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INVESTMENTS IN EDUCATION DEVELOPMENT

Jan Evangelista Purkyně University

Faculty of the Environment

**Nature Conservation and Landscape Protection:
Protected Area Management -
*Selected Chapters***

JIŘÍ MORAVEC, Ph.D.

**Ústí nad Labem
2014**



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CONTENTS

Foreword: Purpose of the Publication	4
1 Introduction	5
2 Reasons for Protected Areas (PA)	10
3 International Categories of Protected Areas	12
4 National Categories of Protected Areas	23
5 Government Agencies for Nature Conservation and Landscape Protection	42
6 Case Study - National Parks in Czech Republic	45
7 Case Study – University Protected Areas in English-speaking Countries	63
8 Protected Area Planning – An Overview	69
9 Protected Area Management Plan – Structure and Process	73
10 NGOs and Protected Areas	81
11 Case Study – Non-governmental Protected Areas in English-Speaking Countries	92
12 Tourism and Protected Areas	95
13 Protected Areas Alone Will Not Stop Biodiversity Loss	112
Glossary	114
Abbreviations and Acronyms	121
References and Sources	122

FOREWORD: PURPOSE OF THE PUBLICATION

This textbook deals with selected topics in the interdisciplinary field of protected area management. The book is primarily intended for environmental science students in Northern Bohemia that would like to enhance their knowledge of nature conservation and communicate their knowledge in English. Foreign students who are visiting or conducting research in the Czech Republic can find specific information in this book. The publication may be useful not only for academics but also for interested non-academics, such as those in public administration, non-profit organisations, tourism, and elsewhere. An effort is made to present the issues of protected area management even to readers with little preliminary knowledge of nature conservation.

The text is not a comprehensive treatment of the subject; only some topics are presented. Moreover, the text does not focus on *biological* management and the specific measures through which people attempt to conserve, maintain or revitalise ecosystems. Although the natural sciences cannot be omitted, this publication primarily addresses the social or human aspects of nature conservation. This book views protected area management from the perspective of social disciplines, such as environmental politics and organisational management.

The Faculty of Environment, University of J.E. Purkyně in Ústí nad Labem, is situated close to the German border. There is cooperation with partner universities. Many students spend some time abroad through academic exchange programs or other avenues. English is currently the first foreign language for most of these students. Therefore, it is appropriate to develop language skills and acquire some knowledge of nature conservation in other countries. This textbook facilitates this endeavour by providing information not only from English-speaking lands but also from Germany and other countries. An international outlook may prove beneficial because we share common opportunities in many fields, including protected area management.

4

HOW TO STUDY THIS BOOK?

The main body of text is complemented by information in *boxes*, *underline notes*, *key ideas*, *review questions* and *annexes*. Read the main body of the text. Make sure you understand the *key ideas* and are able to answer or to discuss the *review questions*. The text in the *boxes* provides either *definitions* or *supplementary text* to the main text body. While it is useful to learn the *definitions*, the *supplementary text*, with its detailed information, it is not essential for understanding of the main points of the chapter. However, it may further clarify some topics or provide some real life examples. The *underline notes* serve for clarification and extension of the study material, and may be skipped in a less rigorous reading. The *glossary* annex serves for a quick reference of some terms, should a need arise.

Chapter 1 INTRODUCTION

Protected area management is a part of environmental science. Knowledge of environmental issues is part of basic education in modern societies. Environmental education is a prerequisite for qualified political decision-making in **public administration**. In the **private sector**, production, marketing and financial managers are increasingly facing changes related to environmental limitations and opportunities. Environmental knowledge has begun to influence human lifestyles, consumer choices, and technology usage and development. There are more than seven billion people on Earth, and their consumption is increasing. The era of the “empty” world is over. According to some economists, free **public goods**, such as clean water, pure air, and abundant biodiversity, have gradually become **scarce commodities**. The life supporting ecosystems of the physically finite Earth are progressively being strained by the growing human economy. Current economic and political systems are criticised as being inadequate for new environmental challenges.

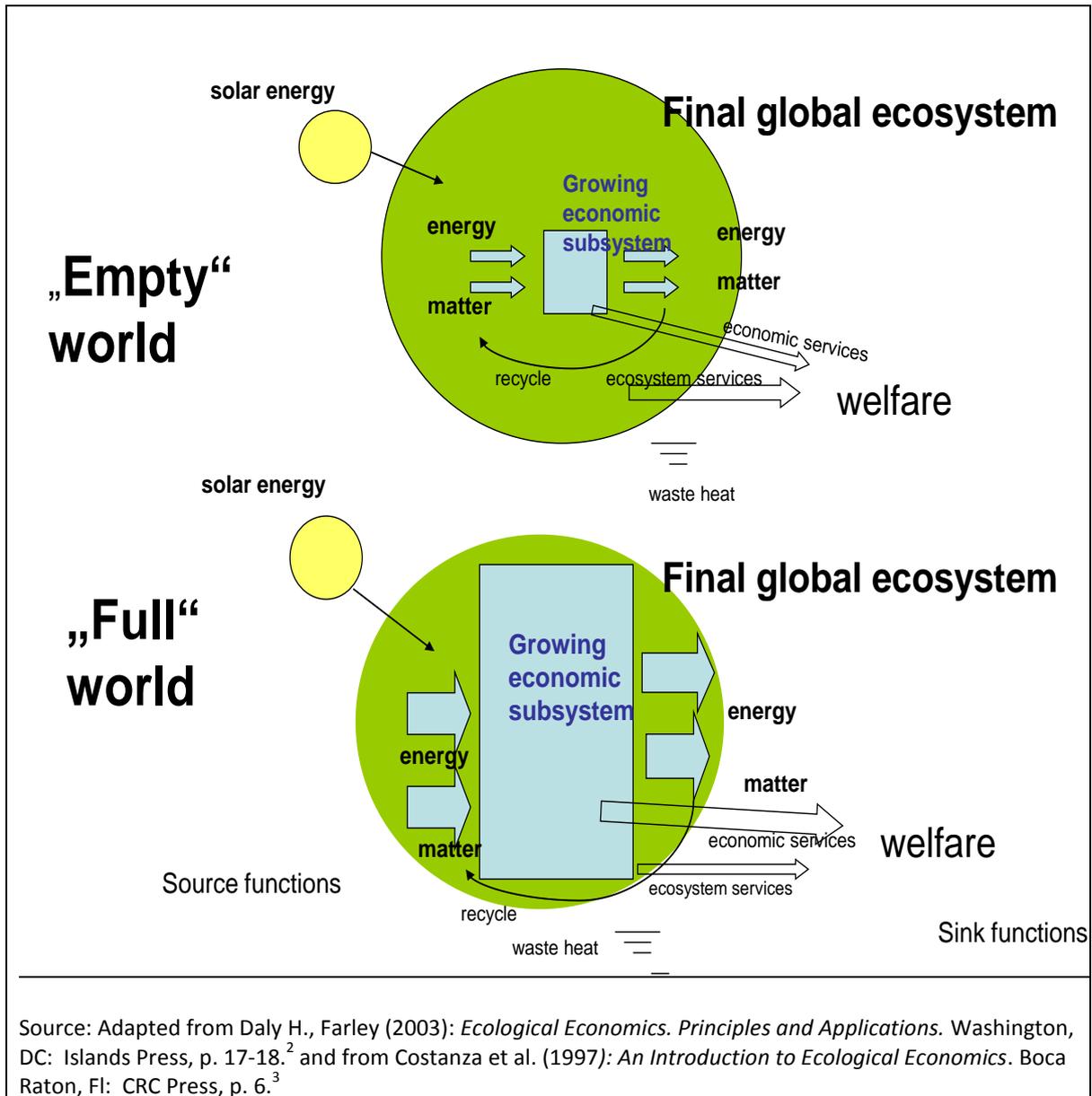
Some concerned scientists have warned that human economic activities have already reached or exceeded some global source and sink limits (see Figure 1). Rapid technological and social developments in the second half of the 20th century gave rise to the discipline of **environmental science**. Environmental science integrates knowledge from various natural and social sciences. Among these knowledge sources are biology, chemistry, environmental economics, and environmental politics. Environmental science helps us understand how the Earth functions, how humans interact with the Earth, and how to develop solutions to environmental problems.¹ **Nature conservation**, which is a part of environmental science, also requires an interdisciplinary approach by combining information and ideas from both natural and social sciences.

5



Photo: J. Kordas 2011

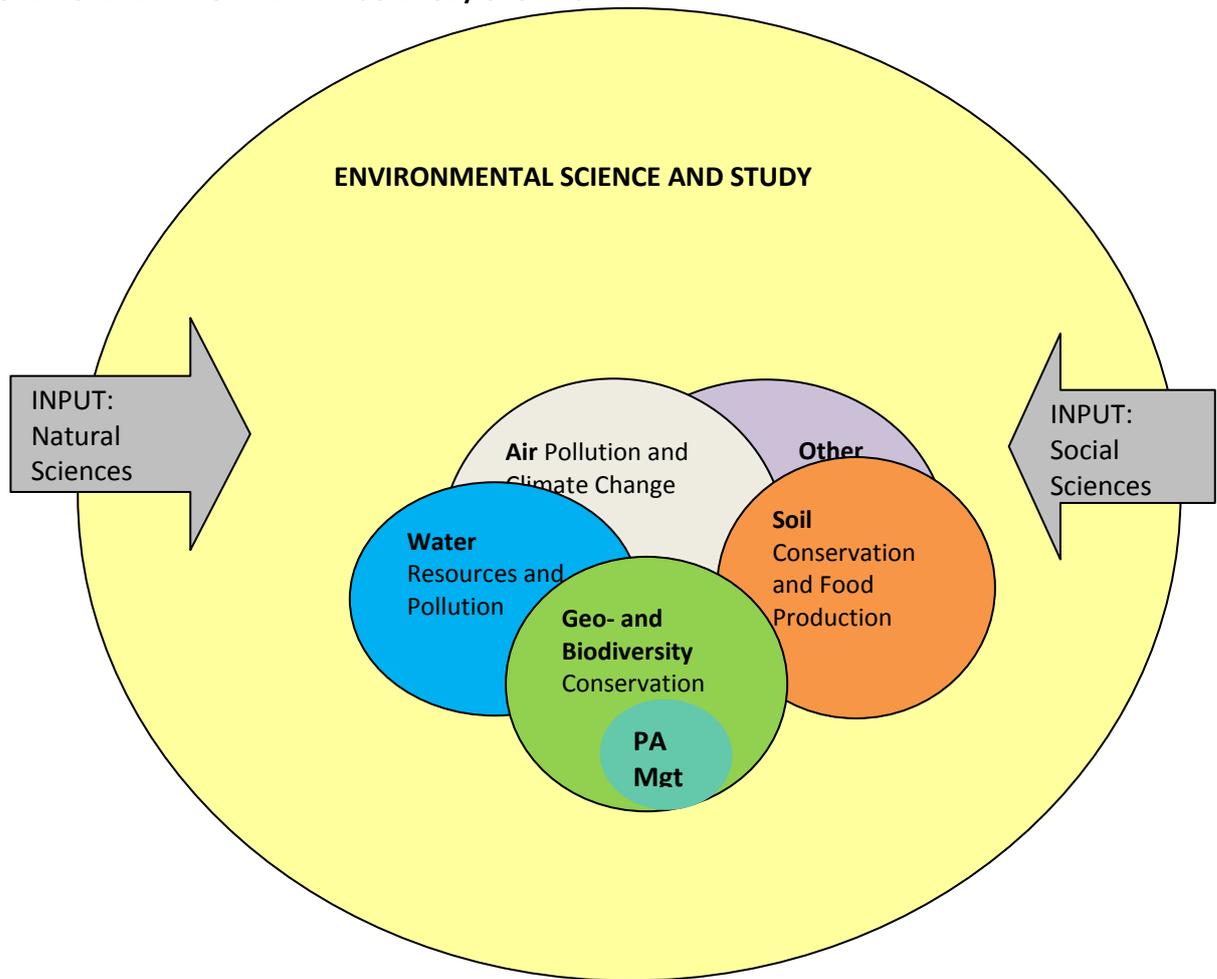
FIGURE No. 1: DEVELOPMENT FROM AN EMPTY WORLD TO A FULL WORLD



Source: Adapted from Daly H., Farley (2003): *Ecological Economics. Principles and Applications*. Washington, DC: Islands Press, p. 17-18.² and from Costanza et al. (1997): *An Introduction to Ecological Economics*. Boca Raton, FL: CRC Press, p. 6.³

Environmental science or environmental studies are divided into several broad areas. After an introductory course on environmental science, the protection of specific **components of the environment** (water, air, soil, and biodiversity) may be studied in separate courses. Other areas of study include waste management and radiation protection. This division is often reflected in public administration, such as government ministries and regional authorities, which include departments for air, water, and biodiversity protection. Some of this division is reflected in large private companies (because different employees are in charge of air protection, water management, and waste handling). Nature conservation and **biodiversity protection** belong to the subdisciplines of environmental science and are the subjects of this text.

FIGURE No. 2: ENVIRONMENTAL SCIENCE / STUDIES



This text focuses on **nature conservation**, which includes the conservation of both living and non-living natural things (biodiversity and geodiversity, respectively). **Conservation** means not only protection against undesirable changes but also a science-based improvement in the current status (e.g., revitalisation of river beds and species reintroduction). Conservation may include active measures by humans to change and develop a locality or a region towards desired goals (e.g., better functioning ecosystems and increased biodiversity).

Protected areas (PAs) are regions or places set aside primarily for nature conservation. In PAs, human involvement and resource extraction are limited, which allows native wildlife to develop.

Protected area management is an important part of **nature conservation**. Certainly, nature conservation is not limited to designated PAs. Biodiversity can also be protected in agricultural landscapes and in commercial forests and fishponds. Urban biodiversity can be protected in town gardens, backyards, city parks, on city buildings, and elsewhere. However, declared PAs typically form a backbone of nature conservation within a country or a region. Rare and endangered species that are sensitive to human activities typically require PAs to survive the pressures of human society.

Protected areas are the most visible sign of organised nature conservation efforts. We can find PAs in most countries, although the actual effectiveness varies. Protected areas can be established by federal governments, states, communities, and various public administration institutions. Other PAs can be established by universities, non-governmental organisations, or private individuals. In some cases, supranational entities, such as the European Union, may initiate the establishment of protected areas.

Selection and declaration of particular PAs often reflect not only the natural values of the given area but also political expediency (e.g., political support in favour of a PA or the absence of strong opposing interests). In some cases, the selection criteria should be solely based on scientific evaluations, regardless of particular economic interests.^a It is important to understand the political process underlying the establishment and operation of PAs.

Box 1: Definition - Protected Areas

Spaces managed for nature conservation.

The selection and declaration of PAs is followed by the **management of protected areas**. This consists of a set of active or passive measures performed or supervised by a nature conservation institution. These measures may include the design and enforcement of rules, habitat revitalisation, maintenance activities, education, and public information. The goals of these measures are to preserve, maintain and/or improve the ecological status of the given area. In some cases, human intervention is used to improve ecological conditions.^b In other cases, management means ensuring that humans do not intervene.^c

Protected areas are lands and waters that have been set aside for **protection from excessive human use**. In a modern society, resource extractors^d, developers, and recreationists must accept limitations on their activities in a selected part of a given landscape or seascape. These limitations may prove unpopular with some people; however, without them, it does not make sense to declare PAs. The scope of the limitations varies with various types or categories of PAs. **Categories of protected areas** (e.g., national parks and natural monuments) serve as standards that assist in evaluating the success of nature conservation.

Protected areas, such as national parks and nature reserves, are the cornerstones of biodiversity and geodiversity conservation. PAs serve to maintain natural ecosystems and act as refuges for non-human species. Some of these areas are so fragile that nearly nobody is allowed to enter. Others are inhabited with fairly large human communities. Therefore, **management** of PAs **varies** and depends on the values protected, on the local conditions, and on the goals for the particular area. Practical management of protected areas has been supported by academic writings by authors from various countries.^{4 5 6 7 8}

^a Note: This was the rule for choosing Natura 2000 areas in the European Union.

^b Note: Examples of the management of a PA by intervention are mowing of a species-rich grassland, or elimination of non-native tree species in a forest.

^c Note: An example of management through non-intervention is leaving the selected forest area to its “own” development, without the implementation of woodcutting or tree planting.

^d Note: Wood harvesting and stone quarrying

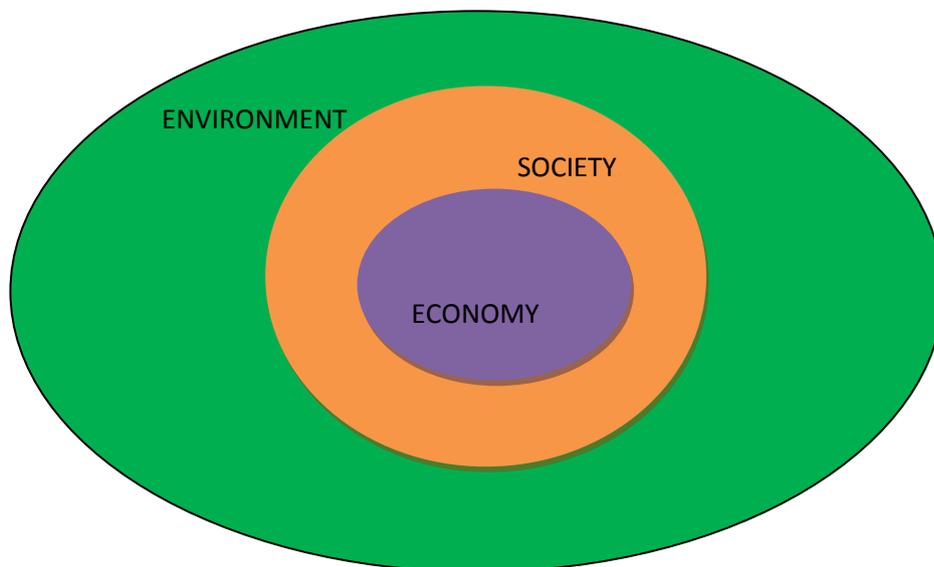
Protected areas present a commitment beyond our current human society. Natural heritage, just like cultural heritage, is also a responsibility for future generations. If PAs are effectively managed, future generations will be able to experience and enjoy nature, various ecosystems, and species. Protected areas will help these generations understand the ecological processes upon which all life depends. Therefore, the establishment and maintenance of PAs complies with the concept of **sustainable development**.

Box 2: Definition - Sustainable Development

Development that allows present and future generations (*of humans*) to meet their basic needs while refraining from decreasing nature's diversity and maintaining natural ecosystem functions.

Source: Czech Law *On the Environment*, No. 17/1992 Sb., §6.

FIGURE No. 3: DIMENSIONS OF SUSTAINABLE DEVELOPMENT



QUESTIONS FOR REFLECTION AND DISCUSSION

- 1) Have you visited a protected area, such as a national park or a nature monument? Do these protected areas receive support from public authorities, businesses, and citizens?
- 2) What type of management is implemented in the protected areas that you have visited? In your opinion, how well organised are the protected areas in your country, region, or community?
- 3) Are the protected areas that you have visited actually protected, or do they remain “just on paper”? How can we know? What can we do about this problem?

Chapter 2 REASONS FOR PROTECTED AREAS

What is the purpose of declaring an area of land or water as a protected area? What are the contributions of protected areas for humans and for other species? Because humans typically must accept some limitations on their activities in a PA, it is important to understand why PAs are actually needed.

Social and natural scientists describe several

contributions of protected areas:

(adapted from Worboys et al. (2001)⁹)

- *Allow other life forms and natural landscapes to exist with limited human interference*
- *Provide contact with nature and support nature education*
- *Offer places to find peace, solitude, and spirituality*
- *Offer recreational opportunities*
- *Preserve genetic wild stock*
- *Protect ecological processes, such as the water cycle and purification*
- *Provide income for local communities through alternative means, such as ecotourism*
- *Stimulate scientific studies*
- *Provide opportunities for the development of environmentally sensitive businesses, technologies, and lifestyles*
- *Allow traditional human cultures to continue and develop on their own paths*

Box 3: Protected Areas and Human Wealth

Countries and regions are said to have three forms of wealth: material, cultural, and biological.

PAs are established and managed to maintain the **biological wealth (biodiversity)**. Some PAs also harbour significant cultural values.

Protected Areas and Ecosystem Services

Protected areas are essential for the provision of ecosystem services within a region, country, or at a global level. What do we mean by ecosystem services? As mentioned above, PAs safeguard various **ecological processes** that are important for all species, including humans. These ecological processes, such as photosynthesis or soil formation, may be regarded as **ecosystem functions**. In the long term, the material wellbeing of human society cannot be preserved without effective ecosystem functions. The protection of ecosystem functions is a major goal of protected areas. Well-functioning ecosystems exhibit positive effects that extend far beyond the border of a particular national park, protected landscape, or other types of PAs.

A properly functioning ecosystem can deliver vital **ecosystem services**. Ecosystem services are ecosystem functions that have a direct influence on contemporary human economies. Moreover, ecosystem services are an economic concept. There are a variety of ecosystem services that are typically supported by protected areas. Among these services belong the protection of watersheds, water supply and purification, pollination and biological control, excessive erosion prevention, and the mitigation of natural disasters (such as floods). Recreation and psychological relaxation in natural settings are also ecosystem services.

Humans receive all of these services for free, even though these services have an economic value for several economic sectors, or even for the whole human society. If these services are damaged, increased costs for human society will follow. Ecosystem services are also provided outside PAs. However, PAs typically play a major role in the proper ecosystem functionality of the entire region or country and positively influence the rest of the landscape. Some economists have calculated the monetary worth of ecosystem services to provide a comparison for competing uses of individual landscapes (such as resource extraction and real estate development).

QUESTIONS FOR REFLECTION AND DISCUSSION

vii-i-xv

- 1) Can you provide at least four reasons for the establishment and maintenance of protected areas?
- 2) Give an example of environmentally sensitive technologies and businesses. Are they suitable for all types of protected areas?
- 3) What are the so-called traditional human cultures? Where do we find them?
- 4) What types of ecosystem services are supported protected areas in your region?
- 5) Think of natural streams and dwarf pine bushes in high mountains (see photo below). Is there a connection to ecosystem services?



Photo: Žiarská dolina, Tatry National Park, Slovakia

JM, 2013

Chapter 3 INTERNATIONAL CATEGORIES OF PROTECTED AREAS

3-1 IUCN Categories of Protected Areas

Key ideas

There are many categories of protected areas around the world. Each country may have its own categories. The International Union for Conservation of Nature (IUCN) created six categories that should be applicable to protected areas in all countries. The IUCN categorisation allows for the comparison of various national categories. The IUCN categories are based on the management goals of a PA and provide a standard for planning and operating those areas. Moreover, these categories also serve as a basis for evaluating the work of PA managers and the effectiveness of country's nature conservation.

There are various types of protected areas with different levels of human involvement. Human effects differ both because of historical development and current legal frameworks. Some protected areas are strictly protected against any human interference; others are more permissive. Moreover, some protected areas even require human intervention to preserve their values. To make a distinction among the various types of PAs, national or international **categories** have been assigned. International categories have been developed to provide a comparison, a standard, and the possibility of evaluating the management of various PAs around the world.

The history of protected areas is long. On all inhabited continents, native people have respected various sacred sites. For example, early nature conservation efforts and laws from the ancient Indian ruler King Ashoka in the third century B.C.¹⁰ and even earlier demonstrate this respect. Centuries ago in Europe, the nobility protected some areas from logging to keep them for recreational hunting.

However, the beginning of PAs in the contemporary sense of the word is connected with 19th century conservation efforts in English-speaking countries. The oldest national parks (NPs) in the world are located in the U.S.A., Australia, Canada, New Zealand and South Africa. The first national parks in these countries were established before the end of the 19th century.

National parks are probably the best-known category of protected areas. Yellowstone NP (est. 1872) in Wyoming, U.S.A., is commonly considered the oldest NP in the world. This claim may be disputed by the Yosemite NP in California, U.S.A. (which was established in 1864 as a state park before changing its status to a NP in 1890). In another part of the world, the Bogd Khan Mountain NP in Mongolia traces its official status back to the end of the 18th century¹¹. The oldest national parks in Europe were founded in Sweden in 1909. While the earliest NPs tended to be established in remote regions, there are currently some NPs that are located close to large cities. An example in Europe is the Danube-Auen NP near Vienna, Austria, and the Kampinos NP in the outskirts of Warsaw, Poland.

International Standard – IUCN Categories

Initially categories of protected areas were created on a national basis. However, a need soon developed to define a common international standard for PAs. The beginnings of these standardisation efforts may be traced to a conference in London in the 1930s¹². A decisive point was the acceptance of six categories for PAs by the International Union for Conservation of Nature (IUCN) in 1994. These six international categories provide a basis for international comparisons, a standard for the planning and operation of PAs, and a basis for management effectiveness evaluations.¹³

The six IUCN categories are as follows (IUCN 2012a):

Category Ia

Strict nature reserve

Category Ib

Wilderness area

Category II

National park

Category III

Natural monument or feature

Category IV

Habitat/species management area

CATEGORY V

Protected landscape/seascape

CATEGORY VI

Protected area with sustainable use of natural resources



FIGURE No. 4: IUCN logo

Box 4: Definition of Protected Area by IUCN

Definition: Protected Area

" ... a clearly defined geographical space, recognized, dedicated, and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values (IUCN, 2012b)".

13

The areas are classified according to their **management objectives**. Human transformation of the areas and human intervention varies among these categories. For example, the low number categories (I and II) usually include areas with less human transformation and intervention than the high number categories (V and VI). However, human transformation of the area does not necessarily exclude the management objective to pursue a "high category" (for example, to become a national park, category II).

Management of a PA does not necessarily mean some type of human **intervention** for conservation purposes. Some types of PAs are best managed without any human intervention.

Protected areas are often subject to numerous political and social pressures in their home countries. There are constant attempts by various interest groups to inappropriately use these areas.^{14 15} In

some countries, national parks are declared by governments in order to attract tourists for income, while protection is actually weak or non-existent. Consequently, an international standard should clarify the real status of individual areas. An international standard should also assist national PA managers with their work when comparing and drawing on foreign experience.

The IUCN categorisation is based on the **primary management objective**. An initial assignment to a category is not a commentary on **management effectiveness**. However, a move from one category to another over time can be a result of proper or improper management by the PA administration.

Box 5: International Union for Conservation of Nature (IUCN)

What is the IUCN? A common error is to consider the IUCN to be either a United Nations institution or a European Union institution. It is neither. Through its members, the IUCN is both a governmental and a non-governmental organisation. It is the world's largest environmental network. The IUCN has more than 1,000 government and non-governmental (NGO) organisations as members.

Countries such as Germany and the Czech Republic (CR) are members as states and are represented through their particular government agencies (the Bundesamt für Naturschutz in Germany and the Agentura ochrany přírody a krajiny in the CR). In the Czech Republic, the *Krkonošský národní park* is a member. In Germany, the NGO *Naturschutzbund Deutschland* is an IUCN member. The Czech NGO *Český svaz ochránců přírody (ČSOP)* is also a member. Moreover, some zoological gardens are also members.

Furthermore, nearly 11,000 individual volunteer scientists in more than 160 countries cooperate with the IUCN. These scientists may be involved in the activities of various commissions of the IUCN. The most relevant commission for PA management is the IUCN *World Commission on Protected Areas*.

The IUCN, as an authority in PA management, occasionally provides expert opinion on controversies in PA management. For example, in 2002, there was an IUCN mission to the Šumava NP in the Czech Republic in association with Šumava's long-standing *log or not-to-log* problem. The IUCN has also published lists of the most endangered NPs in the world. In 1984, Krkonoše NP in the Czech Republic was placed on the most endangered parks list due to its acid rain problems and unsustainable tourism problems¹⁶.

The IUCN cooperates closely with the United Nations, particularly with the United Nations Environmental Programme (UNEP) and the UNESCO, sharing an information database with the UNEP on PAs. The IUCN was authorised by the UNESCO to provide expert evaluation on the inclusion of natural areas on the prestigious World Heritage List.

14

IUCN Categories - Examples of Protected Areas¹⁷

To obtain a better idea of national categories that are included under individual IUCN categories, please see some examples of protected areas below:

Category Ia (Strict Nature Reserve)

- Swiss National Park, Switzerland
- University of Wisconsin-Madison Lakeshore Nature Preserve, U.S.A.

Category Ib (Wilderness area)

- Denali National Park and Preserve, Alaska, U.S.A.

Category II (National park)

- Yellowstone National Park, U.S.A. (partially)
- Royal National Park, Australia
- Serengeti National Park, Tanzania
- Etosha National Park, Namibia
- Bavaria Forest National Park, Germany
- National Park Donau-Auen, Austria

Category III (Natural monument or feature)

- Devil's Tower National Monument, U.S.A.
- Pravčická^a Gate Nature Monument, Czech Republic
- Yozgat Camigi National Park, Turkey

Category IV (Habitat/species management area)

- Yellowstone NP, U.S.A. (partially)
- Externsteine Nature Reserve, Germany
- Radobýl Nature Monument, Czech Republic

Category V (Protected landscape/seascape)

- Lake District National Park, United Kingdom
- Krkonoše National Park, Czech Republic
- Biele Karpaty Protected Landscape Area, Slovakia

Category VI

- Expedition National Park, Australia
- Rio Macho Forest Reserve, Costa Rica

As seen from the above examples, some protected areas with the same national title, such as the *national park*, can be included in any IUCN category.

^a Czech: Pravčická brána; German: Prebischtor

Box 6: IUCN Category II – National Park:

A Desired Certification for Protected Area Managers

There are many protected areas around the world called *national parks* by national legislation or authorities. However, not all of these areas are managed according to the IUCN Category II definition. Sometimes, governments declare NPs to attract tourists; however, they are unwilling or unable to provide sufficient biodiversity and landscape protection. These are the so-called “*paper national parks*”, or “*paper tiger parks*”. These parks are common in the developing countries of Africa and Latin America and in some post-communist countries. Sometimes, even when a park is declared, the social conditions were such that it would be unrealistic to pursue the Category II goal. For example, this was the case for English NPs that, unlike most Czech NPs, had dense human populations and relatively intense agriculture.

However, the staff at some German and Austrian NPs worked very hard to get into the desired IUCN Category II. In these countries, the governments and regional and local authorities supported the effort of the NP administrations to obtain an IUCN Category II certification. Getting a certification of Category II by the IUCN is viewed as a sign of good work by the NP administrations. Not all NP administrations must or want to apply to be officially certified by the IUCN. This is the case when there are no favourable social and natural conditions to be placed into Category II (NPs in the United Kingdom) or there is a strong controversy surrounding the management of a NP (Czech Republic, NP Šumava). An official certification is not obtained, however, the IUCN category is assigned in the UNEP/IUCN Database on Protected Areas based on the information available.¹⁸

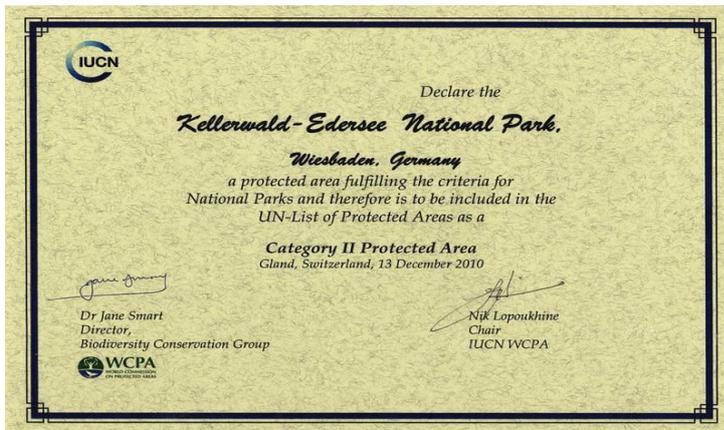


Illustration I-11 The IUCN Certificate (Category II), Kellerwald-Edersee NP, Germany

Source: <http://weltnaturerbe-buchenwaelder.de/de/aktuelles/detailansicht/article/52/iucn-zertifi.html>, access 20-8-12

Assigning the IUCN Category

The IUCN category should reflect the primary management objective of a particular protected area. This objective should apply to at least $\frac{3}{4}$ of the protected area. Table 1 summarises the objectives of various IUCN categories.

Ia	Strict nature reserve	To conserve regionally, nationally or globally outstanding ecosystems, species and geodiversity features. These attributes will have been formed primarily or entirely by non-human forces and will be degraded when subjected to all but very light human impact.
Ib	Wilderness area	To protect the long-term integrity of natural areas that are undisturbed by significant human activity and free of modern infrastructure. Natural processes predominate so that current and future generations have the opportunity to experience these areas.
II	National park	To protect natural biodiversity along with its underlying ecological structure and supporting environmental processes, and to promote education and recreation.
III	Natural monument or feature	To protect specific outstanding natural features and their associated biodiversity and habitats.
IV	Habitats/species management area	To maintain, conserve and restore species and habitats.
V	Protected landscape/seascape	To sustain important landscapes/seascapes and their associated nature conservation and other values.
VI	Protected area with sustainable use of natural resources	To protect natural ecosystems and use natural resources sustainably (when conservation and sustainable use can be mutually beneficial).

Source: Dudley N. (ed.) (2008): *Guidelines for Applying Protected Area Management Categories*. IUCN, Gland, Switzerland, p. 13-22, quoted with minor simplifications.

The **categorisation process** can take place as follows:¹⁹

- Before the declaration of a PA
- After the establishment of a PA
- In the case when a change in category is desired
- In case of doubts about the current category

The **process of applying for a particular category** is as follows:

- The most suitable category for a given PA in a particular country is initially selected and agreed upon. The category is assigned based on national legislation and international standards.
- The protected area is recorded with the United Nations Environmental Programme (UNEP) World Conservation Centre. The PA is included in the World Database of Protected Areas (WDPA) and on the UN List of Protected Areas^a.

During the process, the issues of **category verification** and **disputes handling** should be addressed. The IUCN can, upon request, be involved in the process. The IUCN may be consulted on the assignment and sometimes organises advisory missions to countries or to individual PAs.

^a Note: Reporting is voluntary. However, it is requested by some UN policies, e.g., by the CBD Programme of Work on Protected Areas. A template is supplied by the UNEP-WCMC for this purpose.

Applications by national institutions for a particular category can be done without the IUCN verification or certification. However, there are cases when a managing authority, such as a NP administration, wants an official IUCN certification stating that the management of the PA meets the assigned category. This certification is done on a voluntary basis and involves an IUCN mission to the particular PA. Similarly, outside parties (e.g., scientific associations and NGOs) may request an IUCN verification of the assigned category in case of controversial management by a PA authority. If the objections are found to be correct, a reassignment of a category in the World Database of Protected Areas (WDPA) and the UN List of Protected Areas may follow. For example, a protected area may lose its originally assigned IUCN Category II for national parks.

Although the IUCN category is still determined by the **management objective**, management effectiveness should become an additional criterion in recognition of PAs. In the future, management effectiveness should be gradually recorded in the UNEP/IUCN World Database on Protected Areas.²⁰ **Management effectiveness** is related to the extent to which the PA management is achieving its nature conservation goals. Management effectiveness, including specific examples, is addressed in the chapter on PA planning.

REVIEW QUESTIONS:

- 1) What are the six IUCN categories for protected areas?
- 2) What is the IUCN?
- 3) When can the categorisation process occur?
- 4) What is an IUCN certification? Is it obligatory?
- 5) What is management effectiveness? Provide a specific example from a protected area that you are familiar with.

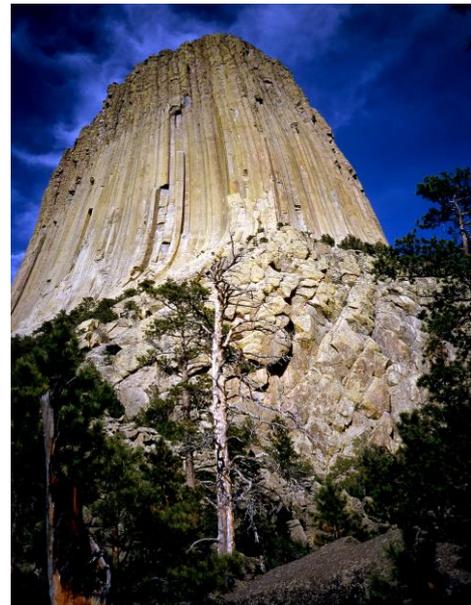


Photo: Devil's Tower, Wyoming, U.S.A.
U.S. category: National Monument.
IUCN category: Natural Monument.

Author: Jaroslav Kordas, 2010

3-2 NATURA 2000



Introduction

Are Natura 2000 sites international or national categories? Some scientists would argue that they are neither because the European Union is not an international but a supranational organisation. Regardless, the Natura 2000 system is the most important development in nature conservation in Europe in recent decades.

Natura 2000 (N2K) is the cornerstone of the European Union biodiversity policy. It is a network of protected areas of European importance. The goal of the initiative is to assure the long-term survival of the most valuable and threatened species and habitats in Europe. The Natura 2000 sites become designated through an administrative process during which the EU member states propose sites to be protected under the EU legislation. The Natura 2000 protected sites often overlap with PAs that were declared earlier as national PAs by individual states. However, after becoming a part of the Natura 2000 network, these PAs are subject to the EU legislation in addition to domestic rules.

Designation and protection of N2K sites is an obligation for all member states of the European Union. This responsibility has been accepted by joining the European Union. N2K designation is advantageous from a nature conservation perspective because anti-conservation minded national and local political forces have fewer opportunities to negatively affect the existence and operation of these areas. The member states are obliged to provide management and/or restoration to assure the favourable conservation status of the sites. The EU legislation is generally no stricter than domestic laws; however, there is more emphasis on the enforcement of legislation through monitoring and reporting.

Natura 2000 areas do not exclude human use of PAs; however, the ecological status of these areas should not be degraded after designation. The PAs in the N2K system range from agriculturally used lands to strictly protected localities. Many strictly protected Natura 2000 localities have already been protected by national laws as the first zones of NPs or as nature reserves. There is an obligation for continuous monitoring of the status and development of Natura 2000 areas. On the basis of the monitoring, the individual member states submit reports to the European Commission. These procedures should ensure that conservation efforts do not stop at formal declaration, which was the case with some nationally PAs in the past.

The basic legislation of Natura 2000 consists of the Birds Directive²¹ and the Habitats Directive.²² Special protection areas (SPAs) are designated under the Birds Directive, and Special Areas of Conservation (SAC) are designated under the Habitats Directive. The Birds Directive protects vulnerable and migrating bird species. The Habitats Directive protects selected species of plants and animals (excluding birds) and selected habitat types (e.g., forests, grasslands, and wetlands). The designation of Natura 2000 areas is not a closed process. Although most of the proposed Natura 2000 areas have already been designated in the Czech Republic and other member states, further sites can be added in the future.

Bird Sites

The process of designation under the Birds Directive is simpler than the process under the Habitats Directive. Under the Birds Directive, the individual EU member states choose the most suitable areas and designate them as *Special protection areas (SPAs)*^a. These sites then immediately become part of the Natura 2000 network. Annex I of the Birds Directive lists approximately 200 threatened European bird species for which adequate sites are to be provided.²³ The designation of Natura 2000 sites must be entirely based on scientific criteria, i.e., not on political expediency. The European Commission inquires whether the areas are sufficient to form a coherent network for the conservation of the vulnerable and migratory bird species.

The occurrence of a “Natura 2000 species” at a particular location does not mean that this area must be designated as a Natura 2000 site. Sufficient and best localities must be selected. In the Czech Republic, there are more than 60 bird species for which Natura 2000 sites have been designated.²⁴ Some of the more common species include the white stork (*Ciconia ciconia*; Cz: čáp bílý), the white-tailed eagle (*Haliaeetus albicilla*; Cz: orel mořský), and the corn crane (*Crex crex*; Cz: chřástal polní).



Photo: White Stork (*Ciconia ciconia*)
JM 2014

Habitat Sites

As in the case of bird sites, the habitat sites are designated on the basis of purely scientific criteria, i.e., not as a compromise with various anti-conservation interests. Under the Habitats Directive, there are three stages in the process of designation. First, the individual EU member states propose a list of sites suitable for the protection of particular species and particular habitat types. National nature conservation authorities may require additional landscape mapping to identify these sites. The completed list contains the **proposed sites of community importance (pSCIs)**.

Second, the European Commission adopts these listed sites as **sites of community importance (SCIs)**. Scientific and public policy seminars are organised by EU institutions to ensure the transparency of the process and to elicit stakeholder feedback. Associations of landowners and users and environmental NGOs are typically among the participants at these seminars and can raise their concerns and suggestions.

Third, the member states designate the adopted SCIs as **special areas of conservation (SAC)** within a specified time limit and are obliged to ensure their protection, which means that some form of protection by national law or by a contract is applied. In some cases, protection already exists, such

^a Note: Do not confuse these *special protection areas (SPAs)*, or *Bird Areas*, with the *Specially Protected Areas (Cz: zvlášť chráněná území)* designated by Czech legislation.

as in case of NPs or nature reserves. In other cases, the rules of land management must be formalised. New areas often receive protection under domestic categories of PAs (e.g., nature reserve or nature monument). Among the **species and habitats of European importance**, there are some **priority species and habitats** that are given special attention by conservation authorities. The Habitats Directive protects approximately 1000 rare, endemic and threatened plant and animal species and more than 200 rare and characteristic habitat types in Europe.²⁵ Other species are being proposed by member states for approval by the European Commission.

In the Czech Republic, there are currently 16 species of plants and more than 50 species of animals (excluding birds) that are protected under Annex II of the Habitats Directive.²⁶ For these species, Natura 2000 sites have been designated at the most appropriate localities. For example, the common lady's-slipper orchid (*Cypripedium calceolus*; Cz: stěvíčnick pantoflíček) and the rare killarney fern (*Trichomanes speciosum*; Cz: vláskatec tajemný) are among the Czech N2K plant species. The Eurasian lynx (*Lynx lynx*) is among the animal species; the brown bear (*Ursus arctos*) is one of the priority animal species protected by the Natura 2000 legislation. In the group of N2K invertebrates, the common stag beetle (*Lucanus cervus*; Cz: roháč obecný) and the hermit beetle (*Osmoderma eremita*; Cz: páchník hnědý) are present, the latter being a priority species.



Photo: Mountain Hay Meadow,
Ore Mountains, Czech Republic

JM 2013

Besides species, there are approximately 60 types of habitats that are protected under Annex II of the Habitats Directive²⁷ for which sites have been designated in the Czech Republic. For example, *Luzulo-Fagetum*^a Beech Forests and Mountain Hay Meadows are among the “regular” habitat types of European importance in the Czech Republic. Moreover, *Tilio-Acerion*^b Forests of Slopes, Scree and Ravines and Active Raised Bogs are among the priority habitat types of European importance.

Biogeographical Regions

The European Union has divided its territory into nine biogeographical regions for the purposes of the Habitats Directive.²⁸ The Natura 2000 sites are selected for each biogeographical region within which species and habitat types occur under similar conditions. The division is not purely scientific; instead, the division reflects the needs of the administrative processes of nature conservation. The European Commission approves the selected sites within one region for several countries at the same time.

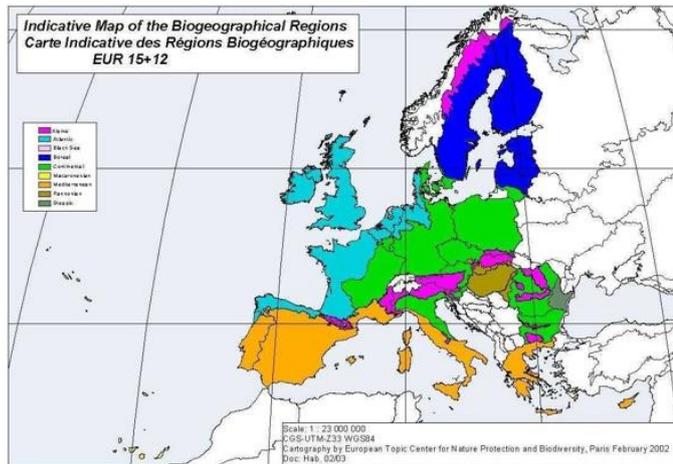
Biogeographical regions

- Continental (e.g., most of the Czech Republic, Poland, and Germany)

^a Note: Latin: *Luzula* - English: wood-rush, Cz: bika; Latin: *Fagus* - English: beech tree, Cz: buk

^b Note: Latin: *Tilia* - English: lime/linden tree, Cz: lípa; Latin: *Acer* - English: maple tree, Cz: javor

- Pannonian (e.g., south-east Czech Republic, southern Slovakia, and Hungary)
- Alpine (e.g., most of Austria and Slovakia and the Pyrenees and Carpathian Mountains)
- Boreal (e.g., Sweden, Finland, and the Baltic states)
- Atlantic (e.g., United Kingdom and Ireland)
- Mediterranean (e.g., most of Spain and Greece)
- Steppic (e.g., a small portion of Romania)
- Black Sea (e.g., coastal regions of Romania and Bulgaria, including the Danube delta)
- Macaronesian (e.g., islands in the Atlantic Ocean: Canaries, Madeira, and Azores)



Map 14A Biogeographic Regions in the European Union
 Author: European Topic Centre for Nature Protection and Biodiversity, Paris
 Source: <http://www.facenatura2000.net/map.jpg>, retr. 15-9-2014

The Czech Republic lies primarily in the Continental biogeographical region, with a small portion of the country being located in the Pannonian region (southern Moravia). The regions have characteristic vegetation, climate and geology. The intention is to coordinate the Natura 2000 system at a biogeographical level across countries and political boundaries.

Financing of Natura 2000

Individual member states of the EU have a basic responsibility to protect and finance Natura 2000 sites within their territory. The individual states can also make use of various forms of EU financing, such as from the European Agricultural Fund for Rural Development (EAFRD), the European Regional Development Fund (ERDF), the EU Life Programme and other sources. Most of these sources are channelled through national rural development programmes and operation programmes.

REVIEW QUESTIONS:

- 1) What are the Natura 2000 (N2K) areas/sites?
- 2) What is protected under the Habitats Directive?
- 3) Are commercial activities allowed in Natura 2000 areas?
- 4) What funds can be used to finance the management of Natura 2000 sites?
- 5) Name some habitat types that are protected under the Habitats Directive in your region.

Chapter 4 NATIONAL CATEGORIES OF PROTECTED AREAS

Key ideas

There are various categories of protected areas in the Czech Republic, in neighbouring Germany, and in English-speaking countries. Some of these categories have similar names to the IUCN categories, although the categories are not the same. There are 6 categories of specially protected areas in the Czech Republic. In England, there are SSSIs, national and local nature reserves, national parks and areas of outstanding natural beauty. In the United States, there are protected areas with federal, state and local status. In Germany, biosphere reserves have a legal status within national law.

To protect biodiversity and landscapes, people in various countries have set aside land to be used for biodiversity conservation and landscape protection. The level of protection varies based on the natural and social conditions in different countries and regions. Therefore, several categories of PAs may exist in any given country. Some categories may have the same name in several countries, while some categories may be unique to a particular country. The national name of the category may not precisely reflect the formal (legal) or the real level of protection that is granted.

23

4-1 CATEGORIES OF PROTECTED AREAS IN THE CZECH REPUBLIC

In the Czech Republic, the terms *small-scale protected areas* and *large-scale protected areas* are used in professional language^a.



The small-scale protected areas include the following:

- | | |
|----------------------------|--------------------------------|
| • National nature reserve | Cz: národní přírodní rezervace |
| • Nature reserve | Cz: přírodní rezervace |
| • National nature monument | Cz: národní přírodní památka |
| • Nature monument | Cz: přírodní památka |

The large-scale protected areas include the following:

- | | |
|---|------------------------------|
| • National park (NP) | Cz: národní park (NP) |
| • Protected landscape area (PLA) (CHKO) | Cz: chráněná krajinná oblast |

Photo: JM, 2013



^a Note: This practical division has no background in Czech law.

In the Czech Republic, the term *specially* protected areas is used in legislation, implying that other land in the country (other areas) also has some degree of protection.

Categories of small-scale protected areas in the Czech Republic

Small-scale protected areas are either **reserves** or **monuments**. Reserves are generally more important for biodiversity conservation than monuments and are typically granted more legal protection than monuments. Some reserves or monuments are more significant from a nature conservation perspective than others. These are called **national** nature reserves or **national** nature monuments. The national nature reserves and national nature monuments should be important from a national perspective at a minimum (or even internationally). The other nature reserves and nature monuments are important “only” from a regional or local perspective. Monuments generally exhibit more human alterations than reserves, and their ecosystems may be fragmented. However, monuments may harbour important animal and plant species. Monuments are often areas that are designated to protect rocks and other geological formations. In these cases, we speak about **geo-diversity** protection.

Categories of large-scale protected areas in the Czech Republic

Czech large-scale protected areas are either national parks (NPs) or protected landscape areas (PLAs). The NPs, in comparison with the PLAs, are granted a higher level of legal protection. Moreover, the NP administrations have substantially larger financial budgets, more staff members, and more legal authority than the PLA administrations. The NP and PLA administrations (Cz: správa NP či CHKO) are organisations formed to ensure the conservation of PAs. Currently, there are 4 national parks and 25 protected areas in the Czech Republic.

In comparison to NPs, PLAs may exhibit more historical human involvement. The landscapes of some Czech PLAs were significantly shaped by human activities. Human work created most grassland areas and all fishponds. In some places, this contributed to the origin of the contemporary protected areas. Examples of such areas include the Bílé Karpaty PLA, with its flower-rich meadows, and the Třeboňsko PLA, with its fishponds^a. A large part of Czech biodiversity is connected to semi-natural grasslands within which regular grass mowing and/or extensive pastures are needed to preserve the biotope.



Photo: JM, 2013

Species protection in the Czech Republic

Land-based protection in protected areas should provide basic conditions for the conservation of species. **Species-oriented protection** targets particular species. These so-called **specialty protected species** are listed in Annexes II and III of Ordinance No. 395/92 of the Ministry of the Environment, which complements **Nature and Landscape Conservation Law No. 114** of 1992. The list of names

^a Certainly, not all fishpond management is favourable for biodiversity and the environment. Intensively managed fishponds are low in biodiversity and they may be a source of pollution in the landscape. However, extensively managed fishponds may contribute to biological variety. The Czech Republic has examples of both non-sustainable and sustainable fishpond management.

contains protected categories: endangered silně special protection means that population)



animals, plants, and fungi. The specially species are classified into three critically endangered, seriously and endangered (Cz: kriticky ohrožené, ohrožené, ohrožené). In addition to this **protection of species**, there is **general of species** according to Czech law, which no Czech animal or plant species (or its should be allowed to become extinct.

Common Butterwort (*Pinguicula vulgaris*) in the Jeseniky PLA Photo: JM 2011

NOTE: DO YOU KNOW THESE CRITICALLY ENDANGERED CZECH MAMMALS? (Critically endangered according to Czech law)			
Scientific name (Latin)	English name	German name	Czech name
<i>Ursus arctos</i>	brown bear	Braunbär	medvěd hnědý
<i>Canis lupus</i>	grey wolf	Wolf, Grauwolf	vlk, vlk obecný
<i>Felis silvestris silvestris</i>	European wildcat	Die Europäische Wildkatze / Waldkatze	kočka divoká
<i>Mustela eversmanii</i>	steppe polecat / white p. / masked p.	Steppeniltis	tchoř tmavý
<i>Spermophilus citellus</i>	European ground squirrel / European souslik	Europäischer Ziesel	sysel obecný
<i>Eliomys quercinus</i>	garden dormouse	Gartenschläfer	plch zahradní
<i>Myotis myotis</i>	greater mouse-eared bat	Grosses Mausohr	netopýr velký

NOTE: DO YOU KNOW THESE SERIOUSLY ENDANGERED CZECH CARNIVOROUS PLANTS? (Seriously endangered according to Czech law)			
Scientific name (Latin)	English name	German name	Czech name
<i>Drosera rotundifolia</i>	round-leaved sundew, common s.	Rundblättriger Sonnentau	rosnatka okrouhlolistá
<i>Pinguicula vulgaris</i>	common butterwort	Gemeines Fettkraut	tučnice obecná

REVIEW QUESTIONS:

- 1) What are the categories of the small-scale protected areas in the Czech Republic?
- 2) What is the difference between these categories?
- 3) What are the categories of the large-scale protected areas in the Czech Republic?
- 4) What is the difference between these categories?
- 5) Why are grasslands often an object of biodiversity conservation in the Czech Republic and elsewhere in Central Europe?

4-2 CATEGORIES OF PROTECTED AREAS IN THE UNITED KINGDOM (U.K.)



The nature conservation system in the United Kingdom of Great Britain and Northern Ireland is administratively decentralised. The four countries of the United Kingdom (England, Scotland, Wales, and Northern Ireland) have their own government bodies that administer nature conservation. The categories of PAs occasionally differ in each country. All of the types of PAs are not listed herein; instead, we focus only on selected categories.

The following categories of protected areas are used in England and in Wales:

1. Site of special scientific interest (SSSI)
2. National nature reserve
3. Local nature reserve
4. National park (NP)
5. Area of outstanding natural beauty (AONB)^a
6. Heritage coast^b

Site of Special Scientific Interest (SSSI)

SSSIs should include the country's most important wildlife and geological sites. There are several thousand SSSIs in England, covering approximately 8% of the country's area²⁹. The SSSIs are either biological or geological. The biological sites may be significant for various taxonomic groups of animals (e.g., birds, and amphibians) or for plants and cover various habitats, including flower-rich meadows, woodlands, salt marshes, cold-water coral reefs, and other areas.

Conservation of biological SSSIs often requires the continuation of both the natural and artificial processes through which they were originally developed. Among these processes may be traditional grazing or extensive orchard cultivation. Some of the SSSIs are also national nature reserves or local nature reserves. Many SSSIs are located in national parks.

National Nature Reserves

There are more than 200 national nature reserves (NNRs) in England.³⁰ There are both wildlife and geological NNRs. Who is managing these PAs? Unlike other countries, the British model is flexible. Approximately two thirds of the NNRs in England (not the U.K.) are managed by the government



^a Note: There are no national parks in Northern Ireland. There are no AONBs in Scotland. In Scotland, there are also national scenic Areas and local nature conservation sites. SSSIs are called ASSIs in Northern Ireland.

^b Note: Heritage coasts include both cultural and natural heritage.

agency Natural England. The remaining third is managed by various organisations approved by Natural England. For example, these organisations include the Forestry Commission or local authorities. Moreover, some NGOs have been approved to manage NNRs. These include the Royal Society for Protection of Birds and some wildlife trusts.

The ownership of protected lands varies, which requires specific administrative approaches. Less than one third of Natural England NNRs are owned by the state. Approximately one half of the NNRs are leased, while the rest are held under Nature Reserve Agreements with land owners³¹

Local Nature Reserves

There are approximately 1500 local nature reserves in England. Besides more traditional biotopes, such as coastal sites and old woodlands, these may include landfill sites, former inner city railways, and brownfields re-colonised by wildlife.³²

Local Nature Conservation Sites

Local nature conservation sites (LNCSs) are non-statutory designations given by local authorities to areas of locally important biodiversity and landscapes in Scotland. The non-statutory designation means that these areas are not protected by law. However, this designation may serve as a guideline for decision-making by public authorities. Many LNCSs are proposed by local biodiversity conservation organisations, such as the *Scottish Wildlife Trust*. Local authorities evaluate the proposals and decide about their inclusion into the planning documents. The goal is to inform government planners and private developers about natural sites of merit.³³

National Parks

The United Kingdom's national parks possess attractive landscapes and harbour significant biodiversity. They are also popular tourist destinations. There are ten national parks in England, 3 in Wales, 2 in Scotland, and none in Northern Ireland. British national parks are areas that have been significantly transformed by agriculture and other human activities. Therefore, their management does not reflect the IUCN Category II (national park); instead, these parks fall under IUCN Category V (protected landscape). Each park is managed by an administrative body called the *National Park Authority*. Among the best-known national parks in the U.K. are the *Lake District NP* and the *Peak District NP* in England and the *Snowdonia NP* in Wales.

The **Lake District NP** in northeastern England is a place connected to English romantic literature. The so-called *Lake Poets* included William Wordsworth, Samuel T. Coleridge, and Robert Southey. The Lake District NP includes the highest mountain in England, Scafell Pike, which is 978 m high.

Box 7:

Daffodils
Poem by William Wordsworth
(Excerpt)

*I wandered lonely as a cloud
That floats on high o'er vales and hills,
When all at once I saw a crowd,
A host, of golden daffodils;
Beside the lake, beneath the trees,
Fluttering and dancing in the breeze.*
.....



Photo: Wild Daffodils

Source:
<http://www.photoeverywhere.co.uk/britain/snowdonia/slides/daffodil2561.htm>,
retr. 2-2-2013

Protected species include the osprey (*Pandion haliaetus*), the viviparous lizard (*Zootoca vivipara*), and the mountain ringlet (*Erebia epiphron*), which is the only montane butterfly in Britain.

Contrary to its name, the **Peak District NP** is not the highest in England or in the U.K., and its mountains typically have rounded tops. Similar to other English national parks, the Peak District NP faces challenges due to the large numbers of visiting tourists. Approximately 12 % of the Peak District NP land is owned by the charity (NGO) *National Trust*. The species subject to nature conservation efforts include the polecat (*Mustela putorius*), the common adder (*Vipera berus*), and the mole cricket (*Gryllotalpa gryllotalpa*).

The **Snowdonia NP** in Wales is popular with tourists for its jagged peaks. The highest peak, Snowdon, is 1278 m high. The Snowdonia NP harbours protected species such as the black grouse (*Tetrao tetrix*), the great crested newt (*Triturus cristatus*), and the freshwater pearl mussel (*Margaritifera margaritifera*).

Areas of Outstanding Natural Beauty (AONBs)

There are approximately 50 AONBs in the United Kingdom, most of which are located in England. The primary purpose of AONBs is to conserve and enhance the natural beauty of the landscape. The AONBs enjoy similar legal protection as NPs in the U.K.; however, they do not have their own administrative bodies. The AONBs typically have fewer tourists than national parks in the United Kingdom. An example of an AONB is the *Cornwall AONB* in England, which is situated on the southeastern tip of Britain. Cornwall is known not only for its landscape scenery but also for its Celtic heritage. Another AONB is the *Causeway Cause* in Northern Ireland. This AONB has a spectacular geology that gave inspiration to the tales of giants walking across the sea to Scotland.

Species Protection in the United Kingdom

Some U.K. wildlife species are protected by national legislation, especially by the Wildlife and Countryside Act of 1981. Species may also be targeted for protection through site designation. Some *sites of special scientific interest* (SSSIs), a national category, as well as *Natura 2000 sites*, which is part of the EU system, are designated for the protection of particular species³⁴. The United Kingdom has internationally important populations of some species. The U.K. coasts and seas are home to internationally important breeding populations of seabirds and also host significant populations of non-breeding waders, gulls, and wildfowl. England, due to climatic and other conditions, is very rich in bryophyte species (e.g., mosses)³⁵. The U.K.



Photo: Great Crested Newt (*Triturus cristatus*)
Author: Amphibian and Reptile Conservation, UK
Source: http://www.arc-trust.org/animals/great_crested_newt.php, retr. 15-8-2013, retr. 12-2-12

fauna reflects the position of the British Isles in the temperate deciduous forest biome, which allows for frequent similarities with many species in central Europe.

NOTE: DO YOU KNOW THESE UNITED KINGDOM SPECIES?			
Scientific name (Latin)	English name	German name	Czech name
<i>Mustela putorius</i>	European polecat / black p. / forest p.	Europäischer Iltis / Waldiltis	tchoř tmavý
<i>Pandion haliaetus</i>	osprey	Fischadler	orlovec říční
<i>Tetrao tetrix</i>	Black grouse	Birkhuhn	tetřívěk obecný
<i>Vipera berus</i>	common European adder / c. E. viper	Kreuzotter	zmije obecná
<i>Zootoca vivipara</i>	viviparous lizard	Waldeidechse	ještěrka živorodá
<i>Triturus cristatus</i>	great crested newt	Noerdlicher Kammolch	čolek velký
<i>Margaritifera margaritifera</i>	freshwater pearl mussel	Flussperlmuschel	perlorodka říční
<i>Erebia epiphron</i>	(small) mountain ringlet	Knochs Mohrenfalter	okáč horský
<i>Gryllotalpa gryllotalpa</i>	mole cricket	Europäische Maulwurfsgrille	krtonožka obecná
<i>Narcissus pseudonarcissus</i>	wild daffodil	Gelbe Wildnarzisse, Osterglocke	narcis žlutý

REVIEW QUESTIONS:

- 1) What are the categories of protected areas in the United Kingdom?
- 2) What are SSSIs?
- 3) What is the difference between a national park and an AONB in the United Kingdom?
- 4) Name some non-traditional biotopes created unintentionally by human activity in industrial or urban areas that can become local nature reserves in the U.K.
- 5) Are there any species found both in the United Kingdom and in your native country?



Heritage Coast, White Cliffs, U.K. Photo: J. Kordas

4-3 CATEGORIES OF PROTECTED AREAS IN THE UNITED STATES



The categories of protected areas in the U.S.A. reflect the federal characteristics of the country. Therefore, there are various categories at the federal, state, and local levels.

At the federal level, we find the following basic protected area categories:

- National parks
- National recreation areas
- National preserves
- National monuments

Other federal protected area categories include:

- National wildlife refuges
- National marine sanctuaries
- National conservation areas
- National wild and scenic rivers
- National forest reserves^a

30

The 50 states of the U.S.A. have their own protected area categories. Consequently, the following categories, which vary among the states, are often used at the state level:

- State parks
- State recreation areas
- State preserves
- State monuments



Finally, at the local level (e.g., county, city, or town) other categories of protected localities can operate under various names.

National Parks in the United States

The U.S. NPs are managed by the U.S. National Park Service (NPS) with its national **headquarters** in Washington, D. C. The NPS manages approximately 400 protected areas, including cultural monuments and national parks. Each individual NP has **park**

^a Note: There are also national forests and national grasslands managed by the (federal) U.S. Forest Service, which is obliged to seek a sustainable use of resources.

headquarters on its territory from which its staff (e.g., park rangers) operate. There are more than 20 000 permanent and seasonal employees in the U.S. National Park Service. These NPS employees are assisted by more than 200 000 volunteers.³⁶

There are approximately 60 national parks in the U.S.A.³⁷ National parks are popular tourist attractions. Generally, there is an entrance fee in the U.S. national parks. NP staffs are well trained to handle visitors; the rules of behaviour for tourists are strictly enforced. Arctic tundra, forests, lakes, deserts and other biotope types are represented in the U.S. national parks. The oldest NP is *Yellowstone National Park* in the state of Wyoming^a. The largest NPs are in the state of Alaska.

Sequoia NP and *Kings Canyon NP* in California house the world's largest trees, the Giant Sequoias (*Sequoiadendron giganteus*). However, the world's oldest non-clonal trees, which grow in protected areas along the California-Nevada border, are the Great Basin bristle-cone pines (*Pinus longaeva*). The smallest NP in the U.S.A., *Hot Springs NP* in Arkansas, is known for its therapeutic baths for rheumatism treatment. Only approximately 3% of the land in U.S. national parks is private. In the past, the U.S. government made efforts to purchase private land when it became available to transfer it to the national parks.³⁸

Regulation of Business in U.S. National Parks

Private businesses provide food, lodging, boating, whitewater rafting, and other recreational services inside the parks under contract with the U.S. National Park Service. These businesses are called "concessioners" because they must obtain a NP concession to carry out their business in the NPs. Travel agencies (commercial tour operators) that bring organised tourist groups into U.S. national parks must apply for a permit and pay a fee.

Species Protection in the U.S.A.

The basic U.S. biodiversity conservation law is the *Endangered Species Act (ESA)*, which was adopted in 1973. The goal of the ESA is to provide protection for the species on the ESA list, including protection for their *critical habitats*. The individual animal and plant species may have an *endangered* or *threatened* status. *Endangered* means that the species is in danger of extinction throughout all or a significant portion of its range. *Threatened* means that the species is likely to become an endangered species within the foreseeable future.



Photo: American Bison (*Bison bison*), Yellowstone NP, U.S.A.

Courtesy of Jaroslav Kordas, 2010

In 2013, there were more than 2000 species on the list.³⁹ Species can be added or dropped from the list; a species status can also be changed. A reward is paid to any person who is not a public

^a Note: The Yellowstone National Park is also located in the states of Montana and Idaho.

administration employee for providing information that leads to an arrest, conviction, or revocation of a license for a violation of the ESA.

The ESA is credited with extinction prevention and with the population recovery of some species.⁴⁰ Some of the animals that exhibited **population increases** after being placed on the ESA list are as follows:

- Grey wolf (*Canis lupus*). Grey wolf populations increased in the northern Rocky Mountains, in the U.S. Southwest, and in the vicinity of the Great Lakes. Its comeback in the continental United States was aided by reintroductions in the states of Wyoming and Idaho.
- Red wolf (*Canis rufus*). This rare species that was formerly on the verge of extinction increased its numbers due to breeding in captivity and a reintroduction programme. Red wolves can be currently found in North Carolina.
- Grizzly bear (*Ursus arctos horribilis*). The grizzly bear is a brown bear subspecies that occurs in the Yellowstone area of the continental United States and in Alaska. It was removed from the ESA list in 2007.
- California's southern sea otter (*Enhydra lutris nereis*). The numbers of this subspecies were dramatically reduced because of hunting and water pollution. The decline was stopped through conservation measures; an increase in its numbers followed. The population remains vulnerable to accidental oil spills.
- Bald eagle (*Haliaeetus leucocephalus*). This emblematic bird, known from the U.S. currency, increased rapidly in numbers after legal protection and a ban on DDT was introduced. The bald eagle was removed from the ESA list in 2007.
- Peregrine falcon (*Falco peregrinus*). This species currently nests not only in protected areas but also in large U.S. and Canadian cities. Its numbers also increased due to the ban on DDT. The peregrine falcon has been removed from the ESA list.

Among the best-known **extinctions in the U.S.A.** is the story of the passenger pigeon (*Ectopistes migratorius*). This pigeon, whose migrating flocks numbered in the millions in the second half of the 19th century, became extinct in 1914 due to hunting and habitat destruction.⁴¹ Another extinct species is the Carolina parakeet (*Conuropsis carolinensis*), which was the only indigenous parrot from the eastern United States. This parrot went extinct in 1918 due to intentional killing and loss of habitat.⁴² Several fish species became extinct in the United States as late as the 1970s and 1980s.⁴³ However, concerned scientists, non-governmental organisations, and environmentally minded citizens worked diligently to prevent such irreversible losses in the future.

NOTE: DO YOU KNOW THESE AMERICAN ANIMAL SPECIES?			
Scientific name (Latin)	English name	German name	Czech name
<i>Canis lupus</i>	grey wolf	Wolf, Grauwolf	vlk, vlk obecný
<i>Canis rufus</i>	red wolf	Rotwolf	vlk rudohnědý, vlk červený
<i>Gulo gulo</i>	wolverine	Vielfrass	rosomák
<i>Ursus arctos horribilis</i>	grizzly bear	Grizzlybär	medvěd grizzly, medvěd hnědý severoamerický
<i>Enhydra lutris nereis</i>	California's southern sea otter	Kalifornischer Seeotter	vydra mořská kalifornská
<i>Haliaeetus leucocephalus</i>	bald Eagle, bald-headed eagle	Weisskopf Seeadler	orel bělohlavý
<i>Falco peregrinus</i>	peregrine falcon	Wanderfalke	sokol stěhovavý
<i>Ectopistes migratorius</i>	passenger pigeon	Wandertaube	holub stěhovavý

NOTE: DO YOU KNOW THESE AMERICAN TREE SPECIES?			
Scientific name (Latin)	English name	German name	Czech name
<i>Sequoiadendron giganteum</i>	giant sequoia / giant redwood	Riesenmammutbaum	sekvojovec obrovský
<i>Pinus longaeva</i>	Great Basin bristle-cone pine	Lang-lebige Kiefer	borovice osinatá

REVIEW QUESTIONS:

- 1) What are the categories of federal protected areas in the United States? Name at least four categories.
- 2) What other protected areas (besides federal protected areas) are found in the U.S.A.?
- 3) What organisation manages the national parks in the U.S.A.?
- 4) What are the successes of U.S. nature conservation (provide some examples)? Were there any species extinctions in the 20th century in the U.S.A.?
- 5) Which protected species of the United States also found in your native country?



Northern elephant seal
(*Mirounga angustirostris*), California,
U.S.A.

Photo: Courtesy of Jaroslav Kordas, 2010

4-4 CATEGORIES OF PROTECTED AREAS IN GERMANY



The Federal Republic of Germany has a partially decentralised system of nature conservation. Legislation may vary in individual constituent countries or states (German: *Laender*). Therefore, the Land of Bavaria may have some differences in its nature conservation system compared to the Land of Saxony, or other states. There is a *Federal Nature and Landscape Conservation Law* in Germany (German name: *Bundesnaturschutzgesetz*). In addition, the 16 states have their own nature and landscape conservation legislature.

The **categories of special protected areas (German: *Schutzgebiete*) in Germany** are as follows⁴⁴:

- Nature reserves (German: *Naturschutzgebiet*)
- Natural monuments (German: *Naturdenkmal*)
- National parks and national nature monuments (German: *Nationalpark, Nationales Naturmonument*)
- Biosphere reserves (German: *Biosphärenreservat*)
- Nature parks (German: *Naturpark*)
- Protected landscape areas^a (German: *Landschaftschutzgebiet*)

Additionally, the following areas can also be found in Germany:

- Protected components of landscapes (German: *Geschützte Landschaftsbestandteile*)
- Legally protected biotope types^b (German: *Gesetzlich geschützte Biotope*)

34

The national parks, biosphere reserves, and nature parks are called *large-scale protected areas* (German: *Großschutzgebiete*) in Germany. As in the Czech Republic, the German legal system also uses the term *specially protected* (German: *besonders geschützt*). One should not confuse the German *Schutzgebiet* (PA in general) with the *Naturschutzgebiet* (a particular category of a PA, i.e., a *nature reserve*).

Nature Reserves (German: *Naturschutzgebiet*)

There are fewer than 9000 nature reserves in Germany, covering less than 4% of the German territory. The average size of a nature reserve in Germany is slightly over 150 ha. More than half of the German nature reserves are smaller than 50 ha. These small nature reserves are considered to be insufficiently protected from negative outside influences, such as water drainage and eutrophication (BfN, 2012).⁴⁵

^a Note: The German Federal Office for Nature Conservation (BfN) also uses the English translation *landscape protection area* instead of *landscape protected area* and *nature conservation area* instead of *nature reserve* on its web pages. We attempt to employ language that uses terms similar to the IUCN and/or categories in English-speaking countries.

^b Note: The legal protection status of these areas appears to be stronger than, for example, the status of the Czech *significant landscape feature* (Czech: *VKP*) sites. Compensatory measures are required when an exception to the law is passed by an authority and when a *specially protected biotope type* is allowed to suffer the risk of damage.



Photo: Lüneburg Heath Nature Reserve
Source: www.luneburg.de, retr. 16-11-12

Box 8: Nature Reserve Lüneburg Heath

One of the oldest and best-known German nature reserves is the **Lüneburg Heath** (German: *Lüneburger Heide*), with extensive areas of heathland and other biotopes. The early history of the protected area is connected to the name Pastor Bode. This clergyman, together with his friends, succeeded in preventing weekend-house development and reforestation in parts of the area at the beginning of the 20th century. Later, he pushed the public authorities to declare a protected area.⁴⁶ Today, as a century ago, the colourful heath of the Lüneburg Heath attracts many tourists every year.

Nature Monument (German: *Naturdenkmal*)

Habitats up to 5 ha can be declared as *nature monuments* in Germany. Trees and geological formations can also be designated as *nature monuments*. The oldest trees in Germany are considered to be approximately 1000 years old^a. The species included are the European yew (*Taxus baccata*), the pedunculate oak (*Quercus robur*), the sessile oak (*Quercus petraea*), the broad-leaved lime (*Tilia platyphyllos*), and the small-leaved lime (*Tilia cordata*). A very old lime tree grows in the city of Dresden (the so called *Kaditzer Linde*).⁴⁷

National Parks (German: *Nationalpark*)

There were 15 national parks in Germany at the end of the year 2014.⁴⁸ The largest national parks are in the coastal areas of northern Germany on the North Sea. Some of the German NPs are classified as IUCN Category II (national park), while others are classified as IUCN Category V (protected landscape).



Photo: Saxon Switzerland National Park, Germany

JM 2012

^a Note: The exact age is usually unknown.

Box 9: Bavarian Forest National Park

The oldest NP in Germany is the **Bavarian Forest NP** (German: *Nationalpark Bayerischer Wald*). This national park was officially founded in 1970. The establishment of the first German NP was a difficult task. The project would not have been completed without the great efforts of dedicated individuals. The project was actively promoted in the mid-1960s by Mr. Weinzierl, then a volunteer nature conservationist in the Lower Bavaria administration. Cooperation with well-known TV media personalities contributed to the success of the conservation efforts. The state forestry authorities initially presented strong opposition to the national park (BN 2012)⁴⁹. A serious problem in the early years of the NP was the extensive damage caused by red deer (*Cervus elaphus*).



Luchsfamilie, Photo: D. M. Sheldon,
Source: Bavarian NP Official Webpages,
retr. 10-1-2014



Gr. Rachel Mountain, Photo: Webcam
Source: Bavarian NP Official Webpages,
retr. 10-1-2014

The deer were overpopulated. Hunting associations fed the deer because the deer were favourite trophy animals. Even in 2014, the red deer were to be fed in four fenced areas in the winter to prevent serious damage to the forest.⁵⁰

Today, the Bavarian Forest National Park has the second largest population of the Eurasian lynx (*Lynx lynx*) in Germany^a. The European wildcat (*Felis catus*) also lives in the NP, a result of an earlier re-introduction of the animal in Bavaria^b. Additionally, both the rare white-backed woodpecker (*Dendrocopos leucotos*) and the disappearing wood grouse (*Tetrao urogallus*) can be found in the NP.⁵¹

National Nature Monument (German: *Nationales Naturmonument*)

National nature monuments represent a recently added category in Germany. As of June 2013, there were no national nature monuments in Germany. The idea was to have large-scale natural monuments of national (federal) significance. Among the areas considered for this status included the Island of Vilm⁵² in the Baltic Sea. Its scenery has attracted many painters in the past, including Caspar Friedrich. Another area considered for the category of national nature monument was the Siebenhirten Mountains⁵³. This romantic landscape on the Rhine River is associated with old legends, including stories about dragons and dwarfs called Nibelungs.

^a Note: The largest lynx population in Germany is in the mountains of Harz National Park on the former East-West Germany border.

^b Note: There are probably no wildcats (*Felis silvestris*) permanently living in the bordering Czech National Park Šumava.

Biosphere Reserve (German: Biosphärenreservat)

Biosphere reserves is a category specified directly in German national legislation. This is unlike some other countries (e.g., the Czech Republic), where this category only exists as an international pledge and not a domestic category.

Box 10: Biosphere Reserves in Southeast Germany

Oberlausitzer Heide- und Teichlandschaft is a UNESCO biosphere reserve that is situated close to the Polish and Czech borders in the bilingual German and (Slavic) Sorbian region. It is an old cultural landscape. Water and wet biotopes are frequent, such as fishponds, reed beds, meandering river sections, and bog forest. It is one of the largest fishpond areas in Central Europe. Pine forests and sand dunes are also present.⁵⁴ The biosphere reserve is divided into four zones. In the first zone, nature is left to its natural dynamics; recreationists are not permitted in this area. Most of the ponds are located in the second zone. The third zone contains most of the human settlements, while the fourth zone has a significant share of past strip coal mining areas.⁵⁵

Spreewald is another biosphere reserve that is situated to the north of Oberlausitzer Heide- und Teichlandschaft. Alder forests on wet soils and pine forests on sandy dry soils characterise the area.⁵⁶ The biosphere reserve is divided into four zones. In the first zone, nature is left to develop on its own terms; tourists are not permitted.^{57 58} However, Spreewald is popular with recreationists. The tourists visit the other “lower” zones, where natural and artificial waterways are popular. Boating on channels is a favourite pastime. Like the other biosphere reserve, Spreewald has its own professional staff.⁵⁹

Nature Parks (German: *Naturpark*) and Protected Landscape Areas (German: *Landschaftschutzgebiet*)

German *nature parks* and *protected landscape areas* each have a somewhat different status than *natural parks* (Czech: *přírodní park*) and *protected landscape areas* (Czech: *CHKO*) in the Czech Republic. Although they have similar names in the two countries, they are not equivalent. *Nature parks* are cultural landscapes in Germany, where they cover approximately 25% of the total area. The largest nature park areas are in the Black Forest (German: *Schwarzwald*) region.^a Environmentally friendly tourism and other sustainable uses of the landscape are often proclaimed as the goals of nature parks. As in other countries, there is a significant difference between *national parks* and *nature parks*. Nature parks possess a significantly lower level of protection than national parks. Nature parks are also typically much less valuable from a nature conservation perspective than national parks.

Protected landscape areas are designed to protect the overall characteristic of a particular landscape. There are few restrictions on the uses of the land, including few restrictions on forestry and agriculture. Only changes to the typical characteristic of the landscape are prohibited. Protected landscape areas also aim to support recreation. Unlike in the Czech protected landscape areas, zoning is not obligatory by law in German protected landscape areas. In some cases, valuable parts of living nature are protected by declarations of another category of a PA, typically a nature reserve (German: *Naturschutzgebiet*).

Protected Components of Landscapes (German: *geschützter Landschaftsbestandteil*)

Among the *protected components of landscapes*, we can find city parks, extensive orchards, plant and animal habitats, animal migration zones, ponds and streams, tree rows, hedgerows, and single trees. Individual German states (Länder) can complement federal legislation on protected components of landscapes. The protected components of landscapes can be individually declared for a particular site, which is similar to most German categories. However, in some cases, the states can declare general protection of some protected components of landscapes, such as all tree rows, within a selected area.



Map No. 4: German Biosphere Reserves

Source: http://natur-schutz-gebiete.com/sites/natur-schutz-gebiete.com/files/Karte_Biosphaerenreservate_Deutschland.png, retr. 2-6-2013

^a Note: A part of the Black Forest became a national park in 2014.

This category should not be confused with *landscape protected areas*, *nature parks* or *legally protected biotopes*, even though there may be some overlap.^a

Legally Protected Biotope Types (German: *Gesetzlich geschützter Biotop*)

There are *legally protected biotope types* for all of Germany (i.e., for the entire federation). Furthermore, individual states (*Länder*) can add biotopes that they consider important for conservation in the state. Although nature conservation administrators set up information lists of sites in their area, the particular sites do not have to be declared as such by the administration. All biotopes of a particular type are legally protected even when they are not on the list. The federally protected biotope types include the following: swamps, reed beds, certain types of wet meadows, bayous and periodically swept flood plains, xeric grasslands, juniper heathlands, natural scree piles (German: *Schutthalden*), and wood- and shrublands in dry and warm locations.

The Land of Saxony also protects the following so-called *special protected biotopes* (German: *besonders geschützte Biotope*): islands of old trees with frequent cavities, individual trees with frequent cavities (for the conservation of cavity-dwelling birds and other animals), dry walls (for the conservation of lizards and other organisms), and field clearance cairns (German: *Steinrücken*, Czech: *kamenné snosy*).

Species Protection in Germany

The basic German conservation law is the Federal Nature Conservation Act (German: *Bundesnaturschutzgesetz*), which went into effect in 1977. The law is concerned with both *land-based conservation* of various categories of PAs and *species-based conservation*. The German law, like the Czech law, includes both *general* protection of species and *special* protection of species. *General* protection of species means that all species of animals and plants (even though if not specifically listed) possess some degree of protection. *Special* protection of species concerns species or groups of species that are listed by the legislature.



Field clearance cairns in Saxony – a special protected biotope

Photo: JM 2012

In Germany, there is a general prohibition according to the federal law to cutting down bushes and trees during the period between the 1st of March and the 30th of September to protect nesting birds.

^a Note: There is a somewhat similar legal arrangement in the Czech Republic with the so-called *significant landscape features* (Czech: *významný krajinný prvek*, VKP). (In the Czech Republic, VKP are not considered *special protected areas* by the Czech law but have another, weaker, protective status). However, part of the relevant Czech legislation on VKP is different from the German *Protected Components of Landscapes* (*Geschützte Landschaftsbestandteile*) legislation.

The *strictly protected* species have more protection than species that are *specially protected* only. Species can be both *specially* and *strictly* protected. For example, the Bavarian pine vole (*Microtus bavaricus*), a high-mountain species, is both specially and strictly protected. The German list of protected species contains not only domestic species but also species that are included because of international obligations (Natura 2000, Bonn, Bern and Washington conventions). Consequently, we find the wolverine (*Gulo gulo*) on the list of protected species, even though it is not a native species.⁶⁰

Red lists for plants and animals have been compiled. In addition, the *German Red Data Book On Endangered Habitats* includes information on species conservation statuses, trends, and the potential for regeneration. Among critically endangered German habitat types are raised bogs⁶¹. The red lists do not have the power of legislation; however, they may serve as guidance in decision-making by public authorities.

The *international responsibility species of Germany* are the species for which Germany has a particular responsibility. Such species are either only present in Germany or are primarily found in Germany (based on the respective total world populations).

An example is the Lake Constance forget-me-not (*Myosotis rehsteineri*), which is a light blue flower that is native to gravel banks on Lake Constance (German: *Bodensee*)^{62 63}. Scientific evaluations

have been conducted for these international responsibility species and for other endangered species. The results of these scientific evaluations should be reflected in public policy measures, which may include changes in legislation, improved law enforcement, habitat maintenance, habitat regeneration, and species reintroduction.

Box 11: The Return of the Wolf to Germany

The Eurasian wolf (*Canis lupus*) has made a comeback in several European countries. Conservation measures and educational outreach have allowed its spontaneous return to regions where it was earlier eliminated. Without top predators, there are no well-functioning ecosystems. Protection of top predators is the ultimate test of effectiveness of national nature conservation.

Following France, Germany re-established a permanent wolf population. Wolves crossed into Germany from Poland and entered the Oberlausitz region in the Land of Saxony. A large part of their current area, which is not far from the Polish and Czech borders, was used as a military exercise zone. A wolf information centre (Wolves Contact Office) was established in Saxony.

The size of the wolf population in Saxony was estimated to be approximately 8 families or couples in January 2013 according to Wolves Contact Office in Rietschen. Other wolfpacks are in the neighbouring Land of Lower Saxony. Compensations are provided to farmers for livestock depredations. Local inhabitants are offered education on how to protect their domestic animals through means that are non-lethal for the wolf. The public acceptance of the wolf seems to be high in Germany. However, many hunters and gamekeepers still perceive the wolf to be their competition.

Source: Kontaktbüro Wolfsregion Lausitz (online: <http://www.wolfsregion-lausitz.de/>, access 30-6-2013

Source: NABU (online: <https://www.nabu.de/aktionenundprojekte/wolf/>), acc. 30-6-2013



Photo: R. Stets, Archiv Naturschutz LfULG, <http://www.umwelt.sachsen.de/umwelt/natur/18228.htm> retr. 30-6-13

NOTE: DO YOU KNOW THESE GERMAN ANIMAL SPECIES?			
Scientific name (Latin)	English name	German name	Czech name
<i>Cervus elaphus</i>	red deer	Rothirsch	jelen evropský
<i>Lynx lynx</i>	Eurasian lynx	Euroasischer Luchs / Nordluchs	rys ostrovid
<i>Felis silvestris silvestris</i>	European wildcat	Europäische Wildkatze/ Waldkatze	kočka divoká
<i>Dendrocopos leucotos</i>	white-backed woodpecker	Weißrückenspecht	strakapoud bělohřbetý
<i>Tetrao urogallus</i>	wood grouse / western capercaillie	Auerhuhn	tetřev hlušec

REVIEW QUESTIONS:

- 1) What are the categories of protected areas in Germany? Name at least four categories.
- 2) What are the *legally protected biotope types* in Germany? Can individual lands/states in Germany have their own additional legally protected biotope types? If yes, provide an example.
- 3) Are there any top predators that permanently reside in Germany? Name at least two of them. What is the importance of top predators?
- 4) What species can be found both in Germany and in your native country?



Educational trail for tourists, Nature reserve Georgenfelder Peatbog, Saxony

Photo: JM 2012

Chapter 5: GOVERNMENT AGENCIES FOR NATURE CONSERVATION AND LANDSCAPE PROTECTION

Specialised government agencies are set up to promote domestic nature conservation. These agencies vary in their administrative powers and in the financial support they receive from their governments. Their influence varies not only depending on the particular country but also depending on the current political climate within the given country. In some countries, these agencies have a relatively strong decision-making power. In other countries, the agencies' role may be limited to the provision of expert advice to decision-making public officers.

5-1 Government Agencies in the Czech Republic

The principal government agency in charge of nature conservation is the Agency for Nature and Landscape Protection (Czech: *Agentura ochrany přírody a krajiny*, AOPK). The AOPK may be involved in all nature conservation matters, both inside and outside of PAs, with the exception of national parks. The obligations and rights of the AOPK vary depending on the category of a protected area. Outside of protected landscape areas and outside some additional categories of PAs, the role of the AOPK may be mostly advisory, while the decision-making power in conservation matters is held by regional and local authorities.⁶⁴ There have been some changes in the system in the last years. Formerly, the landscape protected areas were not under the authority of the AOPK. The AOPK management reports to the Ministry of the Environment of the Czech Republic. The national park administrations lie outside of the AOPK structure.



Regional and local authorities in the Czech Republic, that are responsible for a large part of nature conservation agenda, are called *kraj/krajský úrad* and *obec/obecní úrad*. Regional authorities manage some categories of small-scale protected areas (nature reserves and natural monuments that lie outside of PLAs and NPs).

5-2 Government Agencies in the United Kingdom

The nature conservation system in the United Kingdom is divided by historical countries. England, Scotland, Wales, and Northern Ireland have their own agencies in charge of nature conservation. The following are the names of the agencies:



- England: *Natural England*
- Scotland: *Scottish Natural Heritage*
- Wales: *Natural Resources Wales*
- Northern Ireland: *Northern Ireland Environment Agency*

The U.K. *Joint Nature Conservation Committee* (JNCC) is a coordinating body for these agencies that brings together members from the aforementioned nature conservation bodies. The JNCC also advises the U.K. Government on U.K.-wide and international nature conservation matters.⁶⁵

5-3 Government Agencies in the U.S.A.

There are 4 agencies that are involved in nature conservation in the United States:

- U.S. Fish and Wildlife Service (USFWS)
- National Marine Fisheries Service (NMFS)
- U.S. National Parks Service (NPS)
- U.S. Environmental Protection Agency (EPA)

There are two so-called “green agencies”, i.e., the U.S. National Parks Service and the U.S. Fish and Wildlife Service,^a one so-called “grey” agency, the U.S. Environmental Protection Agency,^b and one “blue agency”, the National Marine Fisheries Service^c.



The U.S. National Parks Service manages federal national parks and some other protected areas and cultural monuments.⁶⁶ **The U.S. Fish and Wildlife Service** is in charge of the *Endangered Species Act* (ESA), which is the basic U.S. nature conservation law. Its task is to enforce the protection of the species on the ESA list, and their “critical” habitats on both public and private land. The U.S. Fish and Wildlife Service (USFWS) is also in charge of the National Wildlife Refuge System, a system of protected public lands and waters set aside to conserve America’s biodiversity. USFWS also takes care of freshwater fish.⁶⁷ **The National Marine Fisheries Service** (NMFS) handles marine species that are on the ESA list.⁶⁸ The NMFS is also in charge of federal sea fisheries for commercial fishing. ESA species that occur in both habitats, e.g., the Atlantic salmon (*Salmo salar*), the Atlantic sturgeon (*Acipenser oxyrinchus*) and sea turtles (*Chelonioidea*), are managed jointly by both agencies. **The U.S. Environmental Protection Agency** (EPA) is in charge of invasive species;⁶⁹ its other many duties include air, water, soil and radiation protection.

43



5-4 Government Agencies Administering Nature Conservation in Germany

There is a federal agency for nature and landscape conservation in Germany, i.e., the Federal Agency for Nature Conservation (German: *Bundesamt für Naturschutz*, *BfN*).⁷⁰ The BfN should not be confused with the Federal Environment Agency (German: *Umweltbundesamt*, UBA), which manages other environmental issues (e.g., air, water, soil, and environmental health).⁷¹

^a Note: The two “green” agencies function under the U.S. Department of Interior.

^b Note: The EPA is a federal government agency that reports directly to the U.S. government.

^c Note: The U.S. Fish and Wildlife Service is a part of the National Oceanic and Atmospheric Administration (NOAA), which works under the U.S. Department of Commerce.

NOTE: DO YOU KNOW THESE FISH SPECIES?			
Scientific name (Latin)	English name	German name	Czech name
<i>Salmo salar</i>	Atlantic salmon	Atlantischer Lachs	losos atlantský / obecný
<i>Acipenser oxyrinchus</i>	Atlantic sturgeon	Atlantischer Stör	jeseter ostrorypý

REVIEW QUESTIONS:

- 1) What is the principal agency for nature conservation in the Czech Republic? Is it in charge of protected landscape areas and national parks?
- 2) Comment on the system of nature conservation agencies in the United Kingdom. How is coordination achieved?
- 3) What is the main federal agency in charge of nature conservation outside of NPs in the United States?
- 4) What is the federal agency for nature conservation in Germany called? Is there another agency in Germany in charge of environmental matters?



Grand Canyon, U.S.A.

Photo: J. Kordas 2010

Chapter 6 CASE STUDY: NATIONAL PARKS IN THE CZECH REPUBLIC

National parks in the Czech Republic, as in other countries, are the “flagships” of land-based nature conservation. As in other countries, NPs reflect (for better or worse) the level of environmental consciousness of the government and of the general public and the efforts of nature conservationists.

There are four **NPs in the Czech Republic**:

- Krkonoše National Park
- Šumava National Park
- Podyjí National Park
- Bohemian Switzerland National Park

6-1 Krkonoše National Park (CZ: *Krkonošský národní park, KRNP*)

The Krkonoše NP is located in the northern part of the Czech Republic, specifically in northeastern Bohemia along the border with Poland. To the north, the park borders Karkonoski Park Narodowy, a Polish NP. The Krkonoše NP has a fairly large protective zone that includes major tourist centres (the towns of Špindlerův Mlýn, Pec pod Sněžkou, and Harrachov).

This national park was founded in 1963. It is the oldest national park in the territory that is currently the Czech Republic. The national park includes forests, alpine meadows, and alpine tundra. Alpine tundra is very rare in the Czech Republic. There are only two other (much smaller) areas in the Czech Republic with alpine tundra.^a Within the territory of the Krkonoše NP and in its protective zone there are numerous recreation facilities. Tourist traffic is heavy, especially in winter during the downhill skiing season.

45



Map No. 6A. Location of Krkonoše National Park in the Czech Republic

Source: Wikipedia, Krkonoše National Park (online: http://en.wikipedia.org/wiki/Krkonoše_National_Park), retr. 15-1-13

^a Note: see Banaš et al. (2008) regarding the alpine tundra in the Jeseníky Mountains and Kralický Snežník areas.

The management of the Krkonoše NP must handle several serious problems in its task of nature conservation. These problems include acidification and mass “hard” recreation. Forest soils are acidified as a result of earlier (and also current) air pollution, which causes instability in forests⁷². Moreover, mass “hard” recreation often surpasses the carrying capacity of the area.⁷³ In 1986, the Krkonoše National Park (KRNAP) was ranked by the IUCN as one of the 12 most threatened NPs in the world. While air pollution in the region has subsided since the 1980s, it is still significant⁷⁴. The KRNAP is rated Category V in the UNEP/IUCN database⁷⁵, which means that it is not a NP according to the IUCN categorisation; instead, the area is a protected landscape. Regardless, the KRNAP still includes biotopes and species that are very valuable from the perspective of Czech nature conservation.

The **management tasks** to be solved by the Krkonoše NP administration include the following:

- A reduction in the share of the Norway spruce (*Picea abies*)
- An increase in the share of broad-leaved tree species, such as the European beech (*Fagus sylvatica*), the sycamore maple (*Acer pseudoplatanus*), the mountain elm (*Ulmus glabra*), the large-leaved lime (*Tilia platyphyllos*) and the wild cherry (*Prunus avium*)^{76 77}

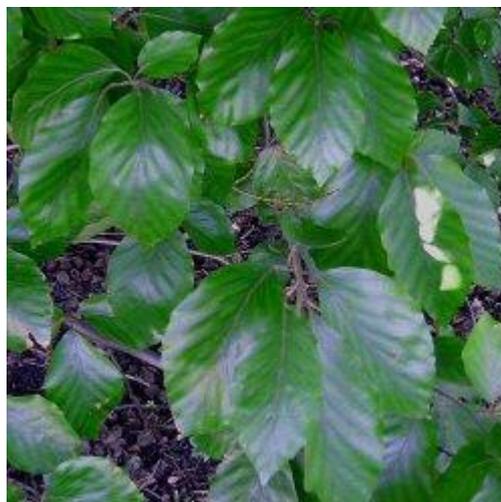


Photo: European Beech (*Fagus sylvatica*) JM 2012

These tasks (in addition to other tasks) must be complete to accomplish the following objectives:

- Support biodiversity
- Increase the stability of forest ecosystems
- React to expected climate change

NOTE: DO YOU KNOW THESE KRKONOŠE NP TREE SPECIES?			
Scientific name (Latin)	English name	German name	Czech name
<i>Picea abies</i>	Norway spruce	Gemeine Fichte / Rotfichte	smrk ztepilý
<i>Fagus sylvatica</i>	European beech / common beech	Rotbuche	buk lesní
<i>Acer pseudoplatanus</i>	sycamore maple / Scottish maple	Bergahorn	javor klen
<i>Ulmus glabra</i>	wych elm / Scots elm	Bergulme	jilm horský / jilm drsný
<i>Tilia platyphyllos</i>	large-leaved lime / large-leaved linden ^a	Sommerlinde	lípa velkolistá
<i>Prunus avium avium</i>	wild cherry	Wilde Vogel-kirsche	třešeň ptačí

^a Note: The name *Linden* for the *Tilia* genus is used outside of Great Britain.

Probably the most challenging task is to approach the problem of hard forms of tourism. Constant pressures to build new ski slopes with artificial lighting, the wide use of snow machines, the traffic by cable cars and snow scooters, and the development of new recreational housing are all putting further stress on sensitive ecosystems. Unlike other countries, such as Austria, the Czech Republic's high mountain ecosystems cover a relatively small area, creating a clash between mass winter sports' tourism and nature conservation in the Krkonoše



Bohemian Gentian (*Gentianella bohemica*)

Photo:

<http://ekolist.cz/cz2/fotobanka/rostliny-2/kvetiny>, retr. 30-6-13

Mountains^a. Efforts to reintroduce the common wood grouse (*Tetrao urogallus*) proved unsuccessful in the Krkonoše NP⁷⁸. Nevertheless, there might also be some good news for nature conservation in Krkonoše. In September 2012, the administration of Krnap announced that there was a high possibility that the Krkonoše Mountains were visited by a 5-member pack of wolves (*Canis lupus*).^{79 b}, which is a top predator species that has been missing for a long time.

Habitats in the KRNAP include acidophilus spruce forests, beech forests, mountain pine (*Pinus mugo*) scrub, and tundra biome habitats, such as alpine grasslands and alpine heathlands.

Among the **plants** in the KRNAP, knotberry (*Rubus chamaemorus*), a plant that otherwise occurs much farther north in Northern Europe, is common. In the KRNAP, there are also four endemic Natura 2000 plant species, i.e., the Bohemian bellflower (*Campanula bohemica*), the sudetic lousewort (*Pedicularis sudetica*), the sudetic bedstraw (*Galium sudeticum*) and the Bohemian gentian (*Gentianella bohemica*).⁸⁰

Invertebrates of the Krkonoše NP include the minute Arctic whorl snail (*Vertigo modesta arctica*; Czech: *vrkoč severní*), the endemic wolf spider (*Acantholycosa norvegica sudetica*; Czech: *slídák ostnonohý*), which lives on scree slopes, the large ringlet (*Erebia euryale*; Czech: *okáč rudopásný*), which is a high mountain butterfly, and the predatory goldshining ground beetle (*Carabus auronitens*; Czech: *střevlík zlatolesklý*).⁸¹

Among the **vertebrates** in the park, the pond bat (*Myotis dasycneme*; Czech: *netopýr pobřežní*), a Natura 2000 (N2K) species, the red-spotted bluethroat (*Luscinia svecica svecica*), which is a N2K bird species that lives in mountain pine areas close to peatbogs, the smooth snake (*Coronella austriaca*), the alpine newt (*Triturus alpestris*), and the European bullhead (*Cottus gobio*; Czech: *vranka obecná*), which is also a Natura 2000 species, are common.^{82 83}

^a Note: The *Krkonoše Mountains* are sometimes translated as the *Giant Mountains* in English (this comes from the German name for Krkonoše "Riesengebirge", which means giant mountains in German).

^b Note: the wolves probably wandered from Poland and/or from Saxony, Germany, which is where they have established permanent populations.

NOTE: DO YOU KNOW THESE KRKONOŠE NP RARE PLANT SPECIES?			
Scientific name (Latin)	English name	German name	Czech name
<i>Rubus chamaemorus</i>	knotberry	Moltebeere	ostružiník moruška
<i>Campanula bohemica</i>	Bohemian bellflower	Boehmische Glockenblume	zvonek český
<i>Pedicularis sudetica sudetica</i>	sudetic lousewort	Sudetisches Lauesekraut	všivec krkonošský pravý
<i>Galium sudeticum</i>	sudetic bedstraw	Sudetisches Labkraut	svízel sudetský
<i>Gentianella (praecox) bohemica</i>	Bohemian gentian	Boehmischer Enzian	hořeček (mnohotvarý) český

REVIEW QUESTIONS:

- 1) What habitats can be found in the Krkonoše National Park?
- 2) What problems from a nature conservation perspective does the Krkonoše National Park face? What are potential solutions? Identify at least three problems and their possible solutions.
- 3) What other national parks does the Krkonoše NP border?
- 4) Name species of plants and animals that occur in the KRNP (name at least three species of rare or endangered animals and three species of rare or endangered plants). Are there any endemic species among them?

6-2 Šumava National Park (CZ: *Národní park Šumava, ŠUNAP*)

The Šumava NP is located in the southwestern part of the Czech Republic, along the German border. To the south, the park borders the Bavarian Forest NP, a German NP. In the Czech Republic, the park is surrounded by the Šumava Protected Landscape Area, with which it shares administration.

The Šumava NP was founded in 1991, soon after the political changes of the so-called Velvet Revolution. Large parts of the present-day NP were formerly military zones that were closed for several decades to the general public. Together with the Bavarian Forest NP and the Šumava PLA, the Šumava National Park forms the largest forest area in Central Europe. For this reason, the park is sometimes called “*The Green Roof of Europe*”.



Map No. 6B: Location of Šumava NP in the Czech Republic^a

Source: Wikipedia, Národní park Šumava,
(online: http://cs.wikipedia.org/wiki/narodni_park_sumava),
retr. 15-1-13

In the Šumava NP, the remnants of original temperate forests, peatbogs, and several glacial lakes are present. The park contains the largest population of large predators in the Czech Republic, i.e., the Eurasian lynx (*Lynx lynx*). The permanent human population is relatively low; only approximately 2000 people inhabit the 680 square kilometres.

The Šumava National Park has several **management problems** to handle:

- The species composition of the forest changed by humans
- Bark beetle (*Ips typographus*) in the weakened forest stands
- Controversial forest management practices of some NP administrations, criticism of NP management by scientists, and conflicts with environmental groups
- A weak understanding of NP values by inhabitants of the surrounding villages and the villages inside the NP
- Pressures to increase the intensity of recreational use
- Poaching of protected predators, especially the Eurasian lynx (*Lynx lynx*)

^a Note: The dark grey colour represents the Šumava NP. The light grey colour represents the the Šumava PLA. Both protected areas share the same administration (managing personnel).

The solution to the problems in the Šumava NP should be connected with qualified professional top management and with the engagement of foresters with nature conservation educations and attitudes. Good communication with environmental activists is very important; providing proper information to local inhabitants is also critical.

The situation in the Šumava NP has drawn international attention. In 2012, the administration of the Šumava NP received a warning from international nature conservation institutions. An official letter stated that the WCPA (World Commission on Protected Areas) and the IUCN (International Union for Nature Conservation) declared that the Šumava NP will not be able to retain its Category II status under the conditions in its proposed management plans. Therefore, on the basis of professional recommendations, the status of the Šumava NP will be changed in the World Database of Protected Areas and the United Nations list of PAs. The title “national park” will be used only locally (in the Czech Republic) and it will not be internationally recognised.⁸⁴

Recently, controversies have continued over the logging of trees in the NP first zone and regarding the size and time schedule of reconnecting the first zones. The Šumava NP is divided, like other NPs, into three zones that are afforded various levels of protection. The first zone is intended to be the most strictly protected, while the third zone is the least protected region.

The Šumava NP is an area rich in valuable ecosystems and wildlife species. **Significant habitats** in the Šumava NP include herb-rich and acidophilus beech forests, montane and bog spruce forests, and open raised bogs. There are some regions containing mountain pine scrub⁸⁵.

Among the **plants** in the park, endemic subspecies, such as the peat western marsh orchid (*Dactylorhiza majalis* subsp. *turfosa*) and the Bohemian gentian (*Gentianella praecox* subsp. *bohémica*) are common. Among the more common plants are the conspicuous orange lily (*Lilium bulbiferum*), the mountain arnica (*Arnica montana*), and the carnivorous southern bladderwort (*Utricularia australis*).⁸⁶

Invertebrates significant from a nature conservation viewpoint include the European Crayfish (*Astacus astacus*) and the Fresh Water Pearl Mussel (*Margaritifera margaritifera*). There are also glacial age relicts: the Moorland Clouded Yellow (*Colias palaeno*; Czech: *žluťásek borůvkový*), the Raised Bog Ground Beetle (*Carabus menetriesi*; Czech: *střevlík Menetriesův*), and the Bog Hawker (*Aeshna arctica*; Czech: *šídlo rašelinné*).⁸⁷

Vertebrates in the Šumava NP include the Eurasian river otter (*Lutra lutra*), the black grouse (*Tetrao tetrix*), the European common viper (*Vipera berus*), the moor frog (*Rana arvalis*), and the brown trout (*Salmo trutta*).⁸⁸



Southern Bladderwort
(*Utricularia australis*)
Photo: commons.wikipedia.org, retr.
30-6-13

NOTE: DO YOU KNOW THESE ŠUMAVA NP TREE SPECIES?			
Scientific name (Latin)	English name	German name	Czech name
<i>Fagus sylvatica</i>	European beech / common beech	Rotbuche	buk lesní
<i>Picea abies</i>	Norway spruce	Gemeine Fichte / Rotfichte	smrk ztepilý
<i>Abies alba</i>	silver fir	Weisstanne	jedle bělokorá
<i>Sorbus aucuparia</i>	European rowan, European mountain ash	Eberesche	jeřáb ptačí
<i>Taxus baccata</i>	European yew	Gemeine Eibe	tis červený

NOTE: DO YOU KNOW THESE ŠUMAVA NP ANIMAL SPECIES?			
Scientific name (Latin)	English name	German name	Czech name
<i>Lynx lynx</i>	Eurasian lynx	Waldluchs	rys ostrovid
<i>Lutra lutra</i>	Eurasian river otter	Eurasischer Fischotter	vydra říční
<i>Tetrao tetrix</i>	Black grouse	Birkhuhn	tetřívěk obecný
<i>Vipera berus</i>	European common viper, European common adder	Kreuzotter	zmije obecná
<i>Rana arvalis</i>	moor frog	Moorfrosch	skokan rašelinný, skokan ostronosý
<i>Salmo trutta fario</i>	brown trout	Bachforelle	pstruh potoční
<i>Astacus astacus</i>	European crayfish, noble crayfish	Europäischer Flusskrebs, Edelkrebs	rak říční
<i>Margaritifera margaritifera</i>	freshwater pearl mussel	Flussperlmuschel	perlorodka říční

REVIEW QUESTIONS:

- 1) What habitats can be found in the Šumava National Park?
- 2) What problems from a nature conservation perspective does the Šumava NP face? What are potential solutions? Identify at least three problems and their possible solutions.
- 3) What other NP does the Šumava National Park border?
- 4) Name plant and animal species that occur in the Šumava NP (name at least 3 species of rare or endangered animals and 3 species of rare or endangered plants). Are there any endemic species among them?



Mountain Elm (*Ulmus glabra*)
Photo: JM 2012

6-3 Podyjí National Park (CZ: Národní park Podyjí)

The Podyjí NP is located in the southeastern part of the Czech Republic, along the border with Austria. To the south, the park borders the Thayatal NP, which is an Austrian NP. The park is the only NP in the historical land of Moravia. The Podyjí NP was founded in 1991, which is the same year as the Šumava NP, soon after the Velvet Revolution. Like the Šumava NP, the area of the present-day Podyjí NP was a military zone for several decades. Because the park's land was located on the East-West border, i.e., adjacent to the iron curtain, the area was closed to the general public.



Map No. 6C: Location of NP Podyjí in the Czech Republic^a

Source: Wikipedia, Národní park Podyjí, modified

(online: http://cs.wikipedia.org/wiki/narodni_park_podyji), retr. 15-1-13

The Podyjí NP has an exceptionally well-preserved river valley and adjacent hills that are covered with natural and near-natural forests. Other significant biotope types include secondary heathland and remnants of steppe-like grasslands. The Podyjí NP has only approximately 70 permanent residents within the NP borders. However, there are several villages inside the protective zone; the city of Znojmo is located nearby.

The Podyjí NP is probably the most preserved NP from a nature conservation perspective in the Czech Republic, which is primarily because its forests were not changed as much as other Czech NPs. Although there are fewer attractions for mass tourism in this park, the Podyjí NP management still has some **problems** to address:

- Vranov hydroelectric dam
- Pollution of streams from agricultural erosion and sewage from the surrounding villages
- Use of pesticides in the Šobes vineyard

The most serious problem is likely the Vranov hydroelectric dam that was built on the Dyje River, which flows through the centre of the NP. This dam, constructed in close vicinity to the park, heavily influences the water ecosystem of the Dyje River. Sudden changes in water flow and in water temperatures due to the operation of the hydroelectric dam put considerable stress on river wildlife.

Another problem in the Podyji NP is the water pollution caused by soil erosion from surrounding fields. Agricultural fertilisers and pesticides enter streams that flow to the core of the NP. Household sewage from villages in the buffer zone of the NP is also a problem.

The use of pesticides in the Šobes vineyard, which is adjacent to the first zone, presents an additional environmental risk and harm. The Šobes vineyard is located exceptionally well for wine production in comparison with other Czech vineyards (facing south in the southernmost part of the Czech Republic).

Solutions to the problems in the Podyji NP include the construction of a sewage system that will reduce water pollution from the villages in the protective zone. In the case of the Šobes vineyard, efforts have been made by conservation authorities to motivate the vineyard to convert to an “integrated”^a wine production system (if not organic wine production).

While the two aforementioned problems may be solved in the near future, the problem with the Vranov dam persists. Although there is currently a surplus of electric energy in the Czech Republic (and large river dams are not considered to be sustainable energy sources), there is a resolute opposition to decommissioning this power plant by some political decision-makers and by its foreign owner.

While the **forests** are relatively preserved from a nature conservation perspective, the park administration works to improve the species composition of the forest in some localities. The desired composition requires some support for oak species (sessile oak and other oaks), which are the dominant trees in the potentially natural vegetation areas. The share of accompanying hornbeam (*Carpinus betulus*) should remain nearly the same. Moreover, a significant increase in European beech (*Fagus sylvatica*) is planned, while a reduction in Scots Pine (*Pinus sylvestris*), which has been primarily artificially planted in the past, is desirable.

Some measures that have been taken by the administration of the Podyjí NP include the following:

- Suppression of invasive plants, such as black locust (*Robinia pseudoacacia*) and policemen’s helmet (*Impatiens glandulifera*)
- Elimination of non-native species introduced by gamekeepers, such as mouflon (*Ovis musimon*)^b and fallow deer (*Dama dama*)
- Regulation of gamekeeping and hunting activities in the park
- Maintaining and creating biotopes for endangered amphibians, with a focus on the northern crested newt (*Triturus cristatus*) and the Italian crested newt (*Triturus carnifex*)^a



Black Locust (*Robinia pseudoacacia*)
Photo: JM 2012

^a Note: “Integrated” agricultural production means production that should be more environmentally sustainable due to limited and improved use of pesticides and fertilisers. Integrated agriculture should be on the scale between organic agriculture and conventional agriculture.

^b Note: Mouflons are probably descendants of feral populations of domestic sheep from the Mediterranean islands of Corsica and Sardinia.

- Monitoring of possible occurrences of the European wildcat (*Felis sylvestris*), the steppe polecat (*Mustella eversmanii*) and the golden jackal (*Canis aureus*) and preparation for the conservation of these species.

These and other management tasks must be performed to address the following concerns:

- Preserve and increase local biodiversity
- Eliminate threats to native species that may arise from the presence and spread of non-native species
- Preserve the unique landscape characteristics of the area

NOTE: DO YOU KNOW THESE PLANT SPECIES THAT ARE INVASIVE IN PODYJÍ NP?				
Scientific name (Latin)	English name	German name	Czech name	Origin
<i>Impatiens glandulifera</i>	policeman's helmet	Drüsiges Springkraut	netykavka žláznatá	Himalayas
<i>Heracleum mantegazzianum</i>	giant hogweed	Riesen-Baerenklau	bolševník obrovský	Caucasian region, Central Asia
<i>Reynoutria x bohemica</i>	Bohemian knotweed	Boehmischer Knoeterich	křídlatka česká	parent species from eastern Asia, cross-breeding in the Czech R.
<i>Robinia pseudoacacia</i>	black locust	Gewoehnliche Robinie	trnovník akát	S.E. United States
<i>Ailanthus altissima</i>	ailanthus, tree of heaven	Bitteresche, Goetterbaum	pajasan žláznatý	China

54

Significant **habitats** in the Podyji NP include oak-hornbeam forests, acidophilus oak forests, dry heathlands, semi-natural dry grasslands, and extensive mowed meadows.

Among the **plants** in the park, pubescent oak (*Quercus pubescent*), which is a tree species that is rare in Central Europe, rose daphne (*Daphne cneorum*), which is an evergreen shrub, and the greater pasque flower (*Pulsatilla grandis*) are common. The occurrence of orchids, such as the European lady's slipper (*Cypripedium calceolus*) and the military orchid (*Orchis militaris*), are also prominent.⁸⁹

Common **invertebrates** include the southern festoon (*Zerynthia polyxena*; Czech: *pestrokřídlec podražcový*), which is a conspicuous butterfly whose caterpillars feed on poisonous birthwort. Decaying wood and dead wood are home for two rare saproxylic beetles, i.e., the great capricorn beetle (*Cerambyx cerdo*; Czech: *tesařík obrovský*) and the violet click-beetle (*Limoniscus violaceus*; Czech: *kovařík fialový*). Xerothermic sites host two large predatory insects, i.e., the praying mantis

^a Note: The Italian crested newt (*Triturus carnifex*) was once considered a subspecies of the northern crested newt (*Triturus cristatus*). The taxonomy of the population of the Italian crested newt in the Podyjí NP requires additional research.

(*Mantis religiosa*; Czech: *kudlanka nábožná*) and the newly discovered predatory bush cricket (*Saga pedo*; Czech: *kobylka sága*).⁹⁰



Common **vertebrates** in the Podyji NP include the lesser horseshoe bat (*Rhinolophus hipposideros*; Czech: *vrápenec malý*), the Syrian woodpecker (*Dendrocopos syriacus*; Czech: *strakapoud jižní*), the

Aesculapian snake (*Zamenis longissimus*; Czech: *užovka stromová*), the great crested newt (*Triturus cristatus*; Czech: *čolek velký*), and the European bullhead (*Cottus gobio*; Czech: *vranka obecná*).⁹¹

Great Capricorn Beetle (*Cerambyx cerdo*)

Photo: D. Descouens, Wikimedia Commons retr. 30-7-2013

NOTE: DO YOU KNOW THESE PODYJÍ NP TREE SPECIES?			
Scientific name (Latin)	English name	German name	Czech name
<i>Quercus petraea</i>	sessile oak	Traubeneiche	dub zimní
<i>Quercus robur</i>	common oak / English oak / pedunculate oak	Stieleiche	dub letní
<i>Quercus pubescens</i>	pubescent oak	Flaumeiche	dub pýřitý / dub šipák
<i>Carpinus betulus</i>	European hornbeam / common hornbeam	Hainbuche	habr obecný
<i>Pinus sylvestris</i>	Scots pine	Waldkiefer	borovice lesní
<i>Acer campestre</i>	field maple	Feldahorn	javor babyka
<i>Ulmus minor</i>	field elm / small-leaved elm	Feldulme	jilm habrolistý
<i>Tilia cordata</i>	small-leaved lime / small-leaved linden ^a	Winterlinde	lípa malolistá / lípa srdčitá
<i>Sorbus torminalis</i>	wild service tree / chequers tree	Elsbeere	jeřáb břek

REVIEW QUESTIONS:

- 1) What habitats can be found in the Podyjí National Park?
- 2) What problems from a nature conservation perspective does the Podyjí NP face? What are potential solutions? Identify at least three types of problems and their possible solutions.
- 3) What other national park does Podyjí National Park border?
- 4) Name plant and animal species that can be found in Podyjí National Park (name at least 3 species of rare or endangered animals and 3 species of rare or endangered plants).
- 5) What animal species may occur in the Podyjí National Park in the future that were not present in the past?

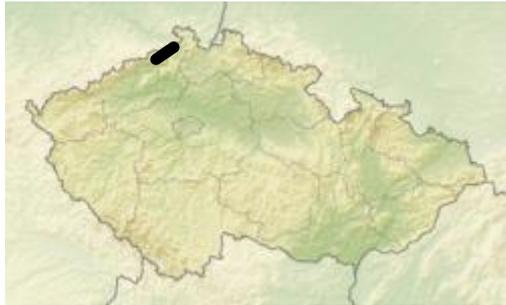
^a Note: The name *Linden* is used for the *Tilia* genus outside of the United Kingdom.



Small-leaved Lime (*Tilia cordata*)
Photo: JM 2013

6-4 Bohemian Switzerland National Park (CZ: Národní park České Švýcarsko)

The Bohemian Switzerland NP is located in the northwestern part of the Czech Republic, along the German border. To the north, the park borders the Saxon Switzerland NP (*Sächsische Schweiz Nationalpark*), which is a German protected area. In the Czech Republic, the park is adjacent to the Labské Pískovce Protected Landscape Area.



Map No. 6D: Location of Bohemian Switzerland National Park in the Czech Republic

Source: Wikipedia, Národní park Podyjí, modified
(online: http://cs.wikipedia.org/wiki/narodni_park_ceske_svycarsko),
retr. 15-1-13

The Bohemian Switzerland NP was founded in 1999. It is the newest national park in the Czech Republic. The founding of this NP was not as fast as that of the Šumava NP and the Podyjí NP because opposing interests and anti-environmental lobbies had to be negotiated within the parliament. However, the long period of preparation and negotiation with various interest groups was for the long-term benefit of the park. Unlike the Šumava NP and the Krkonoše NP, this park is not known for serious clashes of interest.

The park is primarily known for its attractive geodiversity due to large areas of sandstone rocks. However, from a biodiversity perspective, there are conservation values of interest. The vegetation inversion in the river gorges is unique. The attractive landscape of the region was popularised in the 19th century by two Swiss painters, Anton Graff and Adrian Zingg. Consequently, the area began to be called “Switzerland” on both the Bohemian and Saxon sides of the border.

The Bohemian Switzerland NP has only a few dozen permanent residents, which is partly because some of the villages that were in the original (“large”) proposal of the NP preferred to remain outside the NP. As a result, the villages lost the “marketing label” of being NP-situated tourist spots and financial support from the government. However, lengthy negotiations with the park



Portrait of Adrian Zingg by Anton Graff (Gallery St. Gallen)

Source: Wikimedia Commons,
retr. 12-12-2013

administration were avoided.

There are still some **management problems** that must be addressed by the park administration:

- Forests transformed by humans with non-native species
- Invasive tree species (Weymouth pine)
- Heavy visitor flows and activities that could damage geological features in some places
- Controversies over land ownership at some important natural attractions (e.g., the gorges of the Kamenice River⁹² and the Pravčická Sandstone Gate⁹³)

The geology of Bohemian Switzerland NP is very picturesque. In most of the area, there are cuboidal sandstones. Some of these sandstones form entire *sandstone rock towns*. There are various unusual sandstone formations in the area, such as natural sandstone arches, which are called *gates*, and small hole-like cavities, which are called *honeycomb weatherings* (CZ: *voštiny*, D: *Wabenverwitterung*); *weather pits* (CZ: *skalní mísy*, D: *Opferkesseln*) are also found in this area. The largest group of sandstone rocks is the *Jetřichovické stěny* group. Most of the *table mountains* are on the German side of the border. There is also a large table mountain on the Czech side of the border, i.e., the *Vysoký (or Děčínský) Sněžník*, which is not located within the Bohemian Switzerland NP.

Besides sandstones, there are also volcanic elevations in the NP; the most conspicuous is Růžovský Mountain (CZ: Růžovský vrch), with its near-natural forest on the top.

The **forests** in the areas around the Bohemian Switzerland NP have been significantly transformed by humans. The largest area of potential natural vegetation in the NP include the acidophilus beech forests, which are dominated by European beech (*Fagus sylvatica*), and other tree species, such as sycamore maple (*Acer platanifolius*). Locally, the Scots Pine (*Pinus sylvestris*) and Norway spruce (*Picea abies*) are much rarer, as potential natural vegetation. Today, instead of acidophilus beech forests, there are mostly monocultural Norway spruce (*Picea abies*) stands in the national park.

In some warm areas of the Bohemian Switzerland, the potential natural vegetation is somewhat different, consisting of acidophilus oak forests that are dominated by sessile oak (*Quercus petraea*),

Box 12: What is the potential natural vegetation (PNV)?

When we talk about *native, original* species or *domestic* species of trees, we typically mean the species of the *potential natural vegetation* of a particular area. Protected area management is often guided by the concept of potential natural vegetation.

The potential natural vegetation (PNV) is usually characterised as the expected state of mature vegetation of a locality in the absence of human intervention under current climatic conditions (Tuexen 1956, and later adaptations).

The concept of potential natural vegetation has been used for practical nature conservation and for forestry mapping. For example, measures for the selection of supported and reduced tree species in protected areas have been based on this concept. Local species of animals tend to be adapted to PNV plant species for food, shelter and reproduction. Therefore, support of PNV tree species is done in part to protect and increase zoological biodiversity

However, in the areas that are largely affected by anthropogenic activities (e.g., strip mining and urbanised areas), the standard PNV concept seems less useful because the starting point for the vegetation changed due to human activities (different soil and water regime conditions). Therefore, the *reconstructed (potential) natural vegetation concept* has been developed (Neuhäusl 1984 et al.).

common oak (*Quercus robur*), and Scots Pine. These areas include the Růžovská Plateau and the Labe Canyon areas. Today, Scots Pine (*Pinus silvestris*) monocultures have taken the place of acidophilus oak forests.⁹⁴

Natural relict pine forests (*Pinus silvestris*) have been preserved in some small and extreme locations, such as on the tops of sand rocks. The Norway spruce (*Picea abies*), which originally occurred in combination with other species in beech forests, has moved to low altitudes in the shaded river gorges due to the vegetation inversion.

The potential natural species composition of the forest in the Bohemian Switzerland NP was estimated to be 55% European beech (*Fagus sylvatica*), 14% silver fir (*Abies alba*), 9% sessile and pedunculate oaks (*Quercus petraea et robur*), 8% Scots Pine (*Pinus silvestris*), and 6% Norway spruce (*Picea abies*).⁹⁵ However, 59% of the park is currently composed of Norway spruce.

Management measures that have been taken by the administration of the Czech Switzerland NP to support biodiversity include the following:

- Identification of local genetic sources (of trees)
- Support for broad-leaved tree species, such as the European beech (*Fagus sylvatica*), sessile oak (*Quercus petraea*), pedunculate oak (*Quercus robur*), and wych elm (*Ulmus glabra*)
- Reduction in the Norway spruce (*Picea abies*) monocultures
- Increase in the share of the silver fir (*Abies alba*)
- Efforts to eliminate the Weymouth pine (*Pinus strobus*) and other locally non-native tree species



Weymouth pine (*Pinus strobus*)

Photo: Richard Webb, www.corinna.info,
retr. 19-2-2014

These and other tasks must be performed to address the following concerns:

- Renew potentially natural vegetation
- Support local biodiversity
- Increase the stability of forest ecosystems
- Preserve the unique landscape characteristics of the area

The problem with the Weymouth pine (*Pinus strobus*) is particularly difficult because this tree species, which is originally from eastern North America, is highly invasive. The Weymouth pine grows well in sandy soils in the Bohemian Switzerland NP and pushes out native species. A reduction in some other species, such as the Scots pine (*Pinus silvestris*), should also be promoted. The Scots pine

is a native species that is well suited to extreme localities. However, it was artificially introduced to areas at the expense of the original forests. Plans for the reduction of the European larch (*Larix decidua*) are also in place because it is not native to the region.^a The European larch is not as invasive as the Weymouth pine. Other non-native species that are able to self-reproduce under local conditions are the northern red oak (*Quercus rubra*) and the Douglas fir (*Pseudotsuga menziesii*). While some non-local tree species may have a place in commercial forestry, they are not desirable in protected areas.

NOTE: DO YOU KNOW THESE TREE SPECIES THAT ARE NON-NATIVE IN THE BOHEMIAN SWITZERLAND NP?				
Scientific name (Latin)	English name	German name	Czech name	Origin
<i>Pinus strobus</i>	Weymouth pine	Weymouth-Kiefer	borovice vejmutovka	eastern U.S.A., eastern Canada
<i>Larix decidua</i>	European larch	Europäische Laerche	modřín evropský	Alps and Carpathian Mountains, Lower Jeseník Mountains
<i>Pseudotsuga menziesii</i>	Douglas fir	Douglasie	douglaska tisolistá	western North America
<i>Quercus rubra</i>	northern red oak / champion oak	Roteiche	dub červený	N.E. U.S.A., S.E. Canada

Further **management measures**, other than those that are forest-related, that have been taken by the administration of the Bohemian Switzerland NP include the following:

- Influencing visitor flows in heavily frequented areas through path maintenance and rule enforcement
- Prohibition of entering or climbing on some vulnerable sites (for example, the Pravčická Gate)
- Setting rules for rock climbing in the national park
- Negotiations with the owners of important properties (e.g., the Kamenice River Gorges and the Pravčická Sandstone Gate).

Common **habitats** in the Bohemian Switzerland NP (from a nature conservation perspective) include the scree forests^b (Růžák Mountain), acidic beech forests (formerly the dominant habitat in the sandstone area), small patches of herb-rich beech forests (Růžák Mountain, Suchý Vrch and Mlýny localities), heathlands, and water streams.

^a Note: The Nížký Jeseník Mountains in northern Moravia represent the only area in the Czech Republic where the European larch (*Larix decidua*) is native. However, many European larch trees have been imported to the current territory of the Czech Republic from the Alps.

^b Note: The Natura 2000 priority habitat 9180: Tilio-Acerion Forests of slopes, scree, and ravines.



Marsh Labrador Tea (*Ledum palustre*)
Photo: Project Noah (online:
<http://www.projectnoah.org/spottings/9022101>),
retr. 30-6-13

Common **plants** in the national park include the marsh labrador tea (*Ledum palustre*; CZ: rojovník bahenní), the black crowberry (*Empetrum nigrum*; CZ: šicha černá), and the killarney fern (*Trichomanes speciosum*^a; CZ: vláskatec tajemný). The occurrence of cryophylic wild plants, such as the twoflower violet (*Viola biflora*; CZ: violka dvoukvětá) and the stiff clubmoss (*Lycopodium annotinum*; CZ: plavuň pučivá), are also prominent.⁹⁶

Furthermore, common **invertebrates** include the horseshoe shrimp (*Triops cancriformis*; CZ: listonoh letní), which is a rare crustacean, the conspicuous common swallowtail (*Papilio machaon*; CZ: otakárek fenyklový), the cave cricket (*Troglophilus neglectus*; CZ: koník jeskynní), and the newly discovered minotaur beetle (*Typhaeus typhoeus*; CZ: chrobák černý), which is from the dung beetle group.⁹⁷

Common **vertebrates** in the Bohemian Switzerland NP include the Eurasian river otter (*Lutra lutra*), the peregrine falcon (*Falco peregrinus*), the marsh frog (*Rana ridibunda*), the Atlantic salmon (*Salmo salar*), and the western brook lamprey (*Lampetra planeri*).⁹⁸

The return of the Atlantic salmon (*Salmo salar*) was one of the goals of nature conservation in the national park. The salmon that were once abundant in Czech waters disappeared due to changes in its habitat. In the past, the fish migrated regularly between its spawning waters in Bohemia and the Atlantic Ocean where it matured. Dams and other man-made barriers blocked the spawning runs when returning to the natal streams in Bohemia from the Atlantic Ocean. A partial improvement in river water quality in the Elbe River and fish passage improvements at dams in Germany provided basic conditions for the return of the species. The Bohemian Switzerland NP administration, in cooperation with local fishermen, stocks the Kamenice River with salmon fry to reintroduce the species to the region. The first adult salmon returned from their ocean voyage in 2002.⁹⁹ The planting of fry will continue until salmon are able to reproduce without the assistance of humans.

^a Note: A Natura 2000 species

NOTE: DO YOU KNOW THESE BOHEMIAN SWITZERLAND NP ANIMAL SPECIES?			
Scientific name (Latin)	English name	German name	Czech name
<i>Falco peregrinus</i>	peregrine falcon	Wanderfalke	sokol stěhovavý
<i>Bubo bubo</i>	eagle owl	Uhu	výr velký
<i>Ciconia nigra</i>	black stork	Schwarzstorch	čáp černý
<i>Natrix natrix</i>	grass snake	Ringelnatter	užovka obojková
<i>Rana ridibunda</i> , <i>Pelophylax ridibundus</i>	marsh frog, Eurasian marsh frog	Seefrosch	skokan skřehotavý
<i>Salmo salar</i>	Atlantic salmon	Atlantischer Lachs	losos atlantský / obecný
<i>Lampetra planeri</i>	western brook lamprey	Bachneunauge	mihule potoční

REVIEW QUESTIONS:

- 1) What are the protected geological features of the Bohemian Switzerland and what management measures are required?
- 2) What habitats can be found in the Bohemian Switzerland National Park?
- 3) What problems from a nature conservation perspective does the Bohemian Switzerland NP face? What are potential solutions? Identify at least three types of problems and their possible solutions.
- 4) Name plant and animal species that are present in the Bohemian Switzerland NP (name at least 3 species of rare or endangered animals and 3 species of rare or endangered plants).
- 5) What other national park does the Bohemian Switzerland NP border?

62



Common Swallowtail (*Papilio machaon*)
 Photo: Hans Ulrich, www.panoramio.com,
 retr. 22-2-2014

Chapter 7 - CASE STUDY: UNIVERSITY NATURE RESERVES IN ENGLISH-SPEAKING COUNTRIES

Protected areas are primarily established by governmental authorities. These authorities are also in charge of factual protection and management of protected areas. In some cases, there may be other institutions that can effectively perform similar tasks. In addition to environmental NGOs and/or private individuals, some educational institutions may protect natural areas on the land they own. In English-speaking countries, some universities operate their own nature reserves. These natural areas are managed specifically for academic use. The University of California in the U.S.A., McGill University in Canada, and Staffordshire University in the United Kingdom are among the universities with their own nature reserves. The size of the protected areas, biodiversity, financing and other conditions vary substantially among these reserves. However, all of these universities have one common goal, i.e., to be directly involved in land-based conservation and to simultaneously facilitate academic education and research. Their efforts serve as a positive example to other universities around the world.



Map No. 7-1B: Locations of reserves in the University of California Natural Reserve System

Source: University of California Natural Reserve System (online: <http://nrs.ucop.edu/map.htm>) retr. 30-6-13

7-1 University of California Natural Reserve System



Map 7-1A: Location of the State of California in the U.S.A.

Source: Wikimedia Commons retr. 30-6-13

The University of California Natural Reserve System is likely the largest university-operated system of nature

reserves in the world. The *University of California (UC)* is a public university system in California. In 2013, the UC operated 38 reserves encompassing 54,600 hectares of protected land¹⁰⁰. These university reserves are available for university-level instruction, for performing university research, and for public outreach. In the UC Natural Reserve System (NRS), there are relatively undisturbed samples of California's natural ecosystems. The university reserves are provided with facilities needed to support teaching and research. The UC does not exclude outside visitors with

relevant qualifications and interests. With a permit, the reserves may be used by qualified teachers, researchers, and students from any institution (public or private), regardless of their nationalities.

The UC Natural Reserve System was formed in 1965, when seven university-owned sites were designated as its first reserves. The goal is to have areas for long-term projects and sites for undisturbed teaching and research. The UC reserves vary in size and in remoteness from the

individual campuses. The reserves also differ in their degree of human impact and in their on-site facilities. Some reserves possess full-service facilities, including housing and equipment. In addition, professional staff that are necessary for supporting long-term research projects and multi-week field courses in remote locations is available at these facilities. Other sites possess only partial facilities and professional staff. The remaining sites have no facilities of their own, with the exception of restrooms or trails. These sites share the facilities of a campus or of a full-service reserve in the vicinity.¹⁰¹

The UC reserves are located throughout California and reflect the high diversity of its landscape. The reserves include a wide range of **habitat types**, including mixed conifer-deciduous forests, redwood groves, riparian woodlands, marshlands, and deserts. The variety of habitats hosts a large variety of species that include both rare and common species.

Several typical native species of the oak genus are represented in the reserve system, including the deciduous California black oak (*Quercus kellogi*) and the valley oak (*Quercus lobata*).¹⁰² Another typical species is the big leaf maple (*Acer macrophyllum*),¹⁰³ which is a tree with the largest leaves of any maple. Among the coniferous trees, the coast redwood (*Sequoia sempervirens*; Cz: sekvoj vždyzelená) and the Douglas fir (*Pseudotsuga menziesii*; Cz: douglaska tisolistá) are present.¹⁰⁴

Invertebrates reflect the diversity of specific habitats. Students and researchers can investigate many groups of invertebrates, ranging from scorpions (*Scorpiones*) and wolf spiders (*Lycosidae*)¹⁰⁵ to swallowtails (*Papilionidae*)¹⁰⁶ and sea stars (*Asterioidae*).¹⁰⁷ The common banana slug (*Ariolimax columbianus*)¹⁰⁸ was chosen as an emblem for the UC Santa Cruz campus.

Vertebrates in the reserves include the American black bear (*Ursus americanus*),¹⁰⁹ the northern spotted owl (*Strix occidentalis caurina*; Cz: puštík karibský severní),¹¹⁰ the red diamond rattlesnake (*Crotalus ruber*; Cz: chřestýš červený),¹¹¹ the coastal giant salamander (*Dicamptodon tenebrosus*; Cz: mloukan temný),¹¹² and the steelhead trout (*Onchorhynchus mykiss*),¹¹³ which are among the best-known California animals. The northern spotted owl is well known in American history for its role in protecting old-growth forests as an umbrella species. The steelhead trout (rainbow trout) is an American species that is widely planted in European streams for sport fishing.

Some special programmes in the UC reserves include the removal of non-native species and species re-introduction.¹¹⁴ The university also cooperates in its research with owners of land surrounding university lands and with public authorities that manage adjacent public lands.

7-2 Gault Nature Reserve of McGill University, Canada

While in the aforementioned example in the U.S.A. there is an extensive system of dozens of PAs under university management, the Gault Nature Reserve (French: *Réserve naturelle Gault*) is a single area of 10 km². The reserve is affiliated with the Faculty of Science of McGill University in the Canadian province of Quebec.¹¹⁵ The reserve is situated approximately 40 km from the second largest Canadian city, i.e., Montreal. The land for the reserve was a bequest of Brigadier-General Gault, and it was named after its generous donor. As founder of the reserve, General Gault had to

fight with conflicting interests for the use of natural resources. Mining interests threatened the reserve for a long period of time, including the threat of land expropriation.¹¹⁶

Currently, this private reserve protects 1000 hectares of natural primeval forests in the St. Lawrence Valley. It covers a major part of the Mount-Saint-Hilaire Mountain. There is also a lake amidst the forests. A professional on-site team provides support to natural science research and teaching of activities. There are several university courses offered at the reserve. The reserve even offers services to the general public, including a public sector that is open to outside visitors.¹¹⁷

The Gault Nature Reserve was declared as the first biosphere reserve in Canada under the UNESCO MaB programme. However, only recently has there been an effort from the surrounding communities to address sustainability issues that are put forth by UNESCO outside of university lands.¹¹⁸



Gault Nature Reserve, Quebec, Canada
Photo: McGill University (online:
<http://www.mcgill.ca/gault/reserve/>,
retr. 14-5-2013

The Gault Nature Reserve is officially recognised as a private nature reserve by the government of Quebec.¹¹⁹ It is also recognised as a federal bird sanctuary protected under Canadian federal law. Recently, the administration of the reserve applied for the status of a *provincial wildlife refuge* for its cliffs with nesting peregrine falcons (*Falco peregrinus*) and valuable flora. This designation, bestowed under Quebec law (French: *Refuge faunique*), should further support conservation efforts.

The Gault Nature Reserve is divided into three **management zones (sectors)**:¹²⁰ the preservation sector, the public sector, and the service sector. These zones have different goals related to preservation and human use. The *preservation sector* serves as secure refuge for reclusive animals. This sector provides a reservoir from which more heavily visited parts can be recolonised. In the preservation sector, only limited research activity can be performed. The *public sector* provides trails for nature education. It is a site for outreach and educational programmes for local communities. Experimental research that is not permitted in the preservation sector may be allowed in the public sector. The third sector, i.e., the *service sector*, includes facilities, buildings and infrastructure that serve the conservation staff, educators, students, and other visitors. The reserve is a place for various scientific studies that map the land's biodiversity.

The forest of the Gault Nature Reserve is a transitional forest. The forest is located in the northernmost part of the eastern deciduous forest of the temperate zone in North America. To the north, the boreal forests are adjacent to the reserve. The dominant tree species in the reserve are the sugar maple (*Acer saccharum*) and the American beech (*Fagus grandifolia*). Besides vascular plants, the reserve is rich in bryophytes (*Bryophyta*) and lichens (*Lichenes*).¹²¹ The forested Mount-Saint-Hilaire is an island of natural vegetation that is surrounded by a largely transformed landscape. In the vicinity, there are both agricultural and commercial forests that are managed for the production of timber and maple sap.

Studies of **invertebrates** within the reserve have included investigations on wood- and sap-feeding beetles (*Coleoptera*; Cz: *brouci*), dipterans (*Diptera*; Cz: *dvoukřídli*), aphids (*Aphidoidea*; Cz: *mšice*), and springtails (*Collembola*; Cz: *chvostkoscoci*).¹²²

There are approximately 40 **mammal** species in the reserve; some of these species are common in Europe. The coyote (*Canis latrans*; Cz: *kojot préríjní*), the northern racoon (*Procyon lotor*; Cz: *mýval severní*), the American mink (*Mustela vison*; Cz: *norek americký*), the Northern American porcupine (*Erethizon dorsatum*; Cz: *urzon kanadský*), and the common muskrat (*Ondatra zibethicus*; Cz: *ondatra pižmová*) can often be found within the reserve.



The Canadian Porcupine (*Erethizon dorsatum*)

Source: www.animalspot.net, retr. 15-5-13

There are approximately 200 **bird** species that have been observed in the area of the mountain. Among the occurring predatory birds, which also extend over much of Europe, the golden eagle (*Aquila haliaetos*; Cz: *orel skalní*), the osprey (*Pandion haliaetus*; Cz: *orlovec říční*), and the northern goshawk (*Accipiter gentilis*; Cz: *jestřáb lesní*) can often be found. The non-native bird species that have been introduced to North America by hunters include the grey partridge (*Perdix perdix*; Cz: *koroptev polní*) and the collard pheasant (*Phasianus colchicus*; Cz: *bažant obecný*).

The American toad (*Bufo americanus*) is one of the amphibian species that resides in the reserve. Lake Hertel in the reserve houses the painted turtle (*Chrysemis picta*; Cz: *želva ozdobná*), which is a popular pet species. There are also several species of fish in the lake, including the Holarctic northern pike (*Esox lucius*; Cz: *štika obecná*).¹²³

There are two other reserves managed by McGill University. The **Penfield Reserve** on Lake Memphremagog in the Appalachian Highlands east of Montreal is a satellite of the Gault Nature Reserve in terms of operations and budget. It has a history focused on limnology. The **Molson Reserve** associated with McGill's Macdonald College campus is located at the western end of Montreal Island. This reserve protects a floodplain forest along the Ottawa River.¹²⁴

7-3 Staffordshire University Nature Reserve, United Kingdom

The aforementioned Canadian reserve presented an example of a relatively large PA within which human activities have exhibited only slight changes to the natural state. However, the Staffordshire University Natural Reserve is a small-scale PA in an urban setting. It is a small reserve owned and managed by Staffordshire University in central England. The reserve is located at the edge of the university's Leek Road campus, which is in the city of Stoke-on-Trent in Staffordshire County. The reserve is situated close to the city centre. One side of the 10 ha reserve is bordered by the Trent River. The local authority designated the nature reserve as a *Natural Heritage* site¹²⁵ in appreciation of the university's efforts.

The reserve includes a reed marsh, a fragment of deciduous woodland and several secluded pools.¹²⁶
¹²⁷ The species composition includes both common and less common species and reflects opportunities for urban biota protection. Species composition bears resemblance to similar localities in Central Europe.

The **vegetation** in the reserve includes several woody species, including black alder (*Alnus glutinosa*), crack willow (*Salix fragilis*), the rowan (*Sorbus aucuparia*), the guelder rose (*Viburnum opulus*), and the common dogwood (*Cornus sanguinea*).¹²⁸

Invertebrates are represented by various types of butterflies (*Lepidoptera*), bumble bees (*Bombus*), hoverflies (*Syrphidae*; Cz: *pestřenky*), dragonflies (*Odonata*), and other insects. Among the butterflies, the common brimstone (*Gonepteryx rhamni*; Cz: *žluťásek rešetlákový*) and the speckled wood butterfly (*Pararge aegeria*; Cz: *okáč pýrový*) are most prevalent in the reserve. Both species are common in Central Europe. In the reserve, the gatekeeper butterfly (*Pyronia tithonus*; Cz: *okáč lipnicový*)^a, which is a species that has gone extinct in some parts of Europe, is also present.¹²⁹



Staffordshire University Nature Reserve

Source:

http://www.staffs.ac.uk/support_depts/environment/biodiversity/nature_reserve/, retr. 15-3-13

The **vertebrates** within the reserve include amphibians, mammals, birds, reptiles and fish. The pools in the reserve provide a breeding opportunity for amphibians, such the smooth newt (*Triturus vulgaris*), the common frog (*Rana temporaria*), and the common toad (*Bufo bufo*).¹³⁰

The reserve provides temporary shelter for the European river otter (*Lutra lutra*). The pipistrell bat (*Pipistrellus pipistrellus*; Cz: *netopýr hvízdavý*) hunts insects over the reed beds. Small rodents are also present, such as the common shrew (*Sorex araneus*), field vole (*Microtus agrestis*; Cz: *hraboš mokřadní*), and the water vole (*Arvicola amphibius*). These rodents provide a feeding opportunity for the common kestrel (*Falco tinninculus*) that frequents the locality. The kingfisher (*Alcedo atthis*) feeds on the three-spined sticklebacks (*Gasterosteus maculeatus*; Cz: *koljuška tříostná*), which is a fish species well known to aquarists with coldwater fishtanks. Freely draining soils and open spaces provide basking opportunities for reptiles (*Reptilia*) in the reserve.¹³¹

The university reserve complements other sites of natural heritage that are in the city of Trent¹³².

^a Note: The species underwent large fluctuations in its range in Europe. In the Czech Republic, the gatekeeper butterfly (*Pyronia tithonus*) is currently not found and is considered extinct. However, these butterflies have been found near Bautzen, Sachsen, Germany, which is close to the Czech border.

NOTE: DO YOU KNOW THESE ENGLISH (AND CENTRAL EUROPEAN) TREES AND SHRUBS?			
Scientific name (Latin)	English name	German name	Czech name
<i>Alnus glutinosa</i>	black alder	Schwarz-Erle	olše lepkavá
<i>Salix fragilis</i>	crack willow	Bruch-Weide	vrba křehká
<i>Sorbus aucuparia</i>	rowan mountain ash	Eberesche	jeřáb ptačí
<i>Viburnum opulus</i>	guelder rose	Gemeiner Schneeball	kalina obecná
<i>Cornus sanguinea</i>	common dogwood	Roter Hartriegel	svída krvavá

NOTE: DO YOU KNOW THESE ENGLISH (AND CENTRAL EUROPEAN) ANIMAL SPECIES?			
Scientific name (Latin)	English name	German name	Czech name
<i>Sorex araneus</i>	common shrew	Waldspitzmaus	rejsek obecný
<i>Arvicola amphibius/terrestris</i>	European water vole	Scherm Maus	hryzec vodní
<i>Falco tinninulus</i>	common kestrel	Turmfalke	poštolka obecná
<i>Atthis alcedo</i>	common kingfisher	Eisvogel	ledňáček říční
<i>Rana temporaria</i>	common frog	Grassfrosch	skokan hnědý
<i>Bufo bufo</i>	common toad	Erdkroete	ropucha obecná
<i>Triturus vulgaris</i> <i>Lissotriton vulgaris</i>	smooth newt, common newt	Teichmolch	čolek obecný

REVIEW QUESTIONS:

- 1) What is the purpose of university protected areas? Who can benefit from university protected areas?
- 2) Where do we find university protected areas in English-speaking countries?
- 3) Are there any habitats or species that the university protected areas in English-speaking countries have in common with PAs in Central Europe?
- 4) Can the protected areas be located in urban settings? If yes, what are the advantages and disadvantages? Is it worth protecting urban biodiversity? How can this be accomplished?
- 5) What university protected areas do you have in your native country?



Black Alder (*Alnus glutinosa*)

Photo: JM 2013

Chapter 8 - PLANNING OF PROTECTED AREAS – AN OVERVIEW

8-1 What is planning?

Planning is an essential tool for effective protected area management. Planning is a process of setting goals, developing strategies, allocating resources, outlining main tasks, and devising time schedules to accomplish goals. As in a business organisation, PA administrations must set realistic objectives, identify priorities, allocate finances and personnel, and schedule a timetable well in advance. Anticipating trends and events is a critical skill in management planning. Evaluation of threats and risks is a significant part of planning in the initial stage. Evaluation of implementation of a plan is necessary in the final stage.

8-2 Why should we plan?

There is a general reason for planning: better nature and landscape conservation and a better use of resources (e.g., financial, personal and material)¹³³.

Furthermore, there are **specific reasons** for planning in protected areas:^{134 135}

- Meeting of statutory obligations and guiding management towards achievement of goals stated in the legislation^a
- Meeting of global and supranational responsibilities (for example, the Convention on Biological Diversity 1992 and Natura 2000)

Other **specific reasons** for planning are as follows:

- Assuring continuity of management regardless of personnel changes
- Making decisions clear and explicit
- Providing participation opportunities for the community, interested groups, and individuals
- Ensuring public accountability and transparency

8-3 What are the levels of planning (types of plans)?

There are several levels of planning and types of plans that should be coordinated with each other. In this chapter, three levels of planning are discussed. To make the process of PA planning effective, one should begin with countrywide or region-wide **land-use planning**. This should be followed by the actual management plan of a particular PA, which is also known as **area management planning**. Inside the PA, there may be some localities that require their own **site planning**.¹³⁶

^a For example, in the Czech Republic, the basic obligations are included in *Law No. 114/92, On Nature and Landscape Conservation*. In the United Kingdom, it is the *National Parks and Access to the Countryside Act of 1949*. In Germany, it is the *Nature Conservation Act (German: Bundesnaturschutzgesetz) of 1977*. All legislation is applied as amended.

8.4 Land-use planning

Land-use planning (or *space planning* in some countries) determines the general land-use designation. Nature conservation managers may provide consultation input; however, decisions are typically made by others (e.g., public administration and/or politicians).

For example, the following decisions and/or recommendations can be made by federal or regional government authorities:

- Areas that will be large-scale protected areas (e.g., national parks)
- Areas will be (commercial) public forest
- High-capacity roads, mass recreation areas, and industrial and urban development

Proper land-use planning should prevent future land-use conflicts. Land-use designations typically are mutually exclusive (law in developed countries prohibits construction of high-capacity roads, industrial and urban development and other activities that threaten protected areas). Commercial forests (Cz: *hospodářské lesy*) may provide valuable renewable resource, wood, outside of protected areas^a. National parks are not a place for commercial forest management.



Photo: A structure to be removed.
Barrier to aquafauna.

Author: JM 2006

8-5 Area management planning

This type of planning is the focus of our textbook. It should begin once the land-use designation has been determined. The nature conservation managers should be in charge. There are various **protected area management plans**:

- National park management plan
- Protected landscape area management plan
- Nature reserve or natural monument management plan
- Areas of outstanding natural beauty management plan (United Kingdom)
- National recreation area management plan (U.S.A.)
- Natura 2000 locality management plan (EU)

^a Note: The IUCN protected area category VI includes sustainable use of resources, which can be applied to wood production. Some national legislations may allow temporary or permanent wood harvesting in particular national categories of protected areas. Temporary wood harvesting in protected areas is typically explained by the need of transforming monocultural forest stands into a near-natural forest. This explanation is sometimes controversial.

8-6 Site planning

Site^a planning provides management details for a particular site within a protected area. For example, site planning can address visitor facilities, forest stands, or grassland areas within a national park. It may also involve the removal of manmade structures that are not compatible with the goals of conservation.

8-7 Other types of plans

In large-scale protected areas, such as national parks, other types of plans may follow the “main” management plan. For example, there may be *operational plans*, *tourism management plans*, *cultural heritage conservation plans*, and *business plans* of PAs¹³⁷.

Operational plans provide detailed information regarding how or when to take specific management actions. These plans have a shorter time scale than the “main” management plan, i.e., typically one year.

Tourism management plans include measures to regulate visitor flows, to protect sensitive biotopes, and to manage the construction and maintenance of tourism facilities and educational and information services. A related document may be a *visitor code of conduct* (Czech: *návštěvní řád*). Visitor code of conduct includes limits for touristic activities in protected areas in order to conserve sensitive biotopes. Visitor code of conduct is not a tourism management plan, since this is only a small part of tourism management. Certainly, rules of conduct and their enforcement is a necessary part of conservation in protected areas.

Cultural heritage conservation plans^{138 139} address the conservation and restoration of historical structures, occasionally including the installation of a modern structure into an older building. Traditional architecture or archaeological sites are objects of such a plan. Providing explanations of the significance of the particular site and cooperating with private owners may be a part of the task. In some countries, conserving of cultural heritage of traditionally living ethnic or social groups (e.g. Australian Aboriginals, American Indians) may be a part of such plans.

Business plans assist protected areas in becoming more financially self-sufficient. Which public financial sources, i.e., regular or irregular, are available? What are the customers, clients, or sponsors of the protected areas? What services and goods could be offered? Entrance fees, licenses sold, and guided tours by the park staff may be a complementary source of income. Income from logging when transforming low-level zones of a PA is often a major source of income for some national parks (if permitted by national legislation). Income from tree felling as a part of NP financing may be a source of controversy. Regardless, care must be taken so that the main mission of the PA (nature and landscape conservation) is not compromised by commercial efforts. Protected areas are primarily public goods; most of these areas cannot be expected to be financed on a market basis.

^a Note: The word “site” is also used in the European Union with Natura 2000 (N2K) sites. This may be slightly confusing because in the Natura 2000 language, the term “site” refers to the entire PA. In the context of this book, the word “site” refers to a particular part/fraction of a PA. It is a site, i.e., a particular area, within a PA.



Photo: Protected Area Boundary Marking

Author: JM 2013

REVIEW QUESTIONS:

- 1) What is the general reason for planning? What are the specific reasons for planning? Name at least three specific reasons.
- 2) What are the three levels of planning related to protected areas?
- 3) What protected area management plans do you know? Name at least three management plans used in your country. Name at least one management plan used abroad.
- 4) What might be the contents of a tourism management plan?

Chapter 9 - PROTECTED AREA MANAGEMENT PLAN – STRUCTURE AND PROCESS

A protected area management plan is a basic tool for protected area management. It is the document that guides PA administrators, employees and contractors in overseeing a protected area. It is also a prerequisite to evaluating the work of protected area managers. One type of this plan is the national park management plan, which is explained in this chapter. There are other types of area management plans that may differ between regions (for example, protected landscape management plans and natural monument management plans). Regardless, the presented structure should be helpful for understanding plans of various categories of PAs independent of the scale.

9-1 Preliminary considerations

A management plan^a consists of several parts that address various aspects of PA management. Before creating a management plan, park managers or planners should have an idea of everything that should be included. The following topics may be considered to determine the contents of the plan¹⁴⁰:

- Conservation of native ecosystems and/or species
- Protection and restoration of landscape quality
- Forest management, agricultural and aquacultural use
- Water quality management
- Visitor use management and relations with organised tourism industry (e.g., permits, concessions^b and leases)
- Local community relations management
- Control of introduced and invasive plant and animal species

73

9-2 Participatory planning

Besides nature conservation authorities, who should participate in the planning of a particular protected area? This question can sometimes be a source of controversy. The participants are typically external scientists, representatives of communities inside and in the vicinity of the PA, and non-governmental organisations.

An important part of nature conservation is gaining the acceptance of local communities. The process of participatory planning is at least partially influenced by the extent of the decision-making power and the attitudes of the local community. The level of education, achieved environmental conscience, and history of democratic discussion play a major role in the success or failure of participatory planning. Post-communist countries have a short history of democratic



^a Note: Management plans are typically called "*plán péče*" in Czech PA management, which literally means "*plan of care*".

^b For example, concessions (permits) for restaurants, camping operators, boat and rafting expeditions organisers. The conditions vary in different countries due to legislative and historical differences.



Tatry NP Sign, Slovakia
Photo: JM 2014

discussion, and a relatively low level of environmental awareness, therefore participatory planning presents a particular challenge.

In practice, participatory planning may include simple provisions of information by nature conservation authorities to local inhabitants or the control of decision-making by the local community.¹⁴¹ The situation is influenced by the type of land ownership (e.g., federal lands, community lands, or private lands), and by the type of financing (e.g., federally financed PAs, or locally financed PAs) involved. Various approaches are used by PA managers to raise awareness and positively engage participants in discussions about landscape values. Landscape

dialogues with local people, photo competitions, and school workshops in relevant communities are among such approaches.¹⁴²

Advantages of participatory planning include the following:¹⁴³

- Access to a range of information provided by local inhabitants
- Early identification of major issues or problems
- Potential for more creative solutions to problems
- Wider acceptance is essential for easier law enforcement

Disadvantages of participatory planning include the following:

- A time-consuming process with potentially substantial financial costs
- The difficulty of achieving constructive debates when interest groups have entrenched and fundamentally incompatible views

9-3 Time range for a protected area management plan

The usual time range for a protected area management plan is 10 years, which often includes a 5-year review.¹⁴⁴ The long-term nature of the plan should prevent arbitrary decision-making on crucial issues that could potentially lead to weak management. Developments in ecosystems tend to have a longer time range than developments in politics. Therefore, provisions should be made to make the management of a PA independent of temporary changes in national, regional or local politics.

9-3 Parts of a protected area management plan

After preliminary considerations regarding the contents of the plan and initial participatory consultations, a formal document should be compiled. The structure of the protected area management plan may be as follows:¹⁴⁵

- Description of natural values
- Identification of issues
- General goals
- Zoning partitioning

- Specific objectives and measures of performance
- Actions for which priorities may be established

9- 4 Description of natural values

The description of natural values is an introductory description of the area that is typically determined by biologists (ecologists) and other natural scientists. The description portrays the area's biotope types, rare and common species, ecological processes, and developments. The biodiversity and geodiversity of the area and landscape characteristics are describe. If relevant biological and geological research is available, this part is relatively easy from a management perspective because it does not directly require any material interests (therefore, even weak management plans may include well-written natural values descriptions that use a disproportionately large space relative to the other parts of the plan).



Photo: European Beech (*Fagus sylvatica*),
Vlčí důl/Wolfsgrund Nature Reserve, Ore
Mountains/Krušné hory, Czech Rep.
Author: JM 2013

9- 5 Identification and analysis of issues

Problem solving is a major part of a manager's work. Nature conservation managers are no exception to this rule. When handling various issues in PAs, it becomes obvious that biological (ecological) knowledge is a prerequisite; however, this knowledge not sufficient for the successful management of PAs. Problem solving often places high pressure on nature conservation managers and presents high demands on their interpersonal and communication skills and their psychological endurance.

For example, issues may involve conflicts between the following groups:

- General public interests (nature conservation) and local interests (e.g., wood harvesting/collecting and gamekeeping)
- Conservation of natural values and various recreation uses (e.g., downhill skiing, river canoeing, camping, recreational home development, motorism, hunting and fishing)
- Protection of natural processes and various commercial, production and extraction interests (e.g., timber interests, agriculture produce, and mining)
- One use versus another (walkers versus bike riders or cross-country skiers)

9- 6 Establishment of goals and objectives

Proper goal setting is critical for any planning activities. However, a common weakness of PA management plans is the lack of specific objectives. Successful nature conservation cannot be evaluated and guidance to conservation employees cannot be provided when these objectives are missing.

Among other things, management means leading an institution towards desired goals and objectives.^a What are the goals and objectives that should be established and achieved by nature conservation administrations? Biodiversity maintenance likely comes first to everybody's mind when considering protected areas. However, is this sufficient? Can we formulate the goals of protected area administration in only this broad manner? First, we should be clear about the difference between goals and objectives. Second, we should know how to establish objectives in a proper manner.

What is the difference between a goal and an objective?^{146 147}

Goal:

- A general statement of ends
- Not necessarily achievable in the planning period
- Indicates the broad ends to which management aspires

Examples of goals include the following:

- To conserve native animals, plants and fungi
- To control pest plants and animals
- To provide a range of recreation and environmental education opportunities
- To protect traditional village architecture and archaeological sites

An individual goal can be a broad statement. The goals provide a general direction; however, they need to be specified by *objectives*. Goals by themselves are insufficient for directing management activities.

Objective:

- A statement of specific ends
- Realistic and measurable
- To be achieved within a specified period of time

Objectives are required for an effective evaluation of a plan and for performance evaluations of public employees. An important point is that the achievement of objectives must be verifiable. How do we verify the achievement of objectives? The objectives must be set in a way so that it is possible to measure their achievement or to provide some other method of verification.

General goals for PAs may lead to *guidelines* (without specific reference to what and where), while specific objectives may lead to *actions*. Lists of actions may be ordered by *priorities*.

^a Note: There is no single definition of the term *management*. Some conservationists understand this term to only correspond to *biological management*. Biological management is a set of measures performed by nature conservationists or contractors to maintain or improve the ecological conditions of a protected locality. In this book, a different or a wider concept of management is used that address all human (social) aspects of PA management.

An objective should have the following characteristics:¹⁴⁸

- Specific (target)
- Clearly stated
- Measurable
- Realistic
- Time limited (when appropriate)
- Quantifiable (if possible)

Some conservation managers have a problem defining quantifiable objectives. However, quantification is possible in many cases and should be used to measure the effectiveness of conservation work.

Some **examples of measurable and quantifiable objectives** related to nature conservation are provided below.



Example 1 – Measurable Quantified Objective

Objectives for an Australian PA¹⁴⁹

(rare species conservation and invasive species reduction):

- To increase the population of the Leadbeater's possum (*Gymnobelideus leadbeateri*; CZ: vakoveverka bezblaná) in the areas shown on Map 1 by 20% over the next ten years
- To reduce the coverage of the European blackberry (*Rubus fruticosus*; CZ: ostružiník křovitý) in the area shown on Map 2 by 50%



Photo: Leadbeater's Possum
(*Gymnobelideus leadbeateri*)
Source: helmetedhoneyeater.org.au.,
retr. 8-8-14



Example 2 – Measurable Quantified Objective

Objectives in Banff NP, Canada¹⁵⁰

(wastewater management and the pollution of a lake by a hotel):

Standards of water quality:

- Phosphorus - 0.15 mg/L
- Faecal coliform - < 20/100 ml (end of pipe)
<2/100/ ml (end of mixing zone)



Photo: Banff NP, Canada
Source: www.canadianrockies.com, retr. 15-8-2014

- pH (acidity) - meet background levels of receiving waters
- BOD5 (Total) - Summer < 10 mg/L
Winter < 20 mg/L
- Total suspended solids < 10.0 mg/L
- NH3N - summer < 1 mg/L
winter < 5 mg/L

Note: Meet targets by the spring of 1998.

Box 13

What is BOD5?

BOD5: BIOCHEMICAL OXYGEN DEMAND (an environmental indicator)

- Often used as a robust surrogate for the degree of organic water pollution
- Commonly expressed in milligrams of oxygen consumed per litre of sample during 5 days of incubation at 20°C
- Can be used as a gauge for the effectiveness of wastewater treatment plants/devices

Example 3 – Measurable Quantified Objective

Objectives in Exmoor NP, United Kingdom¹⁵¹
(butterfly species conservation):



Objective B 2.7 (excerpt):

“... heath fritillary will have increased to 15 large colonies by the end of 2012 ... “

(Note: In the base year, i.e., 2005, there were 7 large and 2 small colonies of the butterfly.)



Photo: Heath Fritillary (*Militaea athalia*) (Cz: hnědásek jitrocelový)
Source: www.telegraph.co.uk, retr. 12-8-2013

Based on these three examples from various parts of the world, it is clear that some objectives in PA management can be quantified for verification purposes. Verification of whether objectives have been met or to what extent that they have been met should be a part of an *ex post* evaluation (after the period of PA management plan has expired). Quantifiable objectives are not only needed in areas of biodiversity and water quality but also in areas of education, public relations and outreach. While not everything is quantifiable, an effort

should be made to verify if the original expectations have been met. Not all circumstances may be under the control of nature conservation managers; however, it is up to the managers to make reasonable predictions of external developments (e.g., political, social, and natural). The non-achievement of objectives should be an indication that changes in management approaches are needed.

The basic essentials for planning objectives include the following:

Rule 1: Establish objectives in protected area management that have verifiable results!

A properly designed objective includes the following characteristics:

- A statement of specific ends
- Realistic and measurable
- Achievable within a specified period of time

9-7 Feedback and evaluation of effectiveness

Feedback is the information provided to a performer during or after an activity that assists the performer in evaluating the success or failure of his/her performance. Protected area managers or administrators must know how they are performing, what works and what doesn't. Feedback can come from many different sources, i.e., measurement systems, peer experts, supervisory bodies, employees, or visitors of a PA. Feedback is to be provided in a timely manner so that adaptive measures can be promptly applied. These measures should reinforce actions that have been properly performed and identify those that must be changed in the future.

The effectiveness^a of actions undertaken to achieve objectives needs to be determined. Management plan implementation needs to be monitored during the planning period and evaluated after its implementation. Funds need to be allocated for monitoring and evaluation. For example, the Natura 2000 system of protected areas has an obligatory monitoring and reporting requirement.

79

9-8 Principles of effective planning

The above text introduced us to some aspects of planning in protected areas. In summary, we find that there are several binding principles that effective planning must respect.

Principles: ¹⁵²

- Specific objectives with verifiable results
- Explicit linkages between goals, objectives and actions
- Links between actions, financial resources and budgeting
- Work programmes aligned with plans and including deadlines for completion of actions
- Independent *ex post* evaluation of performance

9-9 The quest for good organisers

Organisational work is an essential part of the activities of a protected area manager. Organisational work may not be the aspect that zoologists and botanists are most enthusiastic about. Nevertheless, if biologists are interested in preservation of the subject of their scientific interest (animals, plants), they must develop organisational skills. The other option is to leave the organisational management

^a Note: We define effectiveness as the degree to which some activity achieves a clearly defined objective.

to other professions (e.g., economists or foresters), although there is a risk that they will not appropriately understand ecological processes and the mission of protected areas. However, cross-disciplinary education has garnered more attention in recent years, producing some economists and foresters with knowledge of nature conservation and biologists that are skilled in organisation and finance.

REVIEW QUESTIONS:

- 1) What are the typical components (structure) of a protected area management plan?
- 2) What are some issues that can be addressed in a protected area management plan?
- 3) What are the differences between goals and objectives?
- 4) You are writing a national park management plan. Establish a specific quantified objective related to biodiversity. Establish a specific quantified objective related to water.



Photo: Oxlip Primrose (*Primula elatior*)
Author: JM 2011

Chapter 10 - ENVIRONMENTAL GROUPS (NGOs) AND PROTECTED AREAS

10-1 What are non-governmental organisations (NGOs)?

Non-governmental organisations (NGOs) are highly visible actors in nature conservation around the globe. NGOs are occasionally called “the third sector”, in reference to the public sector and the private sector. NGOs are non-profit entities that are independent of government or business institutions^a. A substantial portion of their activities is performed on a voluntary basis as unpaid work. The goal of their activities is often in the realm of public interest or the common good (such as clean air or biodiversity conservation). Besides environmentally oriented NGOs, there are other types of NGOs. Some NGOs work with physically and socially handicapped people, some provide aid in developing countries, and others fight government corruption.^b Some NGOs consist of only a few individuals that work for their cause during weekends, while other NGOs include hundreds of thousands of members and have a professional full-time paid staff.

Environmental NGOs in western democracies play an important role in the establishment and operation of protected areas. These NGOs promote the declaration of protected areas. Moreover, environmental NGOs may also get involved in managing PAs or providing a check on the effectiveness of PA management by public agencies. Environmental NGOs are considered by some political scientists to be “*the most effective movement fighting for progressive environmental change*” (Carter 2007)¹⁵³, particularly in countries with weak Green parties, such as in the U.S.A. and in the United Kingdom. However, environmental NGOs in developing and in some post-communist countries face serious obstacles from governmental authorities.^{154 155}

81

10-2 The role of NGOs in a democratic society

NGOs are involved in several types of activities:

- Natural areas conservation, revitalisation and regeneration
- The observance of human rights (including exercising a right-to-know in environmental matters)
 - Welfare of the disadvantaged (including environmental justice issues)
 - Support for citizen participation in environmental governance
 - Monitoring the public administration’s compliance with laws and good practices (including practices in PA management)
- Filling the gap in government services



^a Note: Independence is included in the usual formal definitions of NGOs. However, some NGOs experience difficulties being fully independent of governmental or business institutions due to financial constraints.

^b Some “non-environmental” NGOs include *Medecins Sans Frontiers* (Engl.: *Doctors Without Borders*), which focuses on medical aid in third world countries, *Amnesty International*, which addresses abuses to human rights, and *Transparency International*, which strives to fight corruption.

- Counter-balancing the power of business lobby groups (affecting public policies)
- Source of innovation (including innovation in natural areas management)

10-3 International agreements on the role of NGOs

The role of non-governmental organisations has been supported by several international agreements. Among these international agreements are the following:

- The Aarhus Convention
- Agenda 21

Aarhus Convention

The Aarhus Convention of 1998, or *The Convention on Access to Information, Public Participation in Decision-making, and Access to Justice in Environmental Matters*, is the most important international agreement related to the activities of environmental NGOs. The agreement is named after the city of Aarhus in Denmark, which was the location of the convention.

The Aarhus Convention was not initiated by the European Union, as has been erroneously assume by some individuals. It was organised by the United Nations Economic Commission for Europe (UNECE). The convention was signed and ratified by individual European countries (including the Czech Republic, the United Kingdom, and Germany). The European Union itself also signed the agreement, which added significant pressure for its implementation.



82

This international agreement establishes several rights of the public (individuals and their associations) related to the environment. The undersigned states are obliged to ensure that these rights become effective. Public authorities at national, regional and local levels must take measures to facilitate public involvement¹⁵⁶, including the involvement of environmental NGOs.

The Aarhus Convention provides for the following rights (three pillars of the Aarhus Convention):

- Access to environmental information
- Public participation in environmental decision-making
- Access to justice

Access to environmental information means that everyone has the right to receive environmental information held by public authorities. In the past, such access was often denied on the grounds of “confidential business information”. **Public participation in environmental decision-making** means that provisions should be made by public authorities to enable NGOs to comment on proposals for projects and programmes affecting the environment. These comments must be considered in the decision-making process. This also implies that environmental decision-making is no longer the sole domain of elected officials and public administration employees. **Access to justice** means the right to legally challenge public administration decisions that were made without considering the two aforementioned rights or without respect to environmental law.



While implementing the first pillar and the second pillar of the Aarhus Convention has made substantial progress since the ratification of the Convention by the European Union, the third pillar requires further attention. A public consultation on the third pillar was held by the EU in 2013.¹⁵⁷

Agenda 21

Agenda 21 is a document of the United Nations (UN) that was signed at the UN Conference held in Rio de Janeiro, Brazil, in 1992. Its recommendations for achieving sustainable development should be implemented at national, local, and global levels. The role of NGOs is described in Chapter 27 of Agenda 21, which is titled, *Strengthening The Role Of Non-governmental Organisations*. Some of the provisions that are requested by the document are similar to those in the Aarhus Convention (NGO participation in policy and decision-making and access to information for NGOs). The document also requires that “the United Nations should see that all its agencies draw on the expertise of non-governmental organisations”.¹⁵⁸

10-4 NGO influence in the politics of western democracies

NGOs in developing countries and in some former Communist countries, continue to suffer from government mistrust and even outright prosecution.^{159 160 161} However, NGOs in most western democracies hold a substantial influence in public policy-making. How have NGOs managed to become a significant participant in the public policy-making process? As explained by some political scientists, there are several **reasons for the influence of NGOs in the politics of western democracies** (Carter 2001)¹⁶²:

- NGOs can offer expert knowledge and innovative thinking
- The goals of NGOs transcend narrow sectoral interests
- NGOs often represent substantial constituencies

Because some NGOs focus on particular issues for many years, they become well informed about these issues. Their knowledge is frequently improved by arguments with opponents in particular cases. This does not mean that that every NGO member is an expert ^a. However, many well-established NGOs possess expert knowledge that helps them win cases in legal courts and administrative proceedings.

According to the European Union, environmental protection (sustainable development) is a horizontal priority¹⁶³ (cross-cutting through all sectors of economy and society), not a sectoral interest. In some countries, NGO representatives are invited into advisory panels and boards that handle particular environmental issues to discuss environmental issues with members of various sectoral ministries and agencies. At the level of PAs, NGOs may become members of boards that supervise or advise the administration



^a Note: The varied membership of NGOs includes well-established scientists and self-taught enthusiasts with little formal education. Members may include occasional volunteers and contributors of all walks of life, including professional administrative and fundraising staff.

of PAs. NGO participation is often dependent on national legislation that favours their involvement. The consistency of NGO operations of is also heavily influenced by tax legislation. National tax laws may or may not allow tax deductions for individual or company donations to NGOs, which affects the financing of NGOs.

Another reason why environmental groups hold substantial political influence in western democracies is the high NGO membership in some countries, which represents a substantial part of voters.

10-5 Large NGOs in the United Kingdom and the U.S.A. and their involvement in protected areas

Information regarding NGO membership and support is provided in the following tables.

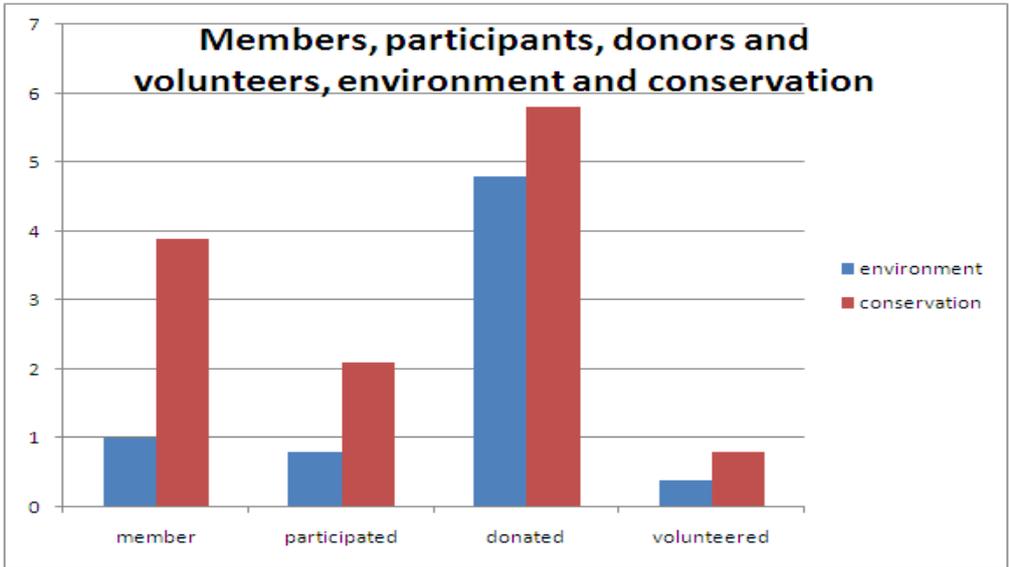
TABLE 10-1

ENVIRONMENTAL GROUP MEMBERSHIP	
Percentage of country’s population (adults)	
The Netherlands	45%
United States of America (U.S.A.)	15%
Denmark	13%
Sweden	less than 12%
Belgium	10%
Austria	less than 10%
Canada	8%
Germany	less than 3%
Russia	0.7%
Turkey	0.2%

Source: Dalton 2005¹⁶⁴ (data are for 1999)

Based on Table 1, there are some countries in which membership and support for environmental groups are relatively high. Membership numbers do not necessarily imply that these are all regularly active members. However, even members that “only” financially contribute to a particular group (sometimes via their membership fees) are important for the operations of NGOs.

FIGURE 10-1
ENVIRONMENTAL GROUP MEMBERSHIP AND THEIR SUPPORT IN GREAT BRITAIN
 Source: Citizen audit of Great Britain (2000-2001)^a



Based on Table 2, the number of donors exceeds the number of NGO members in Great Britain. Moreover, membership and support for wildlife conservation-oriented causes (e.g., biodiversity and natural areas) are higher than that for general environmental causes (e.g., air and water pollution and waste handling). In the UK, there is often an overlap of natural heritage and cultural heritage conservation in the activities of NGOs and public authorities. Natural ecosystems are protected together with historical architecture and archaeological sites.

TABLE 10-2

LARGE ENVIRONMENTAL GROUPS IN THE UNITED KINGDOM OF BRITAIN AND NORTHERN IRELAND	
	
Name	Membership
National Trust	3 400 000 ^a
Royal Society for Protection of Birds (RSPB)	1 042 000
Wildlife Trusts	413 000
World Wildlife Fund (WWF) – United Kingdom	330 000
Greenpeace – United Kingdom	221 000
Friends of the Earth	100 000

Source: Carter 2007¹⁶⁵ (data are for 2004)

Based on Table 3, the National Trust, which is an organisation that strives to protect both the natural and cultural heritage of the United Kingdom by acquiring own land, has the largest membership. The Royal Society for Protection of Birds (RSPB), the Wildlife Trusts group and the World Wildlife Fund focus on biodiversity conservation. The RSBP manages more than 200 of its own bird reserves on approximately 140 000 ha of land in the United Kingdom.¹⁶⁶ Moreover, Greenpeace and Friends of the Earth have a more general environmental agenda (in addition to biodiversity protection, they focus on such issues as air and water pollution issues and toxic waste handling)



85

TABLE 4

LARGE ENVIRONMENTAL GROUPS IN THE UNITED STATES OF AMERICA	
	
Name (year founded)	Membership
Sierra Club (1892)	736 000
Audubon Society (1905)	550 000
National Parks & Conservation Association (1919)	375 000
Wilderness Society (1935)	225 000
National Wildlife Federation (1936)	650 000
Defenders of Wildlife (1947)	463 000
The Nature Conservancy (1951)	972 000
World Wildlife Fund – United States (1961)	1 200 000
Environmental Defense Fund (1967)	350 000
Natural Resources Defense Council (1970)	450 000
Clean Water Action (1971)	300 000
Greenpeace U.S.A. (1971)	250 000
Ocean Conservancy (1972)	100 000

Source: Bosso 2005¹⁶⁷ (data are for 2004)

^a Note: The numbers do not include Scotland. Scotland has its own National Trust.

Based on Table 4, some NGOs in the U.S.A. have a long history, such as the Sierra Club and the Audubon Society. Most of the NGOs focus on biodiversity conservation (e.g., World Wildlife Fund and the Sierra Club), while others have a wider or different focus (e.g., Greenpeace and Clean Water Action). The **Audubon Society** is an ornithological society engaged in active nature conservation. The society also publishes popular ornithological field guides. The Audubon Society operates some bird preserves on its own land.^{168 169}



The **National Parks & Conservation Association (NPCA)**¹⁷⁰ advocates for national parks in the United States. The NPCA educates decision-makers^a and the public about the importance of preserving parks. The group communicates with members of the U.S. Congress to uphold laws that protect NPs and fights against attempts to weaken these laws in courts. The NPCA also evaluates the health of the parks and the effectiveness of park management.¹⁷¹

10- 6 NGOs in the Czech Republic and their involvement in protected areas



In the Czech Republic, there are some active environmental NGOs that are engaged in nature conservation, including conservation in PAs. Unlike the U.S.A., the United Kingdom and some countries in Western Europe, the Czech NGOs have a relatively weak political presence and have small operating budgets. Some Czech politicians and a portion of the general public continue to not understanding the role of NGOs in a democratic society.^{172 173} This problem may be due to the long decades of autocratic rule before the *Velvet Revolution*. The tax laws in the Czech Republic do not favour substantial financial contributions to NGOs by individuals or corporations,¹⁷⁴ which has a negative effect on the long-term stability, personnel and operations of the Czech NGOs.¹⁷⁵ However, some Czech NGOs contribute significantly to nature conservation at local levels.

Environmental NGOs cannot replace the role and responsibilities of government institutions in nature conservation solely via volunteer activities. However, they can add to total nature conservation and revitalisation efforts. Individual NGOs or their members may be controversial in their activities or lack some knowledge. The same may be true of public institutions, public officials and political decision-makers. Certainly, the role of the environmental NGOs is not just to *pick up trash* and *plant trees*, which is a common belief in the Czech Republic.^{176 177} The role of NGOs in an open society is much wider, which is suggested by examples from Western Europe and North America, including activities related to PAs, regardless of whether these areas are under government, private, or shared governance.

Classification of environmental NGOs in the Czech Republic

In the Czech Republic, environmental NGOs are classified according to the focus of their activities and by the scale of their operations, which is analogous to many other countries. Some NGOs are engaged in PAs, either regularly (for example, through biotope maintenance work) or occasionally

^a Decision-makers: politicians, public employees, private sector executives

(for example, by participating in the design of PA management plans or by participating in administrative procedures).

Czech NGOs can be classified according to their primary activities as follows:

- NGOs that focus on biodiversity protection
- NGOs with general environmental agendas, including biodiversity protection

Some of the environmental NGOs that focus on biodiversity protection in the Czech Republic include the Czech Union for Nature Conservation (ČSOP; Cz: *Český svaz ochránců přírody*) and the Czech Society for Ornithology (ČSO; Cz: *Česká společnost ornitologická*). NGOs with a more general environmental agenda, which are also active in PAs, include the Hnutí Duha, the Děti Země and the Arnika.

The following classifications are used for Czech NGOs based on the scope of their operations:

- NGOs with nationwide activities
- NGOs with regional activities
- NGOs with local activities

NGOs with nationwide activities are the ČSOP, the ČSO, the Hnutí Duha, the Děti Země and the Arnika. NGOs with regional activities include Čmelák and Suchopýr in the Liberecký region. In nearly every region of the Czech Republic, there are NGOs with local activities.

87

Czech NGOs that focus on biodiversity conservation

The largest Czech NGO that focuses on biodiversity conservation is the **Czech Union for Nature Conservation (ČSOP; Cz: *Český svaz ochránců přírody*)**. The group had approximately 7300 members, including approximately 2000 children, in 2012.¹⁷⁸ The group is engaged in biotope enhancement (e.g., native trees planting and amphibian pond building), biotope maintenance (e.g., species-rich grasslands mowing), and care for injured wild animals (e.g., animal care stations). The ČSOP works with the public (educational walks and presentations) and with political decision-makers (including advisory boards and participation in administrative procedures^a). The cooperation of the ČSOP with nature conservation authorities and other public authorities is generally good, which is most likely because some of its leading members held public offices in the past.



The ČSOP operates several small, protected areas around the Czech Republic on land that was purchased by financial contributions from its members and sponsors¹⁷⁹. These protected areas typically have no official assigned governmental category. However, the ČSOP is able to provide protection and maintenance that some official PAs lack. The ČSOP organises a fundraising drive to buy land with interesting biodiversity potential. The land purchases began in 2003. By the spring of

^a Participation in administrative procedures under § 70 of Act No. 114/1992 regarding the Protection of Nature and Landscape (Czech: *účast ve správních řízeních dle § 70 zákona č. 114/1992, o ochraně přírody a krajiny*)

2014, the ČSOP had acquired more than 100 ha of land at 25 locations throughout the Czech Republic¹⁸⁰. Although the size of the land under its governance is relatively small, its mere existence can be called a success for Czech nature conservation.

The ČSOP is an NGO with nationwide activities, containing approximately 330 local groups throughout the Czech Republic.¹⁸³ Individual groups have substantial independence, and their nature conservation activities are very diverse. The headquarters of the ČSOP are in Prague, where it operates an informational and educational centre in the district of Michle. The local ČSOP group Veronica, which is located in Brno, is involved with the Hostětín Centre for Sustainable Living in Bílé Karpaty, southern Moravia.¹⁸⁴ The local ČSOP group Vlašim, which is located in Central Bohemia (close to the historical hill of Blaník), operates an information centre in Vlašim and an injured animal refuge.¹⁸⁵ ČSOP Vlašim takes part in public administrative procedures that handle the interests of nature conservation and landscape protection (e.g., felling of trees in non-forest areas and stream regulation).¹⁸⁶ Through its land trust association, Vlašim administers two ČSOP nature reserves. Its land trust association also maintains approximately 30 biodiverse localities in Central Bohemia, where it has long-term agreements with landowners¹⁸⁷.

The **Czech Ornithological Society (ČSO; Cz: Česká společnost ornitologická)** is another Czech NGO that focuses on biodiversity protection. Its members include



both professional biologists and many bird-watching enthusiasts who lack formal education in nature sciences. The ČSO has 8 regional branches in different parts of the Czech Republic (e.g., the North-Bohemian Branch, the Vysočina/Highlands Branch, and the Central-Moravian Branch). The ČSO has developed from a primarily recreational bird-watching association into an organisation that has become actively engaged in various nature conservation activities. It is involved in nesting support and biotope enhancement activities, organises educational walks for the public, and takes part in administrative procedures^{188 a}. In 2008, the group began acquiring land to set up its own nature reserve. The first ČSO bird reserve, *Josefov Meadows*, will be located in eastern Bohemia in

Box 14

What about Slovakia?



NGO-Protected Areas

In Slovakia, the NGO VLK (*English: Wolf*) established the first private reserve, *Vlčia rezervácia (English: Wolf Reserve)*, in the Čergov Mountains of eastern Slovakia. The 21 hectares of forestland was purchased through contributions from Slovak citizens and people from other countries. The efforts for private protection began in 1997. In 2004, the regional authority officially acknowledged the reserve.

The other private reserve, which is managed by the same NGO, is the *Rysia rezervácia (English: Lynx Reserve)*, which is located in the Stražovské Mountains of east-central Slovakia. It was declared in 2004 on an area of over 30 hectares.¹⁸¹

Community-Protected Areas

In the vicinity of the central Slovakian community of Zaježová, there is a project of community-protected natural areas (SK: *obcou chránené územia*), which is another alternative to state protected natural areas. More than 20 localities, including grassland, forestland and individual trees, were included in the project. The localities, which are in community ownership, cover more than 100 ha and approximately 2% of the area of the communities of Pliešovce and Zaježová.¹⁸² Although the total area is not large compared to areas that are formally protected by the country, the approach appears unique in Visegrad countries.

^a Note: Participation by NGOs in administrative procedures (Cz: *účast NNO na správních řízeních*): Participation in procedures, regulated by law, which are managed by public authorities, such as community administrations

the vicinity of Jaroměř, which is alongside the Metuje River. Building new water pools for birds and watchtowers for bird watcher, is a part of the project. A fundraising drive continued through 2013 to acquire sufficient land for this ČSO nature reserve.¹⁸⁹

Czech NGOs with general environmental agendas

The **Hnutí Duha** (*English: Rainbow Movement*) is a part of the international federation of organisations of the Friends of the Earth. Its members and small groups in various parts of the Czech Republic are engaged in energy, waste handling, and transportation issues.¹⁹⁰ The Hnutí Duha has been active in biodiversity conservation and PAs as well. The organisation focuses on protecting large carnivores (e.g., lynx and wolf) through public discussions and information. In the Beskydy Protected Landscape Area, the group organises wolf patrols (*Czech: vlčí hlídka*) in winter. Groups of young people walk through the forest to watch for traces of large predators (including wolf, lynx, and bear) and for signs of illegal activities, such as poaching. Similarly, the group organises lynx patrols in Šumava NP to monitor poaching of the Eurasian lynx.¹⁹¹ The members of Hnutí Duha participated in the anti-logging blockades in 1999, 2003 and 2011 in the Šumava National Park.



Another Czech environmental NGO is the **Děti Země** (*English: Children of the Earth*) group, which handles transportation issues, the protection of birds of prey¹⁹², and biotope management. The group organises volunteer camps for biotope maintenance in the Kokořínsko PLA¹⁹³. The group has received media publicity due to its opposition to motorway construction through the České Středohoří Protected Landscape Area. Another NGO, the **Arnika**, handles toxic materials, waste handling, and protection of natural biotopes. Through its team *Bořena*, the organisation takes care of several biodiversity-rich grasslands in the České Středohoří PLA. Moreover, the group cooperates with the German NGO Gruene Liga.¹⁹⁴



Photo: Arnika o.s.,
www.arnika.org, retr. 9-9-2013

Regional NGOs

In the Liberec region, there are two nature conservation NGOs that are engaged in similar activities, the **Čmelák - Společnost přátel přírody, o.s.**, (*English: Bumblebee – Association of Friends of Nature*) and the **Suchopýr o.p.s.** (*English: Cottongrass*). Their work is related to natural forest conservation and regeneration. Both organisations maintain near-natural tree nurseries^{195 196} that have reduced the application of chemicals and artificial fertilisers used in conventional tree nurseries. These NGOs also organise educational activities for the public, especially for students. The Čmelák NGO acquired its own forestland in 2008. The group set up its own nature reserve on this land to protect the near-natural forest. By mid-2013, the NGO had acquired 35 hectares of forest for its nature reserve.¹⁹⁷

(*Cz: obce*), regional authorities (*krajské úřady*), national park administration, to make an official decision on some matter. The result of these administrative procedures is usually a decision by public authorities that has an impact on nature conservation or on the environment in general (e.g., new construction development and logging). In the Czech Republic, the Law on Nature and Landscape Conservation, No. 114/92, par. 70, applies to most of these cases.

Local NGOs

There are small conservation-oriented NGOs with local activities in every region of the Czech Republic. Besides local chapters of the ČSOP, which have their own legal status, there are other conservation groups. Examples include the Hamerský Potok o.s.¹⁹⁸ (*Engl: Hamerský Brook*) in the district of Jindřichův Hradec in southern Bohemia and the Společnost pro ochranu Prokopského a Dalejského údolí¹⁹⁹ (*English: Society for the Protection of Prokopske and Dalejské Vallyes*) in the capital, Prague. These NGOs are engaged in the local protection of species and biotopes (such as amphibians and their habitats).



The wet grassland locality V Hatích, which is in the Bohemian-Moravian Highlands, is handled by the Gallinago Land Trust and by volunteers from the region.

Photo: JM 2013

Land trust associations in the Czech Republic

Land trust associations (*Czech: pozemkové spolky*) are groups focusing on the maintenance of small biotopes that are valuable from a nature conservation perspective. Some of these sites are located in officially declared protected areas, some sites lie outside of protected areas. There were more than 50 land trust associations in the CR in 2010²⁰⁰. Typically, these organisations mow species-rich grasslands^a to prevent the disappearance of rare plant species. While most trusts are part of the ČSOP (Czech Union for Nature Conservation / *Cz: Český svaz ochránců přírody*), several are not. However, the ČSOP often provides consulting and accreditation.

There are two ways through which the land trusts operate:

- Conservation management on leased lands (long-term lease)
- Acquisition of land for conservation

When working on leased land, these associations typically require at least a 20-year lease so that their work will not be disrupted by ownership changes. The ČSOP provides an accreditation system for the land trust associations to assure good standards. Additionally, the most precious localities can be “certified”, which means that in case the particular land trust is not capable of caring for the land, the ČSOP will take over its maintenance.²⁰¹

An example of a land trust association is Team Bořena, which is part of the Arnica NGO. This group cares for meadows in the České Středohoří Protected Landscape Area²⁰². Another example of a land trust association is the Gallinago land trust²⁰³, which is part of the ČSO Vysočina NGO. This group maintains grasslands in the Vysočina region and builds new pools for endangered amphibians.

Although the term *land trust* is used in English translations, these organisations in the Czech Republic do not have the same legal and tax status as land trusts in the United Kingdom. They are not land trusts in terms of the Anglo-Saxon law. The Czech land trusts (*Czech: pozemkové spolky*) do not have

^a Note: Mowing of grasslands by light technology is beneficial for biodiversity. The conventional mowing of grasslands performed by most agricultural companies by heavy and fast moving technology provides limited or no benefits for biodiversity.

their own legal identity, such as endowments. They operate under an NGO (spolek^a, o.p.s.). The guarantee for the accredited or certified land trusts is provided by the ČSOP, which cooperates in this matter with the Czech Ministry of Environment.²⁰⁴

REVIEW QUESTIONS:

- 6) What are NGOs? What are their characteristics? What areas of social life are they active?
- 7) What is the role of NGOs in a democratic society? Explain their role in protected areas.
- 8) What is the most important international agreement on the rights of NGOs? What are the *three pillars* of this agreement?
- 9) Why are NGOs influential in mature western democracies?
- 10) What environmental groups in your native country are you familiar with? What are their activities in protected areas? Describe at least three activities.

^a Note: The Czech term *spolek* (English: *alliance*, German: *Verband*) is used in the current legislation (2014), while the Czech term *občanské sdružení* (English: *civic association*) was used until 2013.

Chapter 11 - CASE STUDY: NON-GOVERNMENTAL PROTECTED AREAS IN ENGLISH-SPEAKING COUNTRIES

Unlike much of Central Europe, private forest and agricultural lands in the U.K. and the U.S.A. are much less accessible to the general public for recreation. In large parts of the English and Welsh countryside, the public right-of-way is limited to designated paths only. In the United States, no *trespassing* signs warn people against entering private land alongside public roads in wooded or open landscapes. However, the United Kingdom and the United States have a long history of private and non-governmental initiatives that led to the establishment of non-governmental PAs. Some of these areas contribute significantly to national, regional, or local nature conservation.²⁰⁵

Private protected areas include “formal protected areas” under private ownership that are legally recognised as protected areas, “personal retreat reserves” for individuals and/or their families without formal governmental recognition, and “NGO reserves” owned by environmental not-for-profit organisations²⁰⁶. The IUCN calls these *protected areas under private or shared governance*.²⁰⁷ Shared governance is when non-governmental entities (e.g., NGOs or private individuals) share the responsibility for managing a particular area with the government.

Non-governmental protected areas certainly cannot replace the role of PAs under governmental governance.²⁰⁸ The costs of non-governmental private areas are carried by few people, while the benefits (biodiversity as a public good) are shared by many people. However, all forms of PA governance can contribute to the goals of biodiversity and landscape conservation and revitalisation. Let’s examine some cases from English-speaking countries in which the private governance of PAs is more established than in continental Europe.

92

11-1 The Nature Conservancy – U.S.A.

The U.S. environmental group *The Nature Conservancy* has established the world’s largest system of private natural areas and wildlife sanctuaries.²⁰⁹ The Nature Conservancy uses member and corporate donations to buy and protect lands threatened by development. The organisation also helps landowners to obtain tax benefits in exchange for establishing legal restrictions on the use of their land. The legal restrictions may prohibit further residential or commercial development on the land. Owners often donate land to The Nature Conservancy and keep lifetime occupancy rights.^{210 211}



The Nature Conservancy performs the following actions:

- Acquires its own land for conservation
- Uses conservation easements (both donated and sold by land owners) on lands it does not own (putting legal restrictions on the use of land)
- Resells some of the land to conservation-minded individuals (conservation-buyer projects)

The Nature Conservancy cooperates with the business sector, including large companies, such as Penguin Books²¹² and Payless Shoesource.²¹³ To obtain financial resources, The Nature Conservancy typically permits limited commercial activities, such as drilling, on small portions of its land. This has been criticised by some conservationists that consider The Nature Conservancy to be too close to big business, including to the major oil companies²¹⁴. In the United States, The Nature Conservancy helps to protect more than 60 000 km² of land²¹⁵. The organisation also operates in other countries, primarily in Latin America, with a few locations in eastern and southern Africa. Outside the U.S., The

Nature Conservancy typically does not acquire land; instead, the organisation formulates arrangements with local authorities and village communities.^{216 217}

11-2 The National Trust – United Kingdom

The National Trust is a well-known institution for the protection of cultural and natural heritage in the United Kingdom. The National Trust is a non-governmental organisation that reached four million members in 2011.²¹⁸ The organisation is engaged in the conservation and maintenance of historic castles, wetlands, meadows, woodlands, historical gardens, traditional village architecture, and archaeological sites.²¹⁹ The National Trust manages a large portion of the UK coastline.²²⁰



The wide range of the group's activities is expressed by its slogan: "from buildings to bats". The National Trust is a large landowner that manages lands from the White Cliffs of Dover on the southeastern English coast²²¹ to the Giant's Causeway, which is a geological monument in Northern Ireland.²²² Some of its 211 private nature reserves are officially recognised as SSSIs (sites of special scientific importance) by the U.K. authorities.²²³ The National Trust cares for more than 2471 km² of land and more than 1141 km of coastline in Wales, England and Northern Ireland^{a 224}.

The organisation is the second largest landowner in the United Kingdom after the government.²²⁵ The National Trust also owns some land inside British NPs^b, such as Exmoor and Dartmoor NPs.^{226 227} Moreover, the organisation is most likely the largest owner of bat-inhabited buildings in the United Kingdom because bats are granted special attention and protection in historical and countryside buildings. This aspect of the organisation reinforces the advantages of integrating cultural and natural heritage protection.

93

Several habitats are protected on the National Trust lands, including acid oakwoods and grasslands²²⁸, sand dunes²²⁹, and aquatic habitats.²³⁰ The habitats are managed to promote characteristic native flora and fauna communities. The National Trust finances its acquisitions and operations through membership fees, donations, and through generous legacies/bequests. Other financial sources include property rents, entrance fees, and investments.²³¹



11-3 THE WILDLIFE TRUSTS - UNITED KINGDOM

The Wildlife Trusts represent an association of 47 local wildlife trusts in the United Kingdom of Great Britain and Northern Ireland.^c Their main focus is biodiversity protection. The Wildlife Trusts own more than 900 km² of land in the United Kingdom²³² and operate more than 2300 of their own nature reserves.²³³ The trusts handle public authorities, participate in public hearings, and take stands on various development projects and extractive activities.²³⁴

^a Note: In Scotland, there is a separate organisation: *The National Trust of Scotland*.

^b Note: Unlike in Central Europe, there is a relatively large permanent human population in the British national parks and a large share of private land holders. The British NPs are category V protected landscapes according to the IUCN classification. There are no NPs in Northern Ireland.

^c Note: In the United Kingdom, the environmental NGOs that are engaged in nature conservation typically have a legal status of *conservation charity*.

The Wildlife Trusts attempt to preserve a broad range of the United Kingdom's habitats, including urban habitats. There are urban wildlife trusts that operate in towns and cities. The London area also has a wildlife trust. The London Wildlife Trust cares for its own small-scale PAs²³⁵ and supports conservation and biodiversity education²³⁶ around the city.



QUESTIONS FOR DISCUSSION AND REFLECTION

- 1) Is it good for the NGOs, such as The Nature Conservancy, to cooperate with big business? What are advantages and disadvantages of this cooperation?
- 2) Compare the area of land owned by land trusts in the United Kingdom with the area of land owned by NGOs in your native country. What is the difference and why?
- 3) Have you ever contributed to a land buy-out organised by a conservation NGO? Do you know what land buy-outs are currently occurring in your native country?
- 4) Is it possible to rely on private conservation efforts? Does the government have a major role in nature conservation?
- 5) Imagine that you can influence law-making practices in your native country. What taxes or other laws would you change to support non-governmental protected areas?

Chapter 12 - TOURISM IN PROTECTED AREAS

Key ideas

Tourism may be both a threat and an opportunity for protected areas. Unsustainable tourism may damage protected values. However, tourism provides an opportunity for conservation education of visitors. There are soft and hard forms of tourism that differ according to their effects on natural areas. Agritourism and ecotourism are forms of tourism that may be suitable for PAs. There are ways to manage tourist flows to minimise their effects on sensitive biotopes. The PAN Parks certification programme was an approach to cooperation between the tourism industry and conservation authorities. Nature-based tourist destinations are doomed to eventual economic self-destruction if nature and landscapes attractive for visitors are despoiled.



Large-scale protected areas in the Czech Republic (NP – red; PLA – green)

Source: IDS – K. Matějka (online: <http://www.infodatasys.cz/lesnioblasti/default.htm>), retr. 9-9-2013

12-1 INTRODUCTION

Nature-based tourism has increased rapidly around the world as a result of the increased mobility of humans. Tourists from wealthy western countries can fly to exotic third-world destinations within a few hours. A heavy influx of tourists may transform landscapes and local communities in recreational regions. Some countries in Central America, eastern Africa and elsewhere have realised the tourism potential of relatively undisturbed ecosystems. Central governments, regional authorities and travel agencies attract tourists through advertising campaigns featuring protected areas. The term *national park* has become part of marketing slogans in travel catalogues. Additionally, formerly remote natural places in Europe are becoming more accessible for short-time visitors due to expansions in

motorway construction. Recreationists with differing motivations, attitudes and environmental knowledge visit protected areas. Local inhabitants and communities near PAs compete for recreation business with long-distance operators and investors. The public authorities in charge of PAs face the challenge of handling large tourist flows, developers of recreational housing, and demands for facilities for numerous sporting and entertainment activities.

The effects of recreation activities on PAs varies depending on the characteristics of the recreation activity, its intensity, the particular biotope involved, and the environmental awareness of tourists. On one hand, spontaneous unregulated tourism presents a threat to PAs through the destruction of biotopes. On the other hand, tourism provides an opportunity for conservation education and for supporting local economies. In some developing countries, income from



Photo: Tourists in a national park.

J. Kordas, 2010

tourism may be the only effective argument for nature conservation. Furthermore, appreciative visitors may provide long-term political support for protected areas.

Protected area administrations are expected to support recreation that involves learning about nature. Observing and identifying wildlife and landscapes without damaging them may raise public environmental awareness. Time spent in nature-based environments positively influences environmental consciousness if proper guidance, advice, information and rule enforcement are provided. Opportunities for the public vary according to the category of the PA and the particular locality.

Popular natural sites can be “visited to death”. Conservation authorities^a are expected to be directly involved with managing tourism. *“If they (conservation authorities) do not provide leadership, then the tourism industry is likely to fill the void by default. Once unsustainable tourism practices are in place, conservation staff who try to change them will face powerful political forces.”^b*

12-2 INSTITUTIONS HANDLING TOURISM AND NATURE CONSERVATION

Various governmental, business and non-profit institutions handle tourism in protected areas. There are both national and international institutions that seek to harmonise the interests of tourism and nature conservation.

^a For example, NP administrations, PLA administrations, regional authorities (CZ: krajský úřad), and town councils in the CR.

^b Worboys, G. et al. (2001). Protected Area Management. Principles and practice. S. Melbourne: Oxford University Press, 2001, p. 272.

12-2-1 International Institutions

The International Union for Nature Conservation (IUCN) works through its *World Commission on Protected Areas (WCPA)* to improve knowledge about planning and managing sustainable tourism in PAs. There is a tourism specialist group within the IUCN WCPA.²³⁷ In cooperation with the United Nations Environmental Programme (UNEP) and with the World Tourism Organisations, the IUCN published the *Guidelines to Planning and Management of Sustainable Tourism*.²³⁸



12-2-2 Institutions in the Czech Republic



In the Czech Republic, the Agency for Nature Conservation and Landscape Protection of the CR (AOPK ČR)^a initiated the establishment of the *Expert Group for Recreation, Sport and Tourism (Cz: Odborná skupina pro rekreaci, sport a turistiku)* that examines tourism issues in protected landscape areas.

The AOPK expert group handles the following issues:

- Environmental impacts of various recreation activities and sports
- Sustainable ways of practicing these activities

Individual members of the group are focused on particular types of activities, such as downhill skiing, golf, motorised sports, and rock climbing.²³⁹

While the AOPK is responsible outside of national parks, the individual Czech NPs also have to handle tourism issues. In the planning process, tourism can be included within the NP management plan or in a separate tourism plan worked out by the NP administration. Cooperation with other stakeholders in the area is very important. Individual Czech administrative regions (Cz: *kraje*) may have their own tourism plans that should comply with nature conservation goals.

An example of addressing tourism issues in a Czech national park is the creation of the *České Švýcarsko o.p.s.* (Engl.: Bohemian Switzerland) organisation. This organisation was founded by the Bohemian Switzerland NP administration, the Town of Krásná Lípa and the ČSOP^b local chapter Tilia. The *České Švýcarsko o.p.s.* aims to protect the natural and cultural heritage of the area in collaboration with local tourism businesses²⁴⁰. In this way, the Bohemian Switzerland NP administration seeks to develop stakeholder cooperation to support its nature conservation efforts.

^a An agency of the Ministry of the Environment of the Czech Republic (Cz: *Agentura ochrany přírody a krajiny České republiky*)

^b ČSOP: The Czech Union for Nature Conservation (Cz: *Český svaz ochránců přírody*), the largest non-governmental nature conservation organisation in the Czech Republic

12-2-3 Institutions in the United Kingdom of Great Britain and Northern Ireland



In the United Kingdom, the issues of sustainable tourism are addressed by the establishment of **partnerships**. In 2013, the national tourist board, *Visit England*, and the association of 10 English NPs, *National Parks England*, committed to a three-year partnership designed to support sustainable rural tourism²⁴¹. In addition, individual UK NPs are active in regional partnership cooperation by which NP authorities establish links to businesses and NGOs (see Box 15).

Accreditation programmes (schemes)

are another method for promoting sustainable tourism. The *Green Tourism* grading scheme certifies the sustainability of the accommodation business based on various criteria, such as energy efficiency and the promotion of local public transport or walking. Recycling and local sourcing of food products are also evaluated.²⁴⁴ This certification scheme is available in the United Kingdom, Ireland and Canada.²⁴⁵ Savings on waste handling and energy costs and positive public relations motivate some businesses to participate.²⁴⁶ This scheme is not directly related to protected areas; however, the evaluation criteria are also relevant for protected areas.

Box 15

Partnerships in the UK's Lake District and Peak District National Parks

In Lake District NP, the *Lake District Tourism & Conservation Partnership* was established in the early 1990s. Among its members include the Lake District NP Authority, the English Tourist Board, the Cumbria Tourist Board and the Rural Development Commission. This organisation has included many tourism operators and has raised money for conservation for two decades. The work of the partnership currently continues under the new *Nurture Lakeland* organisation with more than 360 business members. The *Nurture Lakeland* trustees board includes members from tourism businesses, the Lake District NP Authority and the National Trust.²⁴² Similarly, in Peak District NP, the *Peak District Rural Development Partnership* was established to create the Peak District Tourism Development Strategy.²⁴³

12-2-4 Institutions in the United States of America



In the United States, there is a federal protected area category that is exclusively dedicated to human recreation, i.e., ***national recreation areas***. This category is managed by the U.S. National Parks Service in cooperation with other institutions. Most of the *national recreation areas* are located at natural or artificial lakes.²⁴⁷ While the primary focus is on human recreation, including mass recreation, some national recreation areas are also important for biodiversity (see Box 16). By restricting housing and industrial development, *national recreation areas* can provide some protection to biota, even under

Box 16

Golden Gate Recreation Area

The Golden Gate Recreation Area is located by San Francisco, California, across the Golden Gate Bridge. This area houses about 380 vertebrate species²⁴⁹, among them 30 endangered species, by the U.S. law.²⁵⁰ Among the vertebrates we find the Bobcat (*Lynx rufus*),^a and also the San Francisco Garter Snake (*Thamnophis sirtalis tetrataenia*), called sometimes the most beautiful North American serpent.²⁵¹

By restricting housing and industrial development, *national recreation areas* can provide some protection to biota, even under conditions of mass tourism. Properly managed recreation areas can ease tourism pressure on *national parks*, while protecting at least some biotopes and ecosystem functions.

Originally, the U.S. national parks invested so much effort into the enjoyment of recreationists that conservation science was neglected. Criticism was raised that the parks were catering too much to tourists and were not sufficiently involved in scientific wildlife conservation.²⁵²

Even today, a large portion of the operation of the U.S. national parks revolves around the guidance, enjoyment and education of tourists. The impact of tourists remains a topic of discussion.²⁵⁴ Unlike in some European national parks, tourists in the U.S. NPs can hardly avoid park administration supervision.

The borders of U.S. national parks are typically well marked in the landscape and are well guarded by park rangers. Cars often have to pass an entrance station where a fee is collected. While all U.S. NPs work actively with tourists, there is a central office of the U.S. National Parks Service in Washington, D.C., i.e., the *Tourism Office*, which handles policies and strategy.²⁵⁵

conditions of hard tourism. Properly managed recreation areas can ease tourism pressure on *national parks*, while protecting at least some biotopes and ecosystem functions.

Individual U.S. states may have their own **state recreation areas**. This protected area category may provide some nature conservation management, such as support for native vegetation, in addition to catering to tourists.²⁴⁸

The U.S. **national parks** are afforded a higher level of wildlife protection than *national recreation areas* and play a significant role in biodiversity conservation. The U.S. national parks have long-term experience with tourists.

Box 17

U.S. President on Stewardship

*"Folks in communities around this park know they don't have to choose between economic and environmental concerns; the tourism that drives their local economy depends on good stewardship of their local environment."*²⁵³

Barack Obama at the Yellowstone NP



Photo: Yellowstone NP, Wyoming, U.S.A.

Author: Jaroslav Kordas 2010

^a Note: The Bobcat (*Lynx rufus*), (Cz: *Rys červený*), a small specie of lynx, occurs in the vicinity of large U.S. cities both in California and in the East Coast.

12-3 SOFT AND HARD FORMS OF TOURISM

The forms of recreation activities and the intensity of tourist activities are the key determinants of tourism sustainability in PAs.²⁵⁶ Administrations of PAs are well aware that the effects of various forms of tourism exhibit substantial variability. Their goal is to manage or at least influence the form of recreational activities and the intensity of tourist use in particular localities. Recreation affects ecosystems, ranging from low-impact sustainable activities to high-impact destructive forms. The former activities are categorised as *soft tourism*, while the latter activities are referred to as *hard tourism*.

The impact of tourism depends on the following aspects:

- Characteristics of the recreational activity (e.g., walking has a lower impact than motorcycling, while cross country skiing typically has a lower impact than downhill skiing)
- Intensity (the number of tourists visiting the area)²⁵⁷
- The particular biotope and the time of year (e.g., nesting areas of prey birds or habitats of wood grouse (*Tetrao urogallus*) are highly sensitive to disturbances)^{258 259 260 261 262}
- The environmental awareness of recreationists (behaviour towards animals and plants, littering, and improper use of motor vehicles)
- Management of tourism flows by authorities (mostly by public authorities on public lands, possibly also by NGOs or private owners on private land. In some cases, management of tourism flows is simply absent)

100

The term *soft tourism* has its origin in German-speaking countries.²⁶³ The term has been associated with a form of Alpine tourism called "*sanfter Tourismus*" in the German language.

The term **soft tourism** typically has the following meaning:

- Forms of tourism that have low or minimal negative impacts on the physical and socio-cultural environment in the destination areas^a

Moreover, the term **hard tourism** can be defined as follows:

- Forms of tourism (because of their characteristics or intensity) that lead to significant damages to biodiversity, water, soil, and air, have negative influences on landscape aesthetics, and/or cause the socio-cultural disintegration^b of destination areas

Certain forms of tourism or recreation tend to be hard because of their characteristics (e.g., impact on the components of the environment, energy usage, and noise).

Hard forms of tourism or recreation typically include the following activities:

- Ski pistes lighted at night in natural areas

^a Note: Physical environment: water, soil, air, biodiversity, and landscape; socio-cultural environment: traditional architecture, traditional ways of living and spirituality, social structure, security and morale.

^b Note: By *socio-cultural disintegration* we refer to negative social impacts on local human populations.

- Snow scooters and recreational off-road vehicles (ORV)
- Recreational motor boating and water skiing on natural lakes and rivers

Some other forms of tourism may have a relatively low impact because of their individual characteristics. If the intensity remains within the carrying capacity of the locality, these activities may be sustainable.

Soft forms of tourism or recreation often include the following activities:

- Walking tourism in small groups
- Bicycling and cross-country skiing on designated trails
- Canoeing and kayaking outside of animal breeding localities and seasons



Bicycle Path Sign

Many sporting and recreational activities may lie between the soft and hard categories. There are forms of tourism that cannot be divided into either the soft or hard category based on the characteristics of the activity alone because other aspects, such as intensity, come into consideration. Different biotopes (e.g., meadows, peat bogs, natural forests, and sand dunes) may have different carrying capacities. The carrying capacity of particular localities should be identified and monitored by the authorities in charge of a protected area.

Carrying capacity: the amount of (recreational) activity that can be accommodated in a natural locality without incurring unsustainable impacts.

Because there is always some change when tourists enter a protected area, **limits of acceptable change** should be determined. If the threshold is surpassed, the authorities must consider measures to bring the locality back to a desirable condition. While biotope elimination, outright killing of animals, or the removal plants may result from unregulated tourism in PAs, there are more subtle influences that can exhibit long-term damage or destruction.

Examples of possible negative tourism impacts include the following actions:

- Disturbance of mating, nesting and resting animals
- Soil erosion on slopes and changes in soil structure on footpaths and in their vicinity
- Trampling of valuable grasslands and the support of nitrophilic and invasive plants

Some measures that can be taken by PA authorities to rectify the aforementioned issues include the following:

- Seasonal or temporary access bans that close a portion of a park for mating season or for recovery
- Employment of professional rangers/volunteer guards and the engagement of the police
- Informative boards and education work

- Physical barriers (blocks) for motorised traffic
- Railings or hardening of some paths to direct walking tourist flows
- Resting and toilet facilities

Measures are dependent on the organisational skills of conservation managers, inventive capabilities of nature conservation staff, legislative background and available financial means.

12-4 SECOND HOMES AND INDIVIDUAL RECREATIONAL HOUSES IN PROTECTED AREAS

Apart from temporary visitors that stay in hotels, guest houses and camps, there are often owners of second homes for individual recreation in PAs.²⁶⁴ These recreational houses may be in a form of weekend houses, mountain huts, or seasonal luxury apartment homes. In some central European countries, e.g., in the Czech Republic and Slovakia, second-home recreational properties have traditionally been very popular, even among less well-to-do citizens. In some British NPs, there is a high proportion of second-home ownership.^{265 266}

The construction of second homes brings additional infrastructural problems (e.g., waste water disposal, energy supply, and road and parking space demands) and an additional challenge for PA managers. Second homeowners often do not feel bound by the same rules as other (short-term) recreationists and demand exemptions.^a

Second-home developments frequently occur as a consequence of land-use policies by local community authorities. Therefore, good cooperation between PA conservation authorities and community authorities is important. Selling agricultural land or forestland in attractive natural areas for individual recreational houses is an easy way to quickly make money. Sometimes, the law permits these practices; occasionally, the law can be circumvented. Ultimately, the attractiveness of such localities for recreationists may go down because of overcrowding and changes in the landscape.

12-5 TOOLS FOR MANAGING TOURISM FLOWS BY PROTECTED AREA AUTHORITIES

12-5-1 Entrance Fees and Visitation Quotas

Entrance fees can complement the budget of protected area administrations. While entrance fees are common in national parks in the United States, some European national parks operate without entrance fees.

There are numerous reasons that have been cited for not levying an entrance fee:

- The aim to provide access to everybody regardless of his/her financial means
- The difficulty of payment enforcement in an easily accessible landscape
- Presence of local inhabitants and second-home owners
- Political resistance of businesses located in protected areas

^a For example, second-home owners in Bohemian Switzerland NP have unlimited access to the first zone of the NP beyond marked trails (as do permanent residents) according to the Visitor's Code (Cz: Návštěvní řád), NP Regulation No. 1/2001, Article 5., of Bohemian Switzerland NP. Members of their families have the same rights. This exemption was a part of a political process and eased the establishment of the national park.

On the other hand, an entrance fee may help with the following aspects:

- To select the *target visitors*^a (individuals and organisations that are particularly interested in the natural area)
- To reduce activities that can easily be conducted outside of the protected areas (e.g., performance sports and general entertainment)
- To reduce undesirable motorised transportation (if levied on cars)
- To contribute to the coverage of costs of tourism management
- To provide evidence of protected area visits
- To raise awareness of the area value (psychological effect)

In case a protected area administration does not want (or is unable) to levy fees for an entire PA, the administration may choose particular areas in which to levy an entrance fee (particular sites or trails). An example is the oldest Hungarian national park, Hortobágyi²⁶⁷, where visitor fees are levied only for several localities in the NP. Another example is in Bieszczady NP, Poland, which levies fees on popular mountain trails during some months of the year.²⁶⁸

Besides *entrance fees*, the number and structure of visits by tourists may be influenced by **visitation quotas**. Visitation quotas limit the total number of visitors to an area (that can be divided into sectors/units for that purpose, while each unit has a unique number of assigned visitors).²⁶⁹ Visitation quotas often also mean waiting periods and prior planning for the visitors. Less motivated people may become discouraged. However, as in the case of entrance fees, visitation quotas should influence the structure of the visitors towards the *target visitor* (tourists that are particularly interested in the natural values of the area) in addition to the total number of visitors. Visitation quotas can be applied to chosen sensitive parts of large-scale PAs, leaving the remaining area without quotas. Benefits for conservation should outweigh the additional administrative burden of the quota system.

12-5-2 Site Hardening and Site Softening

Site hardening and *site softening* reflect the techniques that a PA administration can use to reduce negative impacts of walking or cycling tourist flows.

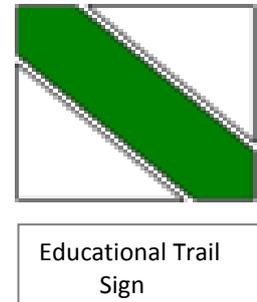
Site hardening includes construction at a site (e.g., paved trails, railings, rest places, and shelters) that allows the area to increase its carrying capacity. While a part of the locality is de-naturalised, it is expected that most of the tourists will take the more comfortable way and the impact will be concentrated on the hardened elements. For example, most walkers will use the paved path and constructed rest places and will not create many small trails and rest places amidst the vegetation. Furthermore, tourists can be kept off rock slopes or other places sensitive to erosion through the use of railings. Proper research of tourist flows must be conducted to determine sites in need of hardening.

^a Note: A concept similar to *target customers* in business marketing

On the contrary, *site softening* reflects restoration work. A formerly excessively trampled or eroded place (e.g., part of a grassland, forest, or rock slope) is brought to a more natural state. The soil can be revitalised and native vegetation re-planted. The site may be temporarily closed to visitors by fencing or some other barricade.

12-5-3 Tourist Information and Educational Trails

Proper environmental information and interpretation is crucial for raising the environmental awareness of tourists, which may provide additional protection to an area because some people (not all) may be influenced by education. Information boards, leaflets, brochures, informative kiosks and exhibits, public presentations and guided walks are used by conservation managers to reach out to the public.



Recreationists differ in educational backgrounds and interests. Some common level of interpretation must be attained. A major mistake is to provide information in scientific language to the general tourist. The point of an environmental information board, leaflet or brochure is not to educate scientists, students, or devoted conservationists. The point of such information is to influence the attitudes of the general public and to support nature conservation.

Environmental information must be *interpreted*, which means that natural values should be translated from scientific language to everyday language. **Environmental interpretation** simplifies complicated ideas and shares them with the general public.²⁷⁰ The audience or the readers must become connected with the interpreted object (e.g., plant or biotope) not only rationally but also emotionally. An ideal environmental interpretation should have ABCD (**a**ttractive, **b**rief, **c**lear and **d**ynamic) qualities.²⁷¹

Box 18

The Design and Language of an Information Board

Information boards should be written and illustrated in an attractive manner. Scientific language is to be avoided or readily explained. A central message, or messages, should be clear and should easily memorisable. Excessive numbers and dates should be avoided. The text should be related to *observable nature* (natural values that a typical recreationist is able to observe and recognize). The construction material of an information board placed in an open landscape should be adapted to local climate conditions and to the risk of vandalism.

Optimally, the board should offer structured information for various levels of interest. There may be three levels of information on one board. Level 1 uses large text/messages for superficial/hurried readers. Level 2 uses midsize text for an average reader. Level 3 provides more detailed information in small text for seriously interested visitors. Irregularly placed short blocks of text accompanied by illustrations are preferable to long book-like texts.

Information boards are frequently installed alongside walking paths in protected areas. A series of information boards form an **educational trail** (e.g., nature trail or nature walk). These trails convey information about biodiversity, geodiversity, or cultural history. Long trails that link more widely spaced phenomena are called *themed trails* or *themed paths*.

12-5-4 Protected Area Patrolling and Park Rangers

Regular patrolling of the terrain is necessary to provide information and assistance to visitors. Patrolling is also needed for enforcing rules and for checking and maintaining resting places and information panels. Not all protected areas can afford regular paid personnel for patrolling. Seasonal staff or volunteers may be other options. Regardless, some periodic check in the terrain by authorities is necessary because conservation efforts that stop after the formal declaration of a PA are not effective.

National parks in many countries of the world are manned with regular patrol personnel that guide and educate visitors and provide law enforcement. Personnel in charge of these duties are called *park rangers* in the United States and *park wardens* in some other English-speaking countries.^a The park rangers in the United States tend to be more specialised than rangers in some other countries. The basic division of the U.S. park rangers includes *interpretive rangers* and *law enforcement rangers*.

Interpretive rangers provide information to the public (e.g., guided walks, presentations, on-site interpretation, and practical information). *Law-enforcement rangers* watch for compliance with national laws and park regulations. Law-enforcement rangers in the United States have police powers to effectively handle law-breaking individuals. The best-known protected area of the United States, the Yellowstone National Park, even has its own federal court with a judge, prosecutors and holding cells.²⁷² The work of interpretive rangers and law-enforcement rangers may overlap; these authorities wear the same uniforms. Other U.S. rangers may work on installations and facility maintenance as scientists or as administrative staff. Park rangers are expected to provide medical first aid to tourists when necessary.

105

In Europe, the work of park rangers is usually less diversified. In most Central European countries, park rangers or guards enforce the law and regulations and watch over the behaviour of tourists. These authorities do not have police powers. Informative and interpretative functions are often conducted by employees that are not called rangers; these individuals are in the terrain by appointment only. In comparison with the U.S. NPs, the interpretive work is less developed in Central European NPs, especially in the Visegrad countries^b. In countries where park rangers fill the watchdog role only, park rangers/wardens or guards are, understandably,, less popular than their U.S. counterparts. Another problem is the absence of police powers.

Volunteers, including both locals and seasonal volunteers from outside the region, can assist professional park rangers. While locals have a better knowledge of the terrain, outsiders may bring new ideas and approaches. If the law of the country does not give sufficient legal powers to the park rangers/wardens, good cooperation with the police is necessary. In any case, good communication skills developed through training are essential for both professional park rangers and volunteer guards.

^a Czech Republic: *stráž národního parku*, Germany: *Nationalparkwacht*

^b Visegrad countries: Slovakia, Czech Republic, Hungary, and Poland

12-6 SUSTAINABLE MANAGEMENT OF RECREATIONAL BUSINESS IN PROTECTED AREAS

The owners of existing local recreation businesses (e.g., hotels, pensions, camping places, restaurants, and sporting and outdoor equipment rentals) can support the environmental mission of a protected area. Nature conservation authorities are expected to provide the information needed to improve environmental awareness of business owners and their employees.

12-6-1 Aspects of Sustainable Recreation Business

Environmentally sensitive management of a recreational business may consist of the following aspects:

- Design of buildings and facilities
- Environmentally progressive management of daily operations
- Ecological education of guests and clients
- Respect to traditional local architecture and ways of life
- Use of native plants in decorative greenery

Sustainable design begins with construction materials. Recycled building materials are preferred from a sustainability perspective. The energy efficiency of buildings is very important and depends on the energy efficiency of windows, insulation and lighting. The safe handling of sewage is a basic norm not only in PAs but also in outside regions. Waste sorting, garden composting, and food composting become a part of the operation of some accommodation and restaurant businesses.²⁷³ The use of local food products and/or organic products supports the beneficial image of a tourism business.

Attention is given to the planted greenery around buildings (e.g., yards, green lots, hedges, and gardens). The greenery of an environmentally conscious business includes *species of potential natural vegetation*^a, particularly when planting visually dominant woody species. Grass lots can be composed of native grass and herb species.^b Plants that may become invasive should not be planted.^c Non-native woody species that are globally overused by municipal arborists, such as the blue spruce (*Picea pungens*), the hybrid plane (*Platanus x hybrida*), and the thujas (*Thuja sp.*), should also be avoided to maintain the distinctiveness of the area.

^a Note 1: *Species of potential natural vegetation* are species that would be present in the local area without human intervention and under current climatic conditions. Commonly, these species are called *native or domestic species*. The presence of these species is important for biodiversity and for overall landscape aesthetics.

^b Note 2: Seeds of native grassland species are available for purchase in some regions.

^c Note 3: For example, in warm areas of Central Europe, the black locust (*Robinia pseudoacacia*) tree may become invasive.



EUROPARC Federation

The EUROPARC Federation represents more than 300 members in more than 30 European countries. Its membership includes PA administrations, governmental departments, NGOs and businesses that manage natural and cultural heritage sites. The EUROPARC Federation aims to facilitate international cooperation in PA management and assists in exchanges of expertise, experience and best practices.²⁷⁴

12-6-2 Certification and Accreditation Schemes^a

The basic goal of various certification systems is to raise environmental awareness of business owners and their employees, customers and clients. Private businesses and other institutions (e.g., public bodies, and educational institutions) can participate in these schemes to improve their environmental record and to support positive public relations.

The EUROPARC scheme

The EUROPARC Federation has a certification scheme that can be voluntarily used by PA administrations.^b This scheme is related to *the European Charter for Sustainable Tourism in Protected Areas*. The certification programme was designed to encourage good practices by both conservation authorities and tourism businesses. The certification scheme recognises PAs that meet agreed requirements for the sustainable management of tourism. A protected area can become a *charter area* by respecting certain principles. The charter principles for sustainable tourism include the following aspects²⁷⁵:

- Cooperation in partnership (a forum of PA authority, local municipality, NGO, or business)
- Monitoring the tourism impact on biota and controlling tourism in sensitive locations by influencing visitor flows to reduce negative impacts
- Reducing activities with adverse environmental effects
- Effective communication to visitors about special qualities of the protected area
- Increasing knowledge of the PA and of sustainability issues among all stakeholders (e.g., businesses and local communities)
- Benefits from tourism to the local economy (e.g., local food, crafts and services)

European Wilderness Society

The general goal of the European Wilderness Society (EWS) is the effective protection, designation, and restoration of wilderness. This NGO publishes a standard called the *European Wilderness Quality Standard and Audit System*²⁷⁶. The standard is compatible with the IUCN criteria for wilderness areas and with the wilderness definition of the German Federal Office for Nature Conservation (D: *Bundesamt für Naturschutz*).



Such a standard for Europe is important because some countries (e.g., Germany) have declared a goal of dedicating a certain share of their land area to wilderness. The EWS

^a Note: The difference between certification and accreditation is often unclear because the terms may be used interchangeably. However, in the proper sense of the words, a company/institution can certify, test, and inspect whether services (or products) comply to a certain standard (and may provide a certificate afterwards). This company/institution gets accredited by some (usually public) institution that is competent to perform these (e.g., certification, testing, and inspection) tasks.

^b Note (repeat): Protected area administration is *správa chráněného území* in Czech.

certification is planned for areas that meet specified criteria (e.g., platinum, gold, silver, and bronze levels).²⁷⁷

PAN Parks Foundation

The now defunct PAN Parks Foundation attempted to create a network of European wilderness areas where wilderness and high-quality tourism facilities could coexist. The goal was to support sustainable local development and to assure effective biodiversity protection. The NGO provided certification in PAs where certain criteria were met.²⁷⁸ The PAN Parks Foundation was discontinued; however, its role, experience and wilderness standards were at least partially adopted by the European Wilderness society.²⁷⁹

Other schemes

There are several environmental management systems and certifications that can be used by recreational businesses, including hotels, restaurants, and sporting facilities. Some of these programmes are nation-wide systems, while others are international. These programmes are typically not directly focused on tourism in protected areas; however, conservation issues are declared among their goals. These schemes have different levels of environmental effectiveness, success or failure.²⁸⁰



The EU Flower Ecolabel

In the European Union, there is the *Flower eco-label* scheme that can also be used for accommodation services²⁸¹, including services in PAs. The label should be guaranteed by an independent institution. For example, in the CR, the label is guaranteed by the CENIA^a, in Germany, by the RAL (the German Institute for Quality Assurance and Certification)²⁸².

Environmental management systems ISO 14001 and EMAS are internationally recognised by managers not only in manufacturing businesses but also in other institutions, including some schools. These systems may be used by PA administrations or by tourist establishments in protected areas. Hotel and restaurant businesses and tour operators can use the international ISO 14001 standard. For example, the largest NP and state park concessionaire^b in the United States, the Xanterra Parks and Resorts Company, obtained the ISO 14001 certification for its properties in, e.g., Yellowstone NP in Wyoming and in Everglades NP in Florida.²⁸³ The EU-designed EMAS scheme is considered to be a more demanding scheme than the ISO scheme primarily due to its public information requirements.

The ECEAT label (European Centre for Ecological and Agricultural Tourism) is a private certification scheme related to rural tourism. A guide was published by the ECEAT in cooperation with the

^a Note 1: CENIA is an agency of the Ministry of the Environment of the Czech Republic. The provision of environmental information is its main task.

^b Note 2: Hotels, restaurants and stores inside national and state parks in the U.S. national parks are typically operated by private concessionaires and not directly by the U.S. National Park Service or state institutions. The U.S. National Park Service may award, e.g., a 10- to 20-year contract for management of these tourist facilities in a NP. Employees at these establishments (there are often students among them) are employed by the concessionaire company and not by the U.S. National Park Service.

EUROPARC ²⁸⁴. The ECEAT publishes tourism guides for various countries, including Poland and the Baltic states, listing contacts for rural vacations. ²⁸⁵

Certainly, the environmental effectiveness of all certification schemes must be independently evaluated. They are not perfect. Moreover, the record of the certified institutions may also be imperfect. However, environmental awareness tends to be generally supported by these certification schemes. ^{286 287}

12-6-3 Agritourism

Agritourism has developed in recent decades as a response to the increasing urbanisation and isolation of the urban population from the rural roots of its ancestors. Many city inhabitants, adults and children, want to know how their food is produced and have an opportunity to observe domestic animals. Traditional rural agricultural life appears increasingly more attractive for families with urban or suburban lifestyles. Agritourism may be an opportunity for farmers to supplement their regular income. ²⁹⁰ Agritourism is a form of tourism that may be suitable for some protected areas.

Agritourism includes one or more of the following components: ²⁹¹

- Accommodation of tourists on farms and in rural houses
- Direct observation of the work life of farmers
- Riding and tending horses
- Learning about bee keeping and tasting honey
- Learning about wine and cheese making and tasting wine and cheese
- Shopping in farm gift shops and farm stands for local and regional products and hand-crafted gifts
- Helping with agricultural work (e.g., tending domestic animals and harvesting)

Additional activities may include bicycling, swimming, camping, and sleeping in hay. ^{292 293} In the United States, guest horse ranches, or “dude ranches”, allow vacationers to enjoy the cowboy life for a period of time. The recreationists can work on cattle ranches and sometimes even participate in

Box 20

Hortobagy National Park, Hungary – Traditional Breeds of Domestic Animals

Hortobagy NP in eastern Hungary is the oldest NP in the country and the largest semi-natural grassland area in Europe. ²⁸⁸ The park has a popular attraction that permits easy tourist photography and levies entrance fees in selected areas. Traditional Hungarian domestic animal breeds, such as the Hungarian grey cattle, the racka sheep and the furry mangalia pig, can be observed by tourists from a close distance. These rare “heritage” breeds of livestock are not only a tourist attraction but are also important for the genetic diversity of domestic animals. Hortobágy is also a breeding place for the taurus cattle in one of several European projects aimed at reviving the extinct auroch (*Bos primigenius*). ²⁸⁹ Tourists can have their travel experiences in the national park without impacting sensitive biotopes.



Photo: The mangalia pig, which is a traditional Hungarian breed, in Hortobágy NP.
JM 2006

cattle drives.²⁹⁴ County fairs and festivals are another opportunity for farming communities to attract tourists.

Agritourism in all countries is dependent on the inventive spirit of local farmers and on attractive landscapes. Moreover, agritourism has the potential for a smaller ecological footprint than conventional tourism. Standing buildings that are adapted to the rural landscape can be used. The number of tourists at one place is not high. Furthermore, partial food self-provisioning can be conducted. A disadvantage of agritourism is that peak harvest and work seasons in the countryside often coincide with the peak tourist season.²⁹⁵

12-6-4 Ecotourism

Nature-based tourism is a growing global business. A small fraction of nature-based tourism can be called *ecotourism*, which comprises a portion of sustainable tourism. Ecotourism is a responsible way to travel to natural areas that conserves the environment and to enjoy and appreciate nature with a low impact. Ecotourism is a form of tourism that is compatible with protected areas except those in which general access is strictly prohibited. However, the term

ecotourism is widely misused by various commercial interests.

“Greenwashing” and “eco-selling”, which are deliberate misinterpretations of ecotourism, are quite common. Most travel in natural locations is not ecotourism. Ecotourism emphasises conservation, education and traveller responsibility. Rights of traditionally living indigenous people (e.g., Latin American indigenous peoples and Australian Aboriginals) are to be respected.



Photo: Information table in Šumava National Park, CR
JM
2011

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Ecotourism possesses the following characteristics:

- Minimises environmental impact
- Builds environmental awareness of recreationists and local communities
- Provides direct financial benefits for local conservation
- Respects local culture and benefits the local economy
- Increases the tourists' knowledge or appreciation of a natural area

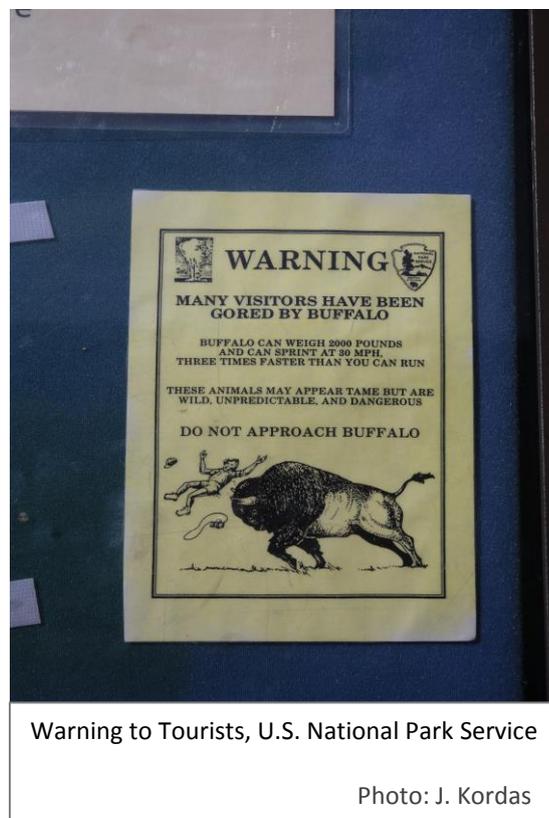
The International Union for Nature Conservation (IUCN) provides methodological assistance with ecotourism and sustainable tourism development. The IUCN compiles educational publications and publishes case studies primarily from developing and newly industrialised countries.^{296 297} **The International Ecotourism Society** organises events (e.g., workshops and conferences) on the topic of ecotourism and sustainable tourism and publishes educational texts.²⁹⁸

The concept of ecotourism is complex. A major critique is often voiced about nature-based recreation in distant exotic places. Long-distance air transportation contributes significantly to greenhouse gas emissions and uses large quantities of non-renewable energy sources. Therefore, it is difficult to call such travel sustainable or even ecotourism even if the businesses in the destination

area may locally respect ecotourism principles. Regardless, visitor management remains vitally important for the sustainability of protected areas around the world.

REVIEW QUESTIONS:

- 1) What are soft and hard forms of tourism? Please provide specific examples.
- 2) How can tourist flows be managed? Explain the meaning of site hardening and site softening.
- 3) What is environmental interpretation? Comment on the proper design and language of information boards in protected areas.
- 4) What are aspects of a sustainable recreation business?
- 5) What is and what is not ecotourism?



Chapter 13 - PROTECTED AREAS ALONE WILL NOT STOP BIODIVERSITY LOSS

Protected areas are very important tools in nature conservation. However, protected areas alone are not sufficient to preserve biodiversity, water, soil and landscapes. Some scientists claim that a substantial reliance on protected areas could prove fateful for biodiversity.³⁰⁰

In addition to protected areas, overall land and resource management are important for nature conservation. The functioning of economies and societies must be adjusted for nature conservation to attain its goals. More time and effort must be allocated by governments and scientists to the complicated issues of human overpopulation, consumption and land use.

Fragmentation of landscapes is one of the pressing problems of land use. Protected areas cannot function properly in isolation. These areas must interact with other natural or semi-natural areas (both rural and urban). Nonetheless, landscape fragmentation is increasing.³⁰¹ Therefore, one of the crucial tasks of nature conservation and public administration is to counter habitat fragmentation.

Since the establishment of Natura 2000 areas, the concept of **Green Infrastructure** is being worked out by the European Union.³⁰² Earlier, there were similar concepts, such as the *European Ecological Networks* by the Council of Europe^a ³⁰³ and the *Territorial System of Ecological Stability (Czech: ÚSES)*³⁰⁴ concept used in the Czech Republic. Unfortunately, for nature conservation, these concepts remained largely on the level of declaration or at a planning stage in most countries. The EU *Green Infrastructure* is to be situated both inside and outside of protected areas.³⁰⁵ Green (vegetation) or blue (water) corridors are to connect the core natural areas. This infrastructure is supposed to be a balanced system of protection, sustainable use and management.³⁰⁶

Box 21

Land Fragmentation (Habitat Fragmentation)

Land fragmentation results in the breaking up of areas of a natural habitat. Humans cause fragmentation through the building of roads for heavy traffic, the denaturalisation of streams, and through other activities.

Fragmentation prevents species from moving in the landscape, which can cause or contribute to the extinction of populations. Genetic decline through inbreeding is one of the effects, especially with animals that naturally move over long distances, such as large or midsize carnivores (bear, lynx, and wolf), or large ungulates, such as the red deer (*Cervus elaphus*) and the Eurasian elk (*Alces alces*).

Preserving biocorridors between patches of natural land is important not only for animals but also for plants due to the processes of pollination and seed dispersal.²⁹⁹

Different types of connecting elements can be used for the new ecological infrastructure depending on local or regional conditions. Isolated elements or stepping stones, such as a group of trees or a pool of water, may be part of green infrastructure. Linear structures, such as hedgerows linking field and forest habitats, are to be preserved or added. Re-naturalised streams may be complemented by *fish ladders*.^b Green bridges and eco-tunnels are expected to connect natural areas that have been cut by motorways.

^a Note: The Council of Europe is a different organisation than the European Union.

^b A fish ladder is a structure on or around artificial barriers (e.g., dams, weirs, or locks) that makes the natural migration of some fish species (e.g., trout or salmon) possible.

Green Infrastructure can also be maintained and developed in urban areas.³⁰⁸ Biodiversity benefits in city parks and street greenery are designed and managed to respect the importance of green infrastructure. The gradual changing of species composition towards native trees and shrubs and modifications of grassland maintenance may be a part of this effort. Green roofs and walls and the adjustment of buildings are other ways in which individual citizens and companies can support biodiversity.

Green Infrastructure does not only benefit animal and plant species. Humans also gain from better recreation opportunities, higher water and air quality, and improved protection from floods. The results should halt the decline in biodiversity in Europe³⁰⁹ and improve the quality of life for EU citizens.

Box 22

The European Green Belt

The European Green Belt³⁰⁷ is a conservation initiative with an aim to preserve the natural and semi-natural areas that originated during the Cold War along the Iron Curtain (the former border between the East and the West). This green belt runs from Norway to the Black Sea in southeastern Europe. The ecological network crosses 24 countries and consists of a chain of protected and non-PAs. Currently, its integrity is threatened by various developments. This initiative, which has its roots in Germany, is led by the IUCN. The project will create the longest biocorridor in Europe if it is successfully implemented.



Map No. 13A: European Green Belt

Source: IUCN (online: http://cmsdata.iucn.org/custom/image-viewer/launch.cfm?img_id=252), access 15-9-2014.

REVIEW QUESTIONS:

- 1) Will protected areas preserve global biodiversity? What are the limitations of protected areas?
- 2) How can human overpopulation and consumption affect biodiversity? How can your personal consumption affect biodiversity?
- 3) What is landscape fragmentation? What does it cause and how can it be prevented?
- 4) What is Green Infrastructure? Can you personally contribute to Green Infrastructure?
- 5) What is the European Green Belt? Does it run through your native country?
- 6) What can you do personally to support biodiversity conservation?

GLOSSARY

Aarhus Convention

An international agreement that grants the European public *the right to access environmental information and the right to participate* in governmental decision-making processes on environmental matters. Decision-making may be related to protected areas (among many other environmental issues). The convention was named after the Danish city of Aarhus where it was signed. The agreement is binding for the Czech Republic and for the whole European Union.

Abiotic

Non-living.

Anthropocentric

Human-centred. The term describes an assessment of reality through an exclusively human perspective (without considering the needs of other species). Anthropocentric worldview values non-humans (animals, plants) and ecosystems exclusively on the basis of their utility for humans. Compare *biocentric*.

Arable land

Land that is cultivated to grow crops.

Biocentric

A worldview or ethical stance that acknowledges the value of non-human life in nature, and admits that non-human organisms (animals, plants) have their own internal value that is not dependent on the utility for humans. Compare *anthropocentric*.

Biodiversity

Includes the variety of Earth's species (species diversity), the variety of the genes they contain (genetic diversity), and the variety of ecosystems in which they live. Biodiversity is used as a measure of the ecosystem health.

Biotic Homogenisation

The process of increasing the similarity of locations during which species or genetic diversity is reduced. Biotic homogenisation may be a result of human interventions, such as some agricultural and forestry practices, or a result of species invasions and extinctions. Measures against biotic homogenisation are a common part of nature conservation efforts.

Biotope

An area of uniform environmental conditions providing a living space for a biological community. Biotopes have observable physical boundaries and are determined by specific abiotic environmental factors. The term *biotope* is synonymously used with the term *habitat*. Some authors distinguish between the two terms by defining that the subject of a biotope is a *community*, while the subject of a habitat is a *species* or a *population*. The term

habitat is more frequently used in English-speaking countries, while the term *biotope* is more common in Central Europe.

Buffer Zone

An area established to provide enhanced protection for core zones of protected areas. It may be situated around the perimeter of a protected area or may link two or more areas. The buffer zone serves to limit negative impacts from beyond protected areas. National parks typically have buffer zones.

Carrying Capacity of a System

The ability of a system (e.g., ecosystem) to preserve its functionality in relation to pressures from the outside. Once the carrying capacity is exceeded, the system disintegrates or breaks down. The carrying capacity is an important concept in the management of recreation use and other uses of protected areas. Generally, nature conservation authorities do not want to forbid access for recreationists into protected areas, however, they need to respect the carrying capacity that should not be exceeded.

Community (in Biology)

Populations of all species living and interacting in an area at a particular time.

Components of the Environment

Parts of the environment, including air, water, soil and rocks, organisms and ecosystems (biodiversity), and energy flows. Environmental protection is typically organised through people, institutions, programmes and measures focused on individual components of the environment.

Conservation

The protection, preservation, management, or restoration of natural environments and of the ecological communities that inhabit them.

Critically Endangered Species

A species that faces an extremely high risk of extinction in the immediate future according to the IUCN classification.

ČSOP

Czech Union for Nature Conservation (*in Czech: Český svaz ochránců přírody*). The largest non-governmental nature conservation organisation in the Czech Republic. The ČSOP has about 300 local chapters (groups) in cities and towns nationwide.

Ecological Corridors

A strip of territory used by wildlife that allows for the movement of biotic factors between two natural areas.

Ecological Stability

Ability of a community or ecosystem to withstand or recover from changes or stresses imposed from outside. Compare *resilience*.

Ecological Succession

Changes in an ecosystem or a biotope as it ages or evolves towards a more stable (stabilised) state under new conditions.

Ecology

A natural science, a part of biology, involved with the study of relationships between living organisms and organisms' relationships with abiotic factors in the environment.

Ecosystem

- a. A functional system of components of the environment (living and non-living).
- b. A community of different species interacting with one another and with their non-living environment.

Ecosystem Services

Natural services that support life on earth and are essential to both the quality of human life and the functioning of the world's economies. These services are provided for free by "nature" and are often not reflected in market prices. However, these services may become seriously damaged by human activities; the damage may be followed by economic losses and/or costs. Ecosystem services include photosynthesis, decomposition of wastes, pollination, flood control, local climate regulation, water purification, erosion protection, and recreation.

Endangered Species

A species that faces a very high risk of extinction in the near future according to the IUCN classification. In the IUCN Red List, "endangered" is the second most severe conservation status, following only "critically endangered" species.

Endemic Species

Species occurring in only one area. Such species are particularly vulnerable to extinction.

Environment

All external conditions and factors (both living and non-living) that affect an organism during its lifetime.

Environmental Science

An interdisciplinary science that integrates knowledge from various natural and social sciences (for example, from biology, chemistry, environmental economics, and environmental politics) to understand how the Earth functions, to learn how humans interact with the Earth, and to develop solutions to environmental problems.

European Commission

The executive body of the European Union responsible for the daily operations of the European Union.

Externalities

Social benefits ("goods") and social costs ("bads") that are not included in the market price of a product or service.

Forestry

The science or art of cultivating, maintaining, and developing forests to meet desired goals. The goals of commercial forestry focus on wood production. The goals of forestry in protected areas focus on supporting or regenerating natural processes. In protected areas, the wood production function may be partly or totally eliminated based on the category of the protected area.

Gamekeeping

A favourite hobby in Europe that includes hunting and breeding of selected species of mammals and birds. Gamekeepers, unlike hunters in some non-European countries, not only hunt (shoot or trap) but also artificially increase the numbers of game animals through winter feeding, captive breeding and release, and other

measures. Gamekeepers are often criticised for eliminating natural predators (carnivores and prey birds) and for raising numbers of favourite game species (especially deer) that prevent the natural renewal of the forest.

Exotic Species

A species that is not indigenous (native) to a region. Exotic species are typically not desirable in protected areas.

Favourable Conservation Status of a Habitat

According to the EU Habitats Directive, the conservation status of a natural habitat is considered "favourable" when its natural range and the areas covered within that range are stable or increasing. Furthermore, the specific structure and functions, necessary for its long-term maintenance, exist and are likely to continue for the foreseeable future.

Habitat

Place or type of place where an organism or population of organisms lives.

Habitat of Community Interest:

A natural habitat type in Annex I of the Habitats Directive. In general, habitats (such as near-natural forests, peat bogs, mountain meadows) whose existence is considered important for the EU biodiversity. Declaration of Natura 2000 sites is based on species and habitats of Community (EU) interest.

International Union for Conservation of Nature (IUCN)

An international organisation that is engaged in nature conservation. The organisation has both government and non-governmental members. The organisation compiles the IUCN Red List of Threatened Species, categorises protected areas, and publishes studies on nature conservation, including protected area management.

Least Concern Species

A species for which there is no immediate threat to its survival according to the IUCN classification.

Management

Organisation and coordination of the activities of an institution to achieve defined objectives. In the case of protected areas, the managing institution may be a national park administration, nature conservation department of a regional authority, community council, or another conservation authority. The conservation authority is in charge of both personnel management (organising people that work for nature conservation) and biological management (carrying out physical measures through which protected land is maintained or revitalised).

Management Effectiveness (in protected areas)

The extent to which the management is achieving its general goals and specific objectives when protecting natural values.

Mitigation

Measures aimed at reducing or eliminating the negative impact of a project during or after its completion. Mitigation measures may be ordered by public authorities when a project damages a natural area. An example would be the creation of a new wetland in place of a destroyed one.

Monitoring

Repeated observations or measurements to evaluate changes and progress towards meeting management objectives. Monitoring of a protected area is a necessary part of its effective conservation or revitalisation.

Native Species

Species that would inhabit a particular ecosystem without human intervention or introduction under current climatic conditions. Native species, unlike exotic species, are a typical object of protection in natural areas. Sometimes, species that are not strictly native (for example, some archaeophytes or traditional varieties of fruit trees) are also protected in the countryside.

Natura 2000 Sites

Sites that form the Natura 2000 network of protected areas:

- a. Special protection areas (SPAs), also called *bird areas*.
- b. Sites of community importance (SCIs) approved by the European Commission and declared as *special areas of conservation* (SACs) by individual EU states.

Near-threatened Species

A species that may be considered threatened in the near future according to the IUCN classification,

Non-native Species

Species that were deliberately or accidentally introduced into an ecosystem by humans.

Organism

Any form of life.

Population (in biology)

Group of individual organisms of the same species living in a particular area.

Potential Natural Vegetation

The expected state of mature vegetation of a locality in the absence of human intervention under current climatic conditions. This is an important concept in nature conservation and protected area management because potential natural vegetation, or at least the species of potential natural vegetation, is a common goal of nature conservation efforts in, e.g., forests and peat bogs.

Protected Area

A delimited geographical space that is established and managed through legal and/or other means to achieve nature conservation goals.

Protected Area Management

Management of natural, human and financial resources to achieve desired goals in protected areas.

Public Administration

A body of public servants working in public departments and agencies at all levels of governments to implement government policies and programmes. Nature conservation is one of the tasks of the public administration.

Public Goods

In economic theory, the public good is a good from which individual persons cannot be effectively excluded from use and where use by one individual does not reduce availability to others. Examples include air, national defence and street lighting. Some public goods may be declared to be public goods by government regulation, such as riverbanks or protected areas. Public goods may be subject to excessive use and damage without proper regulation/behaviour modification of its users. In environmental protection and nature conservation, we often encounter public goods and consequently also government regulation.

Natura 2000

A system of protected areas of European importance established by the European Union and its member states.

Nature Conservation

See conservation.

Non-governmental Organisation (NGO)

Non-profit entities that are conceptually independent of government or business institutions. Typically, a part of their activities is conducted on a voluntary basis as unpaid work. The goal of NGO activities is often in the realm of public interest or common good.

Precautionary principle

- Where scientific evidence is insufficient, or uncertain, **but**
- there are indications, through preliminary scientific evaluation, that there are grounds for concern that potentially dangerous effects on the environment, humans, and biodiversity may be inconsistent with the current level of protection, **then**
- lack of scientific knowledge shall not be used as an argument for postponing cost-effective measures to prevent environmental harm.

This principle was accepted by the 1992 Rio Declaration, and forms a basis of various national environmental and health-safety laws.

Reclamation

Land reclamation can refer to technical measures aiming to convert heavily disturbed lands and soil to their former or other uses, e.g., after coal mining. In other cases, reclamation refers to the process of creating new land for human use from, e.g., ocean, riverbeds, and wetlands.

Rehabilitation

Measures taken to convert derelict land to usable land. These measures may include engineering and ecological approaches. The restoration of natural habitats is sometimes part of the rehabilitation process.

Resilience

Capacity of a system to recover its primary properties and functions after a disturbance.

Restoration

Measures aiming to bring a locality back to its original condition (or close to it) before the occurrence of (human) intervention.

Revitalisation

Renewal of some ecological functions of a degraded locality, e.g., of a wetland or a water stream. Revitalisations may be a part of protected area management, however, frequently they take part also outside of protected areas.

Scarce Commodity (in economics)

Something that is deficient in quantity or in short supply when compared to the demand. Some environmental public goods (such as clean air, pure water) may become scarce commodity.

Site of Community Importance (SCI)

An area defined by the EU Habitats Directive. A site that contributes significantly to the maintenance or restoration of a natural habitat type listed in Annex I or of a species listed in Annex II at a favourable conservation status (in the biogeographical region to which it belongs). The SCIs are proposed to the European Commission by the member states. Once approved, they must be designated as Special Areas of Conservation (SACs) by the member states.

Special Protection Area (SPA)

Protected area designated in accordance with the EU Birds Directive for species listed in Annex I and/or regularly occurring migratory species and included in the Natura 2000 network. Called also Bird Area.

Special Area of Conservation (SAC)

A protected area under the EU Habitats Directive. A site of community importance designated by the member states through a statutory, administrative, or contractual act where conservation measures are applied for the maintenance or restoration of natural habitats and species. SAC follows the SCI status. Typically, a site is declared as a nature reserve or natural monument by the national law (if it was not a protected area earlier). Another option is an contractual conservation agreement with the land owner.

Species of Community Interest

A species listed in Annex II and/or in Annex IV or V of the Habitats Directive. In general, indigenous species of animals and plants whose existence is considered important for the EU biodiversity. Declaration of Natura 2000 sites is based on species and habitats of Community (EU) interest.

120

Stakeholders

People or organisations that will be affected by (or will influence) a programme, project or action. Protected areas, and related projects or actions, have their stakeholders too.

Sustainable Development

A type of development that allows the present generation (of humans) to meet its basic needs without undermining the ability of future generations to meet their needs, preserves the vital functions of ecosystems and does not decrease biodiversity. Protected areas management, as an important part of biodiversity conservation, should contribute to sustainable development.

Sustainable Use of Biodiversity

Human use of biodiversity in a way that does not lead to the long-term decline of biodiversity and maintains its potential to meet the needs of present and future generations of humans. Some forms of recreation, respecting the carrying capacity of the area, may belong to sustainable use of biodiversity in a protected area. Plant research for medical purposes may be another example.

Urban Protected Areas

Protected areas situated in or at the edge of large human population centres. They can be classified in any of the six IUCN management categories and exclude conventional urban parks.

Vulnerable Species

A species that faces a high risk of extinction in the medium term according to the IUCN classification,

World Wildlife Fund (WWF)

A major international NGO dedicated to wildlife conservation. The WWF assists in the establishment of protected areas worldwide.

ABBREVIATIONS AND ACRONYMS

AONB - Area of Outstanding Natural Beauty

AOPK - Agency for Nature Conservation and Landscape Protection of the Czech Republic / *Cz: Agentura ochrany přírody a krajiny České republiky*

ČSO - Czech Ornithological Society / *Cz: Česká společnost ornitologická*

ČSOP - Czech Union for Nature Conservation / *Cz: Český svaz ochránců přírody*

CR - Czech Republic

CZ - Czech

D - Deutsch/German

ESA - Endangered Species Act

EU - European Commission

IUCN - International Union for Conservation of Nature

KRNAP - Krkonoše National Park

NGO - Non-governmental Organisation

NP - National Park

PA - Protected Area

NPS - U.S. National Parks Service

NNR - National Nature Reserve

PLA - Protected Landscape Area

pSCI - Proposed Site of Community Importance

SAC - Special Area of Conservation

SCI - Site of Community Importance

SPA - Special Protection Area

SSSI - Site of Special Scientific Importance

ŠUNAP - Šumava National Park

U.K. - United Kingdom of Great Britain and Northern Ireland

U.S. - United States

WCPA - World Commission on Protected Areas

WWF - World Wildlife Fund

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Help me Improve this Text (Protected Area Management – Selected Chapters)

Your comments are welcome. If you find any errors, deficiencies, or confusing explanations, please let me know at my email address: j.morawetz@seznam.cz.