

## Protected areas' landscapes as resources for human health and well-being – case studies from Austria

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### Abstract

Natural and historic cultural landscapes of protected areas may positively influence the health of protected area visitors. Today's western societies are faced with a growing incidence of poor health because of mental stress and sedentary lifestyles. Natural and semi-natural landscapes are increasingly seen as restorative settings, compensating for these negative psycho-physiological effects. However, the restorative potential of different landscape types of protected areas seems to be rather unexplored. This presentation gives an overview about recent Austrian research activities on restorative effects of a stay in mountainous protected areas.

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### Keywords

attention restoration, biosphere reserves, mountain meadows, perceived restorativeness, stress reduction

### Introduction

Natural and cultural landscapes of protected areas harbour not only a high biodiversity, they attract tourists and even may positively influence the health of protected area visitors. Today's western societies are faced with a growing incidence of poor health because of mental stress and sedentary lifestyles. Natural landscapes are increasingly seen as restorative settings, compensating for negative psycho-physiological effects on humans (ARNBERGER & EDER 2015; EDER et al. 2016; HARTIG et al. 1997, 2003; KAPLAN & KAPLAN 1989; ULRICH et al. 1991). However, the health potential of natural and semi-natural landscapes of protected areas seems to be rather unexplored, in particular for mountainous landscapes (ARNBERGER & WÖRAN 2012; EDER et al. 2015). In addition, possible linkages between cultural ecosystem services such as landscape beauty, human health and well-being benefits, and actual or perceived biodiversity have rarely been investigated (ARNBERGER et al., in press; LOVELL et al. 2014).

So far, health effects of mountainous landscapes of protected areas are rather unused for sustainable health-related offers. Consequently, the ecosystem services they provide cannot be fully considered in political decisions and public health measures as well as in nature conservation policies and measures. If protected landscapes are specifically effective in providing restorative effects, then such benefits can be used for regional development by exploiting the natural-cultural capital for new health-related (commercial) offers in a sustainable way.

This presentation gives an overview on recent Austrian research activities of an interdisciplinary team which investigates the restorative effects of a stay in mountainous protected areas. This presentation is part of the session on 'Protected areas' landscapes as resources for human health and well-being'. The following research questions guided these studies:

Do mountainous landscapes of protected areas provide positive effects on human health and well-being?  
Do various landscape types have different effects on attention restoration, stress relief and well-being?

### Methods

#### Study areas

This presentation focusses on two Austrian study areas. The Großes Walsertal UNESCO Biosphere Reserve in the west of Austria, and the Wienerwald UNESCO Biosphere Reserve in the east of Austria. In both study areas, the effects of different landscape types on human health and well-being were analyzed (Table 1). While the study in the Großes Walsertal compared perceived health benefits of managed and unmanaged meadows, the Wienerwald study compared perceived health benefits of forests, meadows and vineyards. The projects were financed by the Earth-System-Science-Programme and the Man and the Biosphere-Programme of the Austrian Academy of Sciences.

## Data collection

In both studies, a dependent sample of participants was used, visiting the study sites in a standardised manner. Each survey day started at the same time with the arrival to the study site. When participants arrived at the study sites, a 25-minute (Großes Walsertal Biosphere Reserve) or 45-minute (Wienerwald Biosphere Reserve) on-site session by sitting or walking and watching the landscape scenery followed. Directly after the visit participants had to fill in several survey forms, dealing among others with perceived restorative quality of landscape types (PRS, HARTIG et al. 1997). Participants were also asked whether they have the perception that a stay in the landscape type has restored their attention, reduced their stress level, and changed their psychological well-being (Table 1). Participants were recruited on a voluntary basis.

Study areas	Großes Walsertal Biosphere Reserve	Wienerwald Biosphere Reserve
Study goal	Comparing perceived health benefits of managed and unmanaged meadows	Comparing perceived health benefits of different landscape types
Sample	N = 22; 55% females; Mean age=27, ranging from 22 to 36 years	N = 44; 55% females, Mean age =32.5, ranging from 20 to 75 years
Methods	On-site questionnaires	On-site questionnaires
Topics	Attention restoration, stress reduction, changes in psychological well-being, perceived restorativeness	Attention restoration, stress reduction, changes in psychological well-being, perceived restorativeness

Table 1: Description of study goals and methods

## Results

Both studies showed that study participants perceived natural and semi-natural landscapes as restorative settings, providing health benefits to them. Participants reported reduced stress levels, higher well-being and increased attention restoration after the stay. The studies also found differences but also commonalities between the landscapes types in perceptions for health benefits.

In the Wienerwald study, the meadow proved to be the best restorative environment for participants in terms of subjective recreational effects, perceived reduction of stress and perceived restoration of attention, followed by the visit of a forest. In the Walsertal study, no differences between managed and unmanaged meadows were found for perceived effects on attention restoration, stress relief and well-being.

## Discussion and conclusion

Although restoration research has shown that natural environments achieve higher outcomes concerning the improvement of the psychological and physiological state of humans than built environments, little is known about the health benefits of natural and semi-natural mountainous landscapes of protected areas. This study explored potentials of protected landscapes for human health and well-being. We found that meadows, regardless of managed or unmanaged types, are seen as very restorative places which are providing many health benefits. European mountain biosphere reserves typically include cultural and natural landscapes, among these are extensively managed and unmanaged meadows. If further studies confirm these findings on perceived health benefits of mountain meadow types, such benefits could be used for health-related offers for tourists, thereby preserving valuable landscapes (EDER et al. 2015).

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