

## Designing research in protected areas – theory and reality

Michael Jungmeier

### Abstract

The designation of many protected areas in the world and, hence in the Alps, is supported, if not driven by science. The ongoing management has to face other priorities; frequently scientific matters are redefined as support functions for measures, education and public relations. Research agendas are in place to define a rationale, principles, goals, activities and technical framework for science in a park.

Using the example of seven research agendas, elaborated in Austrian parks within the last 15 years, the paper compares, discusses and evaluates the appropriateness and effectiveness of research agendas as such. Three biosphere reserves (Walsertal, Wienerwald, Nockberge as part of the newly established BSR Salzburger Lungau und Kärntner Nockberge), three national parks (Donau-Auen, Hohe Tauern and Gesäuse) as well as one nature park (Gebenzen) are compared. The experiences indicate that research agendas are not only an academic exercise, but can initiate and trigger systematic research in a park. However, in some cases there seems to be a considerable lack of commitment as well as of resources. Furthermore, the research agenda of the future defines the principles and processes rather than the activities and standards.

### Keywords

Research design, national park, biosphere reserve, nature park, knowledge management

### Introduction

The bodies that administer protected areas are knowledge-based organisations. They put knowledge of nature into practice by means of regulations, measures and educational work. There can be no doubt that no form of institution has greater knowledge of regional natural resources and regional sustainable development than the worldwide network of protected areas. In an attempt to draw up knowledge balance sheets for protected areas, Huber et al. (2013) showed that extensive knowledge capital can be built up, stored and also accessed in protected areas (see Figure 1):

- Human capital (e.g. employees, advisory bodies, stakeholders)
- Structural capital (e.g. information and educational establishments, libraries, databases, statutory regulations)
- Relational capital (e.g. partnerships, service providers, cooperations, umbrella organisations)

When accumulating knowledge, alongside the development of experience and exchanges between the parks, research plays a major role. To some extent this involves very great expense. Many parks attempt to structure research activities proactively. One instrument for this is the compilation of a research concept or research guidelines. All the concepts presented below are based on the intention of acquainting the park management with the research activities in the park and structuring these activities profitably. In most cases the intention is to initiate or stimulate science and research, or to focus these on a particular area.

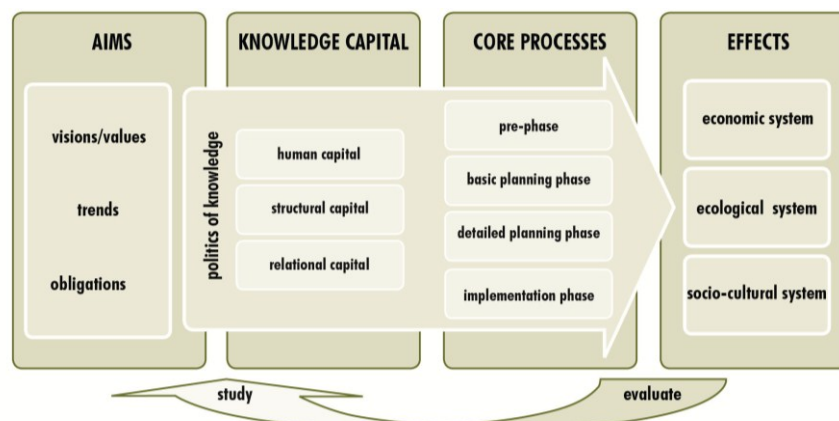


Figure 1: Knowledge assessment model for protected areas (HUBER et al. 2013, based on KOCH 2009)

## Methods

All the concepts presented were compiled using the same method. On the basis of an analysis of the starting situation, the concept explores the following questions:

- What for – what function should research have in the park and what rationale underlies the research?
- What – what is the focus in terms of content and which central questions should the research answer?
- How – what organisational framework conditions should apply to the research in the park and what requirements will be imposed on the researchers?
- How much – what resources can be provided or raised for the research?

The central questions are answered in specially designed intensive workshops, using partly creative and partly analytical processes (cf. GETZNER et al. 2010) (Figure 2). Different groups can be invited to collaborate depending on the requirements specified by the park management. The research concepts of seven parks are described below.



Figure 2: What would these scientists find interesting about the National Park? – Workshop design for the research agenda. Photo: Jungmeier

## Comparison of concepts

### Research Concept Donau-Auen National Park, 1998

This concept underlines the significance of research for the National Park, especially as support for “perceiving problems, the decision-making process, evaluating measures and monitoring the effects of interventions” (HAUSHERR & JUNGMEIER 1998). The concept “stresses the coordination and regulation function of the National Park administration”. The Donau-Auen National Park is also the only park in Austria to define the ethical limits of the research: “This research concept therefore demands (self-)restraint and abstinence of the scientists.” The research concept is anchored within the management plan as an obligatory element, and has been partially implemented.

### Research Guideline Grebenzen Nature Park, 1999

This guideline was compiled within a regional discussion process (DRAPELA & JUNGMEIER 1999). The aim of the research is to “develop awareness, increase value creation and document the region”. The content focuses on the “activities by agriculture to protect nature and the environment”, for which sketches of 20 research projects were developed. These were subsequently implemented (only) in rudimentary form.

### Research Guideline Wienerwald Biosphere Reserve, 2006

This guideline was compiled within an internal discussion by the management team. The research is intended to support the management and investigate the “steep hemeroby gradients between original habitats and cities” as a theme of global significance. “Innovation, high end technologies, global relevance and interdisciplinarity” are stated as the guiding principles for this research focus (ZOLLNER et al. 2006a). The guideline has not yet been implemented; the research and management have developed in a different direction.

### Research Guideline Walsertal Biosphere Reserve, 2006

A regional discussion process specified that research in the Biosphere Park primarily serves to “create benefits (increase value creation), promote the regional identity and document the region” (ZOLLNER et al. 2006b). (Note the congruence in terms of content with the research goals for the Grebenzen Nature Park, which were also compiled within a regional discussion process.) The content focuses on “researching the future” in the areas of Alpine farming, natural hazards and daily life, and also on “problem-specific ad hoc research”. Major impulses are expected from small projects which (are intended to) fit together to form an overall picture. The guideline has been conceived as a “living document” and has been partly implemented.

### Research Concept Hohe Tauern National Park, 2007

The intention behind the research in the park is to “monitor, understand ... and document developments in the area, ... , actively look into the role and responsibility of the National Park in the region and society (and) provide fundamental principles for the effective maintenance and sustainable development of the National Park and its region”. The concept is based on a catalogue of research questions (BAUCH et al. 2007b) and was developed within an internal discussion. It contains a series of organisational provisions, such as the creation of a scientific advisory board, standard procedures for both contract and grant-funded research, and also guidelines on documenting the research. The concept was approved by the trilateral council of the park and is therefore binding. Implementation has been initiated.

### Research Agenda Nockberge National Park, 2007

The research agenda was put together in an international workshop. It was designed as a provisional action plan “to raise the profile of and stimulate research in the future Biosphere Park” (JUNGMEIER et al. 2008). Essentially three concrete research projects were conceived. Two of these have now been implemented (part\_b, a project on governance in participation processes and the development of a BRIM system (Biosphere Reserve Integrated Monitoring)). They have had a substantial influence on the development of the Biosphere Park. The Lungau – Nockberge Biosphere Park, which was designated in 2012, wants to further develop and extend its research activities.

### Research Concept Gesäuse National Park, 2013

This concept emphasises the importance of continuity in research work. “Research ... supports the best possible achievement of the objectives of the National Park and continues the tradition of the comprehensive inventarisation of the area. It ... creates new impulses for the region and its inhabitants” (MAHRINGER & KRAINER 2012). The concept is based on the detailed analysis of 347 (!) research studies that have been undertaken and an intensive discussion process between representatives of the park, science and the region. The implementation has already been initiated.

Figure 3 shows a comparative summary of the research concepts. The actual research activities are not fully documented for all the parks, but the author ventures to assess the level of implementation.

	Donau-Auen	Grebenzen	Wienerwald	Walsertal	Hohe Tauern	Nockberge	Gesäuse
1 Category							
National Park	y				y		y
Nature Park		y					
Biosphere Reserve			y	y		y	
2 Year	1998	1999	2006	2006	2007	2007	2013
3 Intention							
Regulate / coordinate research	y				y		y
Stimulate research		y	y	y	y	y	y
4 Contents							
Definition of goals (what for?)	y	y	y	y	y	y	y
Definition of contents (what?)	y	y	y	y	y	y	y
Definition of frame (how?)	y	y	y	y	y		y
Definition of resources (how much?)		y			y		
5 Participation							
Staff	y	y	y	y	y	y	y
Region		y		y		y	y
Scientists	y					y	y
6 State of implementation*							
No / not yet started			y				
Little / just started		y			y		y
Partly	y			y			
Mainly						y	
Completely							

\* author's estimate

Figure 3: Comparison of seven research concepts (compiled by the author)

The Nationalparks Austria Science Prize, which has been awarded on the occasion of this conference, provides us with some additional information relating to research in Austrian protected areas. Of the 34 papers submitted to the jury, 28 (more than 80 percent!) relate to the natural sciences. The human and cultural sciences are represented by three papers, and the economic sciences account for two contributions. In terms of their content 21 contributions can be allocated to the FoA Basic Investigation, and eight to the FoA Management Plan. All the other fields of activity of park management are represented either marginally or not at all (cf. Figure 4).

<b>Pre-phase</b>	
<i>FoA-1: Development of Idea and Vision</i>	0
<i>FoA-2: Feasibility Check</i>	0
<i>FoA-3: Communication and Participation I</i>	0
<i>FoA-4: Incorporation into PA-Systems</i>	0
<b>Basic planning</b>	0
<i>FoA-5: Planning Handbook</i>	0
<i>FoA-6: Communication and Participation II</i>	0
<i>FoA-7: Basic Investigation</i>	21
<i>FoA-8: Implementation Planning</i>	0
<i>FoA-9: Designation and Establishment</i>	0
<b>Detailed planning</b>	0
<i>FoA-10: Mission Statement and Basic Concepts</i>	0
<i>FoA-11: Ecosystem-based Management Plan</i>	8
<i>FoA-12: (Regional) Economic Programmes</i>	0
<i>FoA-13: Specific Planning (Subsidiary Plans)</i>	0
<b>Implementation and management phase</b>	0
<i>FoA-14: Personnel &amp; Organisational Development</i>	0
<i>FoA-15: Evaluating Management Effectiveness</i>	0
<i>FoA-16: Financing (Business Plan)</i>	0
<i>FoA-17: Impact Assessment and Limitation</i>	0
<i>FoA-18: Data and Information Management</i>	1
<i>FoA-19: Research Setting and Monitoring</i>	1
<i>FoA-20: Communication and Participation III</i>	1
<i>FoA-21: Development of PA's Region</i>	0
<i>FoA-22: Co-operation Design</i>	0
<i>FoA-23: Information, Interpretation &amp; Education</i>	2
<i>FoA-24: Visitors, Services &amp; Infrastructure</i>	1
<i>FoA-25: Marketing and Public Relations</i>	1
<i>Other</i>	3

*Multiple attribution for some papers!*

Figure 4: Contributions to the Nationalparks Austria Science Prize, shown by FoAs (Fields of Activity) in the management of protected areas (evaluation by the author, FoAs according to GETZNER et al., 2010)

## Discussion

All the concepts with one exception laid the foundations for research activities. A comparison of the concepts reveals that they have the following points in common:

- The parks define research throughout as support for the management; research thus has a similar function to that of R&D in companies.
- With the possible exception of the Gesäuse National Park, the parks undertake scarcely any research themselves; it is given over or left to service providers and universities.
- The research concepts are only partially implemented. It is apparent that the resources allocated are not consistent with the objectives set.
- The research concepts were unable to resolve the following dilemmas:
  - Parks, even Biosphere Reserves, are not research organisations; instead they are research brokers or consumers. It is not easy to “stay on the ball” in terms of specialist knowledge.
  - It is not easy to appeal to top research providers, amongst other things because regionalised science, monographic presentations and research carried out with the purpose of influencing actions deliver (too) few “impact credits” for the academic career ladder.
  - Regionalised research into protected areas remains on a small scale.

The future of research concepts lies in compound research concepts which intelligently and synergistically combine several or many individual components. The individual parks will also have to make greater efforts to connect themselves to international research networks, programmes and activities. The commitment to the importance of research in protected areas, for protected areas and with protected areas must be increased by means of the wide scale involvement of different participants. Strong parks need strong research.

## Literature

- BAUCH, K., JUNGMEIER, M. & S. LIEB 2007a. Forschungskonzept Nationalpark Hohe Tauern 2020. Unpublished report by Nationalpark Hohe Tauern, Matrei 14p.
- BAUCH, K., JUNGMEIER, M. & S. LIEB 2007b. Forschungskonzept Nationalpark Hohe Tauern 2020. Study commissioned by: Nationalpark Hohe Tauern. E.C.O. Institute of Ecology, Klagenfurt, 80p.
- DRAPELA, J. & M. JUNGMEIER 1999. Guideline "Forschung im Naturpark Grebenzen". Study commissioned by: Verein Naturpark Grebenzen. E.C.O. Institute of Ecology, Klagenfurt, 142p.
- GETZNER, M., LANGE, S. & M. JUNGMEIER 2010. People, Parks and Money. Stakeholder involvement and regional development. A manual for protected areas. Proceedings in the Management of Protected Areas, Vol. 2, Klagenfurt, 216p.
- HAUSHERR, H. & M. JUNGMEIER 1998. Forschungs- und Monitoringkonzept Nationalpark Donau-Auen. Study commissioned by: Nationalpark Donau-Auen. E.C.O. Institute of Ecology, Klagenfurt, 79p.
- HUBER, M., JUNGMEIER, M., LANGE, S. & D. ZOLLNER 2012. Knowledge, Parks and cultures. Transcultural exchange of knowledge in protected areas: Case studies from Austria and Nepal. Proceedings in the Management of Protected Areas, Vol.V, 232p.
- JUNGMEIER, M., PICHLER-KOBAN, C. & D. ZOLLNER 2008. Biosphärenparkentwicklung Nockberge – Tätigkeitsbericht. Study commissioned by: Nationalparkverwaltung Nockberge. E.C.O. Institute of Ecology, Klagenfurt, 15p and annexes.
- JUNGMEIER, M. & D. ZOLLNER 2004. Biosphere Reserves in Austria – Grundlagenerhebung und Stand der Forschung. Study commissioned by: Österreichisches MAB-Nationalkomitee an der Österreichischen Akademie der Wissenschaften. E.C.O. Institute of Ecology, Klagenfurt, 85p and annexes.
- MAHRINGER, A. & D. KRAINER 2012. Forschungskonzept Nationalpark Gesäuse 2013-2023. Unpublished report by Nationalpark Gesäuse. 31p, Weng.
- ZOLLNER, D., KIRCHMEIR, H., REUTZ-HORNSTEINER, B. & M. JUNGMEIER 2006a. Leitfaden für Forschung und Monitoring Biosphärenpark Großes Walsertal. Study commissioned by: Österreichisches MaB-Nationalkomitee an der Österreichischen Akademie der Wissenschaften. E.C.O. Institute of Ecology, Klagenfurt, 90p.
- ZOLLNER, D., KIRCHMEIR, H., LOISKANDL, G. & M. JUNGMEIER 2006b. Leitfaden für Forschung und Monitoring im Biosphärenpark Wienerwald. Study commissioned by: Österreichisches MaB-Nationalkomitee an der Österreichischen Akademie der Wissenschaften. E.C.O. Institute of Ecology, Klagenfurt, 99p.

## Contact

Michael Jungmeier  
[jungmeier@e-c-o.at](mailto:jungmeier@e-c-o.at)

E.C.O. – Institute of Ecology  
Kinoplatz 6  
9020 Klagenfurt  
Austria  
[www.e-c-o.at](http://www.e-c-o.at)

Institute of Geography  
Alpen-Adria University Klagenfurt  
Universitätsstraße 65-67  
9020 Klagenfurt  
Austria  
[www.geo.aau.at](http://www.geo.aau.at)

MSc "Management of Protected Areas"  
[www.mpa.uni-klu.ac.at](http://www.mpa.uni-klu.ac.at)

