw, mass increase of insects, avalanches, wild fires) can be quite successful in restoring natural forest dynamics and meeting biodiversity conservation objectives.
- In the frame of a zoning system or management-plan guidelines, active management accelerates the development of forest structural diversity and other old-growth conditions which sometimes are needed to rescue declining populations of species that depend on such structures.
- A network of smaller strict protected forest reserves without extractive use can help to safeguard the Natura 2000 protection goods outside large protected areas, e.g. national parks.
- Protected areas and Natura 2000 sites with a non-intervention approach provide excellent reference areas for natural habitats and the consequences of climate change. They represent open air laboratories for natural dynamics and new demanding challenges for scientists.
- Non-intervention management in protected areas and Natura 2000 sites reduces the export of nutrients out of the ecosystems. Research-programs in unmanaged forests in the Czech Republic and the Bavarian Forest show, that even after spacious die-off of old spruce stands after bark beetle infestation the essential base cations for plant nutrition, which are mostly agglomerated in dead wood on this poor acidic soils remain in the ecosystem. In contrast forestry measures including the removal of bark beetle infested wood mean a loss of essential plant nutrients to the ecosystem and therefore in the long run affect the life cycles of this system in an unsustainable way.

b) Social and economic values

- Protected areas and Natura 2000 sites with non-intervention management (equivalent to wilderness areas) are a key ingredient in the sustainable livelihoods of local communities through a range of ecosystem services, for example, erosion control or reliable supplies of fresh water and clean air. And perhaps most importantly, they provide globally important ecosystem services - such as carbon sequestration - that benefit all of humankind.

Photo: Harald Grunwald

- Protected areas and Natura 2000 sites with non-intervention management (equivalent to wilderness areas) are places highly appreciated for primitive recreation, well-being, refuges to escape the stress of modern civilization and places where one can thrill and challenge the meeting of wild nature on its own terms. They provide excellent sources for experiencing spiritual renewal.

c) Iconic values

- Protected areas and Natura 2000 sites with non-intervention management (equivalent to wilderness areas) are counting for the most biological intact, undisturbed, wild, natural and beautiful landscapes left on earth - those last truly wild places that humans do not control and have not developed with roads or other industrial infrastructure. In recognition of this special significance, many areas with wilderness qualities are awarded special status - not only at a local or national level as protected areas, but also internationally, such as through UNESCO World Heritage status, European Diploma or through PAN Parks and Transboundary Park. These labels provide international reputation, better connection to and credibility vis-à-vis stakeholders.

Main obstacles and limits

a) Ecological aspects

- Non-intervention management is not compatible with every type of Natura 2000 sites, especially secondary habitats or small and fragmented areas. Therefore the non-intervention approach will focus mainly on primary habitats and large areas with the capacity of self-restoration.
  It can also cause conflicts with the conservation of endangered species of outstanding national or international value depending on specific management.
  It is necessary to find a balance between the concepts and to integrate them. Such balance can be established at a large geographical scale, such as within bio geographical regions.
- Non-intervention is not possible in all cases and at all time. In areas with strong human impacts it is necessary to remove the impacts or at least to initiate a reversal process, before non-intervention management starts.
- Invasive (alien) species may threaten the natural protection goods (species and habitats) and disturb natural processes by driving out original species. Therefore non-native species are unwelcome in protected areas and Natura 2000 sites. Measures to eradicate them should be looked at case by case and the positive and negative effects must be carefully considered.

b) Social and political aspects

- Many local people think the same way as farmers – their mind-set is based on states and not on processes.. They are afraid of (risk to neighbour-hood) and lack of experience and understanding of wilderness. For that reason public perception of large disturbances is affected negatively.
- In many EU member states national laws and regulations (e.g. forest laws) competing and overruling nature protection laws and Natura 2000 guidelines enforce cutting of any dead-wood in forests and so do not allow to follow the non-intervention management approach.

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