



# Recreation, tourism and nature in a **changing world**



The Fifth International Conference on  
Monitoring and Management of Visitor Flows  
in Recreational and Protected Areas

Wageningen, The Netherlands,  
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Book of Abstracts  
Edited by Martin Goossen, Birgit Elands and  
Ramona van Marwijk



WAGENINGENUR

*For quality of life*

# **Recreation, tourism and nature in a changing world**

**Proceedings of the Fifth International Conference on Monitoring and  
Management of Visitor Flows in Recreational and Protected Areas**

**Wageningen, the Netherlands  
May 30–June 3, 2010**

**Edited by:**

**Martin Goossen, Birgit Elands & Ramona van Marwijk**

**Editors**

Martin Goossen, Alterra (Chair)  
Birgit Elands, Wageningen University (Co-Chair)  
Ramona van Marwijk, Wageningen University (Co-Chair)

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## Preface

### Recreation, tourism and nature in a changing world

#### Introduction

Human activities impact the natural environment. We all know the examples. The oil spill in the Mexican Gulf that threatens hundreds of species of wildlife. Polar bears whose future is endangered because of climate change. Erosion and disturbance of wildlife by visitors of protected areas. But besides signs of despair, there are signs of hope as well. An increasing number of hectares are being protected, e.g. in the form of national parks. And in several countries we are seeing an increasing number of people being actively engaged in nature. More and more we become aware of the importance of nature for human beings, for example, for our welfare and our health. Concern for the quality of life and the environment as well as bringing people through recreation closer to nature brings scientists, researchers, policy makers, managers together at the biennial MMV-conferences

In 2010, Wageningen hosts the 5<sup>th</sup> MMV conference, following on from Vienna, Austria (2002), Rovaniemi, Finland (2004), Rapperswill, Switzerland (2006), and Montecatini Terme, Italy (2008). MMV has been organised because of the growing concern about increasing recreational use of protected areas and concern about the limits of ecological and social carrying capacities in these areas in many parts of the world. As more and more scientists, managers and policy makers are involved in the relationship between outdoor recreation, tourism and the natural environment, the interest in MMV-conferences and consequently its participants is increasing yearly. Today, recreation and tourism are ever growing important aspects of quality of life as well as the natural landscape is important for the spatial quality of our living environment. Participants in the MMV-conference are involved in questions of how to improve quality of life and quality of the environment simultaneously. This is a challenging assignment because demands of visitors are diverse and subject to external factors such as climate change, economic situation, natural hazards and fashion. At the same time, the notion of 'nature and outdoor recreation as partners' is becoming more accepted.

#### MMV 2010

The fifth MMV-conference in 2010 takes place in the Netherlands. If we look back, we notice not only a growth in the number of presentations (from 81 in 2002 to 143 in 2010), but also in the themes that are presented. While the original themes such as monitoring methods, user conflicts, visitor behavior, and visitor management are still important today, new themes have come up that are also of importance for nature management. Examples of these themes include economic impacts, landscape images and visitor experiences, participation processes, human-wildlife interactions, perceptions and preferences. This development clearly shows that nature management is much more than only area management. The significance of nature for humans is understood by nature managers, who more and more have an eye on the benefits of nature for people. In the end, public support is necessary to preserve precious/vulnerable nature areas. In her opening speech on May 31<sup>st</sup>, Princess Irene deepens and intensifies this viewpoint by stating that 'being in connection' with life on earth is necessary for a sustainable future of our planet. To quote her own words "*the goal of my plea is to restore the relationship of human beings and nature so that we will stop destroying her and start to appreciate and love her, and to understand the intrinsic value of all life*" (Van Lippe-Biesterfeld and Schouten, 2010: 88). Princess Irene is highly motivated to enhance personal commitment to, and awareness of, the values of our natural environment. This is especially important in highly urbanised countries such as the Netherlands where untouched nature is non-existing. As such, new nature areas have been created not only for ecological values, but also for the opportunities they offer for e.g. relaxation, sports and inspiration.

#### Book of abstracts

The 5<sup>th</sup> MMV has all ingredients to become successful, with participants coming from more than 25 countries all over the world. Learning, exchanging ideas and networking are the key elements in the MMV-conferences. This MMV-conference has 10 special organised sessions where the participants can learn and exchange ideas on a special issue. More than 140 interesting abstracts and 15 posters were submitted. We clustered the contributions into 11 groups:

- *Visitor experiences*: This theme prioritises nature experiences and motives as key factors to acknowledge into the design and management of nature areas

- *People and landscape*: Many people appreciate forest and nature areas for its aesthetic and symbolic values. The perceptual relations of people with forest and landscape are explored within this theme.
- *Target groups*: Some user groups, such as ethnic minorities, hardly ever visit nature areas or have different views upon nature compared to native groups. Other user groups have special requirements for their recreational activities. Target groups or visitor segmentation are a means to deal with this diversity,
- *Human-conservation*: This theme relates important conservation issues, such as wildlife, risks and hazards, to attitudes and perceptions of human beings
- *Public involvement*: Increasingly different societal and market groups are considered to be essential partners in nature management. This theme discusses nature outside nature areas with people inside.
- *Ecological impact*: Many papers deal with the ecological impact of visits to nature areas as well as the development of management strategies for it.
- *Nature and economy*: Increasingly monetary values and economic effects of nature areas are considered and dealt with in the management of nature areas. It is also considered how monitoring data can benefit the economy of nature areas
- *Visitor management*: High visitor density needs to be managed with respect to e.g. conflicts, crowding and mobility. Visitor management frameworks contribute to the solution of problems.
- *Knowledge for management*: Up-to-date knowledge is essential for adequate visitor management. Papers within this theme discuss the potentials of (scientific) knowledge and monitoring data for management.
- *Instruments, tools and technology*: All kinds of tools and media as well as new technology can contribute to the development of user friendly visitor management. Several papers discuss the possibilities of these innovative techniques.
- *Planning*: Finally, we discuss regional planning issues with respect to sustainable development in general and the functions of recreation-ecology in particular.

### **Acknowledgements**

Organising a conference implies an enormous amount of energy, persistence and enthusiasm. Not only have the members of the organising committee put efforts into it, but so have many other people and organisations. We would like to acknowledge to this fact.

All submitted abstracts for (poster) presentations were blind reviewed by members of the International Steering Committee. Most of the abstracts were accepted, some were returned for a minor or major revision. We thank the members of the International Steering Committee for their valuable guidance and suggestions. In addition, we thank Wageningen University and Research centre, the Ministry of Agriculture, Nature and Food Quality, the State Forestry Service, Ecocounter, the Dutch Expert Centre on Leisure and Recreation for their financial and material support. We thank all the people who have assisted us with the organisation of the conference, such as Emile Bruls, Marloes Berndsen, Ingrid Luitse, Yvonne van Heezik, Anja de Jong, Niek Botden, Erwin van der Waal and the team of students. They all greatly helped us with the organisation of this conference. Last but not least we want to thank the session and workshop chairs as well as all the contributors, upon whose work the scientific quality of the MMV5 conference depends.

Martin Goossen<sup>1</sup>, Birgit Elands<sup>2</sup>, Ramona van Marwijk<sup>2</sup>

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<sup>1</sup> Alterra, part of Wageningen UR (University and Research centre)

<sup>2</sup> Wageningen University

## **Staatsbosbeheer, everything nature has to offer**

### **Harry Boeschoten**

Director Central Staff, Staatsbosbeheer (Dutch State Forestry Service)

P.O. Box 1300, 3970 BH Driebergen, The Netherlands

[H.Boeschoten@staatsbosbeheer.nl](mailto:H.Boeschoten@staatsbosbeheer.nl)

Keywords: relation human-nature, demand-oriented approach, differentiation, participation, co-operation, research

Staatsbosbeheer, the Dutch State Forestry Service, was established in 1899 when the nation needed an organisation to plant trees in order to stop walking sand dunes from covering villages. Nowadays it is more accurate to describe Staatsbosbeheer as a 'public body guarding the natural heritage of the Netherlands'. The agency manages over 250,000 hectares of protected areas, including national parks, which amount to around 7% of the total surface area of this small, crowded country.

The Netherlands is an extremely urbanised country. This can be illustrated by the fact that 36% of the 250,000 hectares is situated within 10 km distance of a city (Staatsbosbeheer 2007). This metropolitan environment determines the task of Staatsbosbeheer to a large extent and Staatsbosbeheer feels responsible for linking urban citizens to forest and nature areas. It is our aim to recover and renew the relationship between human beings and nature (Staatsbosbeheer 2005).

This leads to a more demand-oriented, instead of a supply-oriented, recreation approach. Moreover, we intend to increase participation of user groups in both the planning and management of forest and nature areas. This change of direction leads towards the recognition and implementation of a divergent scale of nature functions. We do not limit ourselves with only nature functions, such as biodiversity protection preferred by ecologists or nature policy makers, but also towards other nature functions, such as recreation or landscape, preferred by lay people, being it more urbanised or local traditional people. Because we cannot accommodate each nature function at each particular site, we have to make choices. Consequently, for each forest and nature area we prioritise one function (ecology, recreation, cultural history, landscape, etc.) which frames the sustainable development of that area. Within this functional frame we optimise the qualities of the other functions as much as possible. Around urban areas with big shortages of forest and nature areas, we have chosen to prioritise the recreation function.

To make the demand-oriented approach more concrete, we follow trends attentively, we work with recreational motive groups, we carry recreational area analysis, we implement surveys and visitor counting, and we encourage user participation. In order to increase the desired quality, co-operation with other stakeholders such as governmental bodies (provinces, municipalities), recreation entrepreneurs, farmers, and citizens is essential. As our budget is limited it is impossible to meet all user wishes. Consequently, we have to generate additional finances derived from commercial environmental services.

In their daily practices, managers from Staatsbosbeheer encounter a number of problems. First of all, most Dutch people live in an urban environment so nearby nature areas are considered to be important. Also, people are prepared to travel long distances for extremely beautiful nature areas. However, this stagnates at too much congestion. Besides, if an area is too crowded, it decreases the experiential quality. We need more insight into the relation between the attractiveness, the accessibility and the experiential quality of it.

Secondly, we are concerned about the green playing opportunities for children and young people. One quarter of the inhabitants of municipalities with more than 50.000 inhabitants indicates that there is no 'playing green' in their neighbourhood (Crommentuijn et al. 2007). Staatsbosbeheer wants to turn back this trend. This made the organisation decide to dedicate 1% of their property into playscapes (nature to play in) which will be realised within the next 10 years. Besides this, we develop play and movement programs specifically for children (Staatsbosbeheer 2009). Some major concerns in this respect are:

- How do you deal with safety and risks with young people who are not raised in nature anymore?
- How do we find new partners in nature with whom we can constructively and financially co-operate?
- How do we connect with youth policy developed by local authorities?

- How should we design participatory decision-making with young urban people? We all know that playscapes close to urban areas are also attractive for divergent and deviant behaviour by young people?

A final problem is that not all visitors want to experience nature in the same way. Some prefer silence, remoteness and wilderness, whereas others prefer amusement and familiarity. In order to get grip on the diversity of nature experiences, we have chosen to work with experiential motives (see also Elands & Lengkeek 2000, Goossen & De Boer 2008). We distinguish five different motives with which managers are able to work as part of their daily management. Moreover, we want to explore how the notion of experiences is related to beauty and art as well as to sensemaking and religion. This should give us an in-depth understanding of the relation of our visitors to nature, which is in turn, essential knowledge in order to achieve our aim of recovering and renewing the relationship between human beings and nature.

## References

- Elands, B. and J. Lengkeek (2000). Typical tourists. Research into the theoretical and methodological foundations of a typology of tourism and recreation experiences. Mansholt Studies 21, Wageningen University.
- Goossen, C.M. & T.A. de Boer (2008). Recreatiemotieven en belevingsferen in een recreatief landschap; Literatuuronderzoek. (*recreational motives and spheres of experience in a recreational landscape; literature study*) Wageningen, Alterra. Alterra-rapport 1692.
- Crommentuijn, L.E.M., J.M.J. Farjon, C. den Dekker, N. van der Wulp (2007). Belevingswaardemonitor Nota Ruimte 2006. Milieu- en Natuurplanbureau (MNP), Bilthoven.
- Staatsbosbeheer (2005), Meerjarenvisie 2020, Driebergen
- Staatsbosbeheer (2007), Recreatie Taskforce prioriteiten in beheer, Driebergen.
- Staatsbosbeheer (2009), Jeugd en Natuur, de ambitie van Staatsbosbeheer, Driebergen

## Biodiversity is about life, our life!

### Ignace Schops<sup>1</sup>

Director of Regionaal Landschap Kempen en Maasland  
Winterslagstraat 87, 3600 Genk, Belgium

[ignace@rlkm.be](mailto:ignace@rlkm.be)

Keywords: biodiversity, (re)connection model, National Park, economy, recreation, Belgium

It is clear from many indices that the loss of biodiversity in the world is increasing very fast. For example, in its Red List of Threatened Species, the International Union for the Conservation of Nature (IUCN) documents the extinction risk of 47.677 species. 17.921 species are threatened, including 12% of birds, 21% of mammals, 30% of amphibians, 27% of reef-building corals, and 35% of conifers ... (extinction rates up to 1.000 times faster). This biodiversity loss has grim consequences for humanity. Over 1,1 billion people are directly threatened by the loss of fish stock, etc.

### The (re)connection model

The idea to save biodiversity and protect nature, using the **(re)connection model** is new and innovative, but rather hard to accomplish. The (re)connection model contains four levels:

- (re)connect nature with nature
- (re)connect people with nature
- (re)connect business with biodiversity and
- (re)connect policy with practice

A sustainable bottom up & integral approach isn't that common ... It needs to be discussed before it can be developed. It's all about creating awareness for sustainable goals!

As an NGO, the **Regionaal Landschap Kempen en Maasland** incorporates the model and the sustainable principles as much as possible by the creation of (inter)national projects<sup>2</sup>. (Re)connecting society leads to an renewed awareness and action for biodiversity and beautiful landscapes, and results in increasing economic benefits.

In 1995, the Regionaal Landschap Kempen en Maasland implemented the **cycling-network**, a first step to reconnect the relationship between nature and society. This innovative concept is has been very successful with good results for the society (economic benefit) and nature (increased quality). Since the invention of the cycling-network the concept is copied in and beyond the borders of Belgium. Several European countries are showing interest in this innovative project. With an annual economic benefit of 16.5 million euro, the cycling-network – located in the 12 municipalities of the Regionaal Landschap Kempen en Maasland (1/3 part of the province of Limburg) – it is proved that biodiversity projects are assets for sustainable economic development.

The cycling-network is created as **a project of sustainable regional development**, trying to seek the reconnection of society and biodiversity (figure 1).

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<sup>1</sup> Winner of the Goldman Environmental Prize 2008 (Green Nobel Prize) – San Francisco, US, Ashoka Fellow 2008 – Paris, France and International Ambassador Biodiversity, Countdown 2010 – IUCN, European Parliament, Brussels, Belgium

<sup>2</sup> [www.rlkm.be](http://www.rlkm.be) - [www.kempenbroek.be](http://www.kempenbroek.be) – [www.demaasvallei.be](http://www.demaasvallei.be)



## Sustainable development

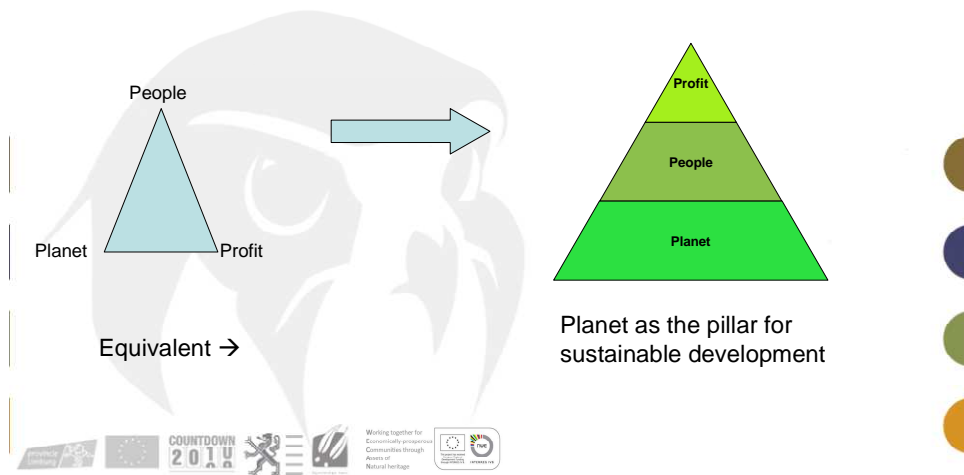


Figure 1 Reconnection of society and biodiversity through sustainable development

A next milestone was achieved with the creation of Belgium's first National Park in March 2006, the **Hoge Kempen National Park**. Since the closing of the coalmines, this region was affected with a lot of unemployment and deprivation at the end of the 20<sup>th</sup> century. A large reconversion plan, emphasising only economic growth, was prepared but as a result of lobbying, it could be reshuffled in a way that a part of the money could be used for the development and the creation of the Hoge Kempen National Park. For the first time it was possible to create a budget for biodiversity and sustainability goals from a budget that was intentionally earmarked for only economic projects.

Along with the development of the National Park, the model of (re)connection got its current form. We developed an integral and bottom up approach which was supported by all target groups. We have tried to make nature sexy: thinking out of the box, not focussing on the borders of the national park (figure 2). And in this we have succeeded: the biodiversity is protected and high numbers of visitors are coming over each year. The total amount of investments in the Hoge Kempen National Park (6 municipalities) culminates to more than €120 million, with an annual economic benefit of €20 million. All these investments were possible due to the financial support of partners, organisations, entrepreneurs and governments. The annual economic return is based on a constant electronic calculation of our visitors, combined with questionnaires about their spending behaviour, etc.

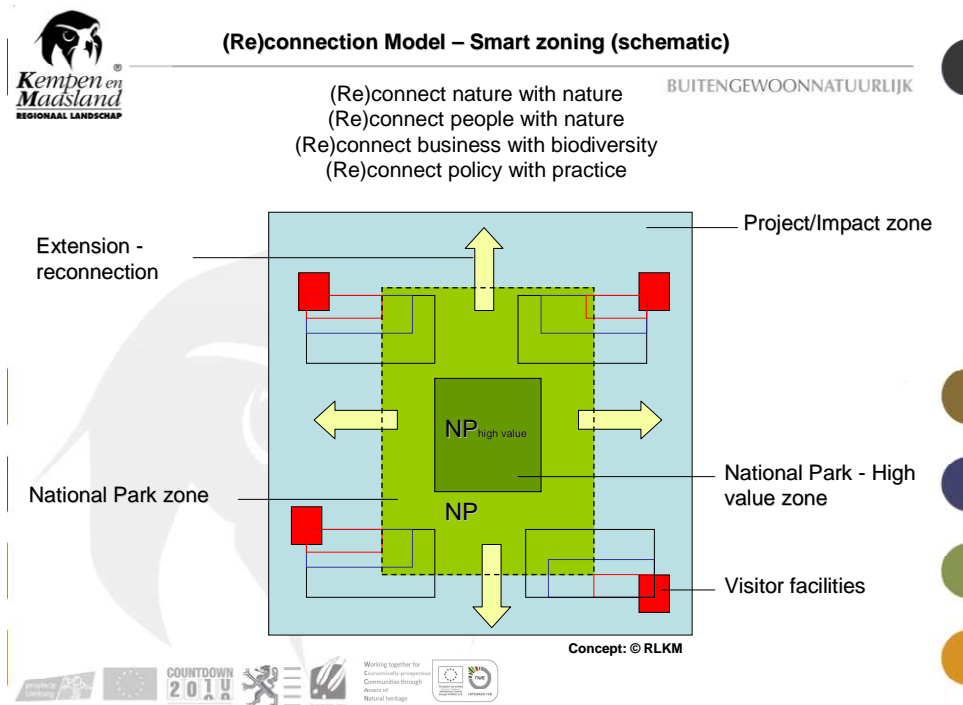


Figure 2. The (re)connection model applied for a National Park

This innovative and renewed way of biodiversity protection – based on a broader perspective and along with all parts of society – got a lot of **international recognition**<sup>1</sup>. This international recognition led to an increased interest of our model and even a meeting with Al Gore in April 2009. Since the development of the Hoge Kempen National Park, global organisations like the International Union for the Conservation of Nature (IUCN) promotes the (re)connection model globally as the successful model to protect biodiversity. Furthermore, we are implementing our model on a new European Interreg IVB project, WECAN<sup>2</sup> with partners out of France and the UK.

### The work isn't done!

A sustainable society demands a constant concern and investment. Besides the daily work and running projects (...), a lot of opportunities are still appearing locally and in a broader perspective. Currently we are trying to work out new sustainable financing techniques for the protection of biodiversity, based on the experience with the Visitor Payback System. Furthermore, we are working on the development of the main gateway of the Hoge Kempen National Park and trying to receive recognition as UNESCO World Heritage Site, etc.

<sup>1</sup> Ashoka Fellow ([www.ashoka.be](http://www.ashoka.be)) - Goldman Environmental Prize ([www.goldmanprize.org/2008/europe](http://www.goldmanprize.org/2008/europe)) - International Ambassador Countdown 2010 (<http://www.countdown2010.net/about/ambassadors>)

<sup>2</sup> Working together for Economically prosperous Communities through Assets of Natural heritage

## **Wildlife reserves: sanctuaries, commons or commodities?**

### **Matthijs Schouten**

Senior Strategist with the National Forest Service of the Netherlands  
Professor of Restoration Ecology and Philosophy of Restoration at Wageningen University  
Visiting Professor of Nature and Landscape Conservation at University College Cork (Ireland)

### **Abstract**

Nature does not know itself as nature. We perceive it as such. And in that perception we project our images of nature. Such images are social constructs that vary in time and between cultures: nature as the enemy, nature as a resource, nature as an uncorrupted domain.....

In western society, nature conservation emerged in the 19<sup>th</sup> century in the aftermath of the Romantic period. In those days, wildlife reserves constituted primarily sanctuaries of hallowed ground of interest primarily to the happy few: the economically privileged and the scientific community.

From the second half of the 20<sup>th</sup> century onwards, with increasing mobility and leisure time, wildlife reserves started to serve a recreational function for the general public. For decades, however, the management of these 'commons' remained the responsibility of the professionals: the scientists and the conservation organisations.

Since the '90s of the last century, nature reserves are increasingly seen as a commodity which needs to serve the varied and changeable needs of society. This creates a dilemma for the wildlife manager: he is constantly torn between a role as a guardian of a heritage which needs a certain constancy in management and a role as a public servant whose survival is dependant on the satisfaction of the needs of an 'electorate'. His understanding of wildlife management is no longer his professional legitimization. He now needs to balance nature's requirements with the requirements of a myriad of user groups. He needs to understand and to anticipate the social constructs in a post-modern and multicultural society and constantly needs to ask himself whether to follow suit or to try and influence these constructs and in the latter case: how to do this?

# **To what extent do different management regimes affect environmental impacts along the Ningaloo Coastline, Western Australia?**

**Anna Lewis<sup>1</sup>**

Keywords: Australia, Ningaloo, coast, impact, environment, management

## **Background**

This paper compares the type and extent of environmental impacts created by visitors who camp under different management regimes in the Ningaloo Marine Park region. The Ningaloo Marine Park in Western Australia is a popular coastal camping destination, and has been nominated for World Heritage listing. Visitors are attracted to this remote location for its warm winters, white sand beaches, prime snorkelling and fishing opportunities. Multiple management regimes exist under several different government departments and pastoral stations. Camping areas within the 260km Ningaloo coastal strip (Fig. 1) therefore differ in road quality for access, amenities, price, and most controversially, regulation. Campers often stay in less regulated camp areas for up to five months at a time, within one hundred meters of the coast. In 2015 the Western Australian state Government is considering to relinquish the Ningaloo coastal strip, in a bid to regulate management and prevent further environmental degradation (WAPC 2004). In response to this plan the research question for this PhD study is:

‘Given the remote landscape, likely visitor increases and visitor preferences, what is the most appropriate development strategy for coastal camping areas at Ningaloo?’

Despite a growing commercial interest in the region, relatively few visitor impact studies have been undertaken. Those conducted include Hugues-Dit-Ciles et al (2004) who undertook a qualitative impact study at Three Mile surf camp, Gnaraloo. It was found that access, extent of area, direct impact of visitors and landscape changes were key impacts and called for quantitative impact studies. Further qualitative surveys by DPI (2003) and Davies et al. (2009) found that many camping activities appeared unsustainable with growing visitor numbers, but that impacts were few in the lesser-used campsites. Management is crucial to provide a sustainable tourism industry (Newsome et al. 2002). The study this paper draws from compares the environmental impacts of different management regimes and their degree of acceptance to current user groups, in order to assist visitor planning and management in the Ningaloo Region.

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<sup>1</sup> Curtin University Sustainability Policy Centre, 3 Pakenham St, Fremantle WA 6160 Australia, [annarlewis@hotmail.com](mailto:annarlewis@hotmail.com)

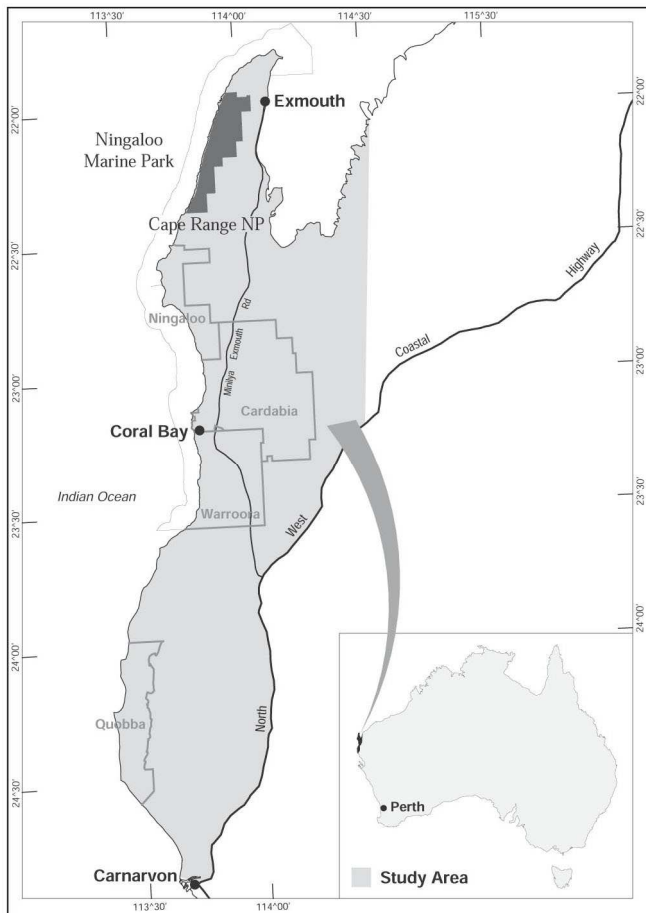


Figure 1: Map of research area

## Methods

Initial impact surveys were conducted between March and April 2009. One hundred sample campsites and twelve control sites were surveyed. Both multiple indicator ratings (qualitative) and multiple indicator measurements (quantitative) were used in a combined survey approach. Indicators were derived from a combination of studies (Marion 1991, Monz 1998, Smith & Newsome 2002) and then adjusted to suit the semi-arid coastal environment.

Eight different types of campgrounds were identified, which varied in management style, road access quality, amenities, price, and regulation. Indicators selected for analysis per campsite included: campsite area, barren core area, vegetation health, litter, toilet paper, social trail number and social trail size. Control sites were located north and south of each camp area. Finding control sites both undisturbed by humans and in close proximity to camp area perimeters proved challenging. Potential control sites were either undergoing rehabilitation, were previously used for sheep and goat grazing, or contained introduced plant species. It was also unknown whether these areas had been used for camping in the past.

## Preliminary Results

Preliminary results indicate that impacts at areas with different management regimes vary in both type and extent of impact. The results, however, suggest that higher regulation does not necessarily equate to smaller impacts. Most camp areas can be considered 'moderately impacted' overall, yet each indicator for each campsite was rarely 'moderate'. It was more common that a camp area had weak points and strong points e.g. a lot of litter (meaning more environmental impact), but also few social trails (meaning less environmental impact). Because of this, once impacts are identified and appropriately managed, overall impact scores for a camp area should decrease considerably. Results from the control sites indicated that feral goats (introduced pests) created more social trails and caused greater vegetation depletion than visitors in some areas. Control sites were not free from small amounts of litter, toilet paper and root exposure. It is not yet known whether this root exposure is a natural occurrence or a result of goat

presence. To increase the sample size of both initial surveys and controls within all eight camp groups, a second field trip in the Ningaloo Marine Park region will be undertaken in March 2010.

## References

- Davies, A., Tonts, M., Cammell, J. (2009). Coastal camping in the Rangelands, emerging opportunities for natural resource management. Available Online: <http://www.rangelandswa.com.au/pages/178/coastal-camping-in-the-rangelands> (Accessed 8/2/2010).
- Department of Planning and Infrastructure. (2003). Carnarvon - Ningaloo Coast Inventory and Assessment of Coastal Usage Patterns and Site Conditions, Department of Planning and Infrastructure, Perth, Australia.
- Hugues-Dit-Ciles, E., Findlay, M., Glegg, G., & Richards, J. (2004). An Investigation into the Nature of Surfing Tourism and its Potential Environmental Impacts on Relatively Pristine Environments: Gnaraloo, Western Australia, A Case Study. Paper presented at the Coast To Coast Conference Proceedings, School of Ocean, Earth and Environmental Science, Plymouth University.
- Marion, J. L. (1991). Developing a natural resource inventory and monitoring program for visitor impacts on recreational sites: A procedural manual. Natural resources report PS/NRVT/NRR-91/06.S.N. P. S. Department of Interior: 59.
- Monz, C. (1998). Monitoring recreation resource impacts in two coastal areas of western North America: An initial assessment Personal, Societal and Ecological Values of Wilderness. Sixth World Wilderness Congress Proceedings on Research, Management, and Allocation, Bangalore, India.
- Newsome, D., Moore, SA., Dowling, R.K. (2002). Natural Area Tourism: Ecology, Impacts and Management. Channel View Publications, Clevedon, England.
- Smith, A. J. and D. J. Newsome (2002). An integrated approach to assessing, managing and monitoring campsite impacts in Warren National Park, Western Australia. *Journal of Sustainable Tourism* (10/4), p 343 - 359.
- Western Australian Planning Commission (2004). Ningaloo Coast Regional Strategy  
Carnarvon – Exmouth. Western Australian Planning Commission and Department of Planning and Infrastructure, Perth. Available Online: <http://www.wapc.wa.gov.au/publications/277.aspx> (Accessed 1/3/10).

# Does recreation affect Natura2000 goals for breeding birds? A case study for the Veluwe

**Rogier Pouwels<sup>1</sup>, Henk Sierdsema<sup>2</sup>, Adrienn Aranyosi<sup>1</sup>, Michiel van Eupen<sup>1</sup>, René Henkens<sup>1</sup>**

Keywords: recreation impact, birds, Natura2000, visitor distribution, regression analysis

In this paper we consider the relationship between biodiversity, conservation and recreation activity in large nature areas in Europe. Legislation in the European Union aims for better protection of valuable species and habitats by implementing the Habitat and Birds directive. At the same time, health programs stimulate people to go out into these nature areas. Recreational use of nature areas is increasing (Kerbiriou et al. 2009), as is the variety of types of recreation (Naylor et al. 2009). However, there is evidence that stimulating these two functions may be incompatible (Young et al. 2005). Especially for birds, recreation activity was shown to affect population trends e.g. for Chough (Kerbiriou et al. 2009), Golden plover (Yalden & Yalden 1990), Black-tailed Godwit (Holm & Laursen 2009), Woodlark (Mallord et al. 2007) Wheatear (Van Turnhout et al. 2007), Nightjar (Liley & Clarke 2003) and Tawny pipit (Van Turnhout 2005).

In our currently ongoing research, we investigate if recreation might be one of the factors affecting Natura2000 goals in one of the largest Natura2000 sites in The Netherlands, the Veluwe. The Veluwe is almost 1000 km<sup>2</sup> large area on sandy soils containing woodlands, heathlands, sand dunes and small streams. The area is popular within The Netherlands for recreation and tourism, and some parts contain high densities of bungalow parks and campsites. The Veluwe is designated as Natura2000 for protecting nature values from both the Habitat and Bird Directive. Considering breeding birds the Veluwe has been designated for Wryneck, Nightjar, Woodlark, Tawny pipit, Stone Chat, Wheatear, Red-backed Shrike, Kingfisher, Honey Buzzard, Black Woodpecker.

The research is being conducted in three parts:

- developing an up-to-date map for recreation pressure;
- analysing the effect of recreation on densities of the breeding birds;
- evaluating whether recreation might effect the Natura2000 goals for breeding birds in the Veluwe.

For the construction of an up-to-date GIS recreation map we included bungalow parks, campsites and car parks as a starting point for visitors of the area. Car parks near sport fields, large companies and high ways were left out. Based on GIS-maps, Google earth and field visits we assessed the capacity of car parks. Visitors from surrounding villages were randomly assigned to the car parks within a distance of 15km, while car parks nearby received a higher preference. The recreation model MASOOR (Jochem et al. 2008) was used to distribute the visitors over the trails.

For analysing the effect of recreation on breeding bird densities we used survey data obtained from 208 plots ranging from a few hectares till several hundreds of hectares. Extra layers of habitat information were used to make a predictive model for the densities in the survey plots. Next, the recreation pressure was added to the model and we analysed if the new model would give a better prediction for the bird densities.

The predictive model will be used to estimate total numbers of breeding pairs in the Veluwe. We will compare these numbers with the Natura2000 goals for the species. These results will be presented at the conference.

In total the car park capacity of 159 cars at The Veluwe was determined. The total trail length at the Veluwe was 7429 km and approximately 200 bungalow parks and campsites were taken into account. Recreation pressure was highly diverse. The southeast part near Arnhem showed the highest pressure (up to 100.000 visitors per year) while some central parts were lowest (Fig. 1).

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<sup>1</sup> Alterra, Wageningen UR, P.O.Box. 47, 6700 AA, Wageningen, [rogier.pouwels@wur.nl](mailto:rogier.pouwels@wur.nl), [adrienn.aranyosi@wur.nl](mailto:adrienn.aranyosi@wur.nl), [michiel.vaneupen@wur.nl](mailto:michiel.vaneupen@wur.nl), [rene.henkens@wur.nl](mailto:rene.henkens@wur.nl)

<sup>2</sup> SOVON Vogelonderzoek Nederland, Rijksweg 178, 6573 DG, Beek-Ubbergen; [henk.sierdsema@sovon.nl](mailto:henk.sierdsema@sovon.nl)

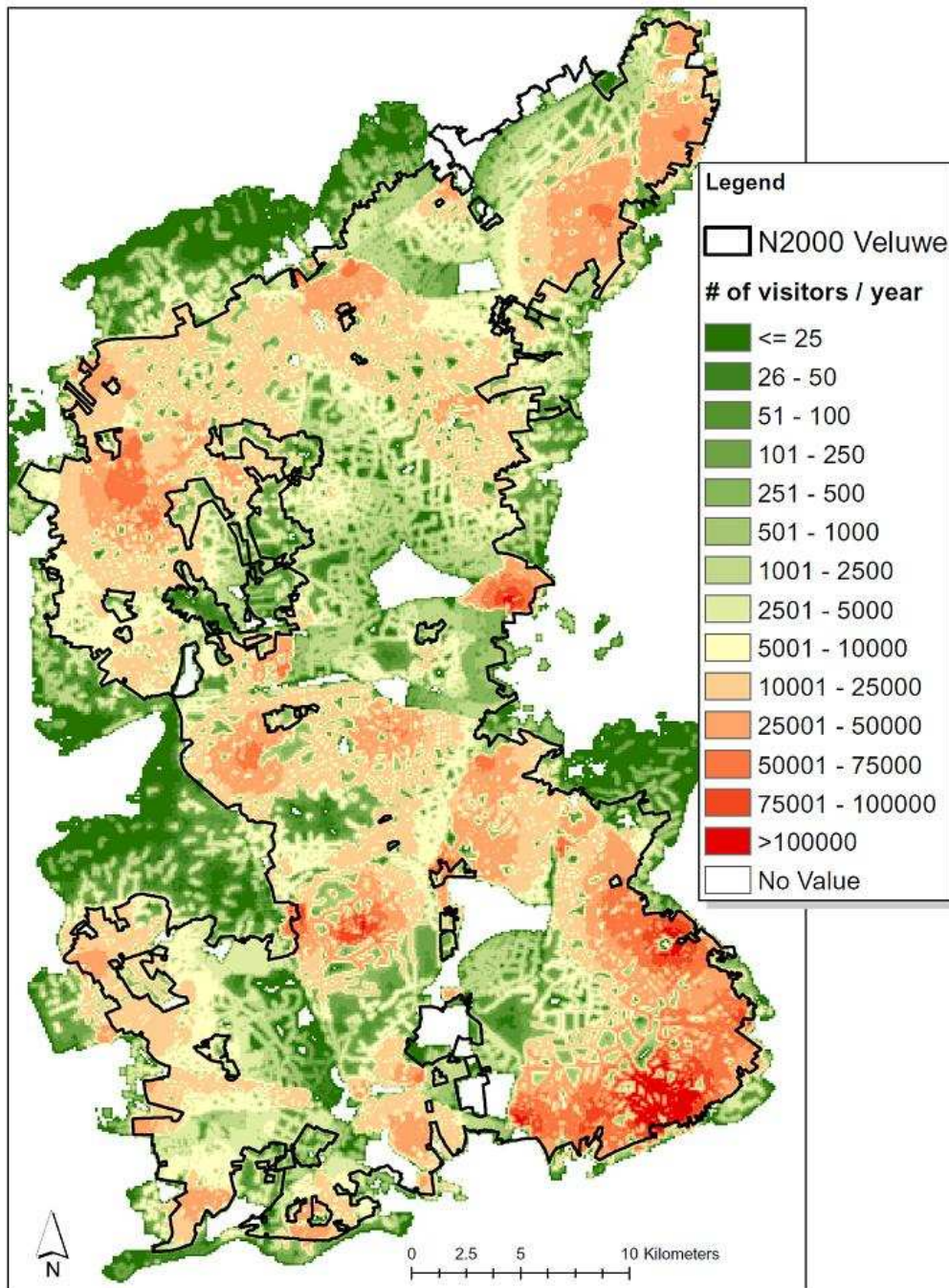


Figure 1: Total recreation pressure.

Data availability for Wryneck, Red-beaked shrike, Tawny pipit and Kingfisher was limited and no useful models could be developed. The models for Black woodpecker and Honey buzzard showed no effect of recreation pressure. Nightjar, Woodlark, Stonechat and Wheatear all showed lower densities by an increase of recreation pressure. This result confirms that heathland species are expected to be more sensitive to recreation than woodland species.

In the dilemma between recreational development and protecting biodiversity, scientists, policy makers, local managers and local communities need to meet each other in order to find a joint and acceptable solution for all (Cash et al. 2003). Scientists can contribute to conflict management by providing objective information (Young et al. 2005). They are expected to help justifying management plans and actions (McCool et al. 2007), but are confronted with a shortage of knowledge (Sutherland 2007) and a lack of sufficient long term monitoring data of both recreation (Cole 2006) and management effects (Wilhere 2002). With the final results of this research we hope to be able to fill in small part of the knowledge gap of the impact of visitors on biodiversity values at the landscape scale.



## References

- Cash, D.W., W.C. Clark, F. Alcock, N.M. Dickson, N. Eckley, D.H. Guston, J. Jager & R.B. Mitchell. 2003. Knowledge systems for sustainable development. In: Proceedings of the National Academy of Sciences of the United States of America (100), p 8086-8091.
- Cole, D.N. 2006. Visitor and recreation impact monitoring: is it lost in the gulf between science and management? In: The George Wright Society Forum (23), p 11-16.
- Holm, T.E. & K. Laursen. 2009. Experimental disturbance by walkers affects behaviour and territory density of nesting Black-tailed Godwit *Limosa limosa*. In: Ibis (151), p77-87.
- Jochem, R., R. Van Marwijk, R. Pouwels & D.G. Pitt. 2008. MASOOR: modeling the transaction of people and environment on dense trail networks in natural resource settings. In: R. Gimblett and H. Skov-Petersen (eds.) Monitoring, simulation and management of visitor landscapes. p. 269-293. The University of Arizona Press, Tucson.
- Kerbiriou, C., I. Le Viol, A. Robert, E. Porcher, F. Gourmelon & R. Julliard. 2009. Tourism in protected areas can threaten wild populations: from individual response to population viability of the chough *Pyrrhocorax pyrrhocorax*. In: Journal of Applied Ecology (46), p 657-665.
- Liley, D. & R.T. Clarke. 2003. The impact of urban development and human disturbance on the numbers of nightjar *Caprimulgus europaeus* on heathlands in Dorset, England. In: Biological Conservation (114), p 219-230.
- Mallord, J.W., P.M. Dolman, A.F. Brown & W.J. Sutherland. 2007. Linking recreational disturbance to population size in a ground-nesting passerine. In: Journal of Applied Ecology (44), p 185-195.
- McCool, S.F., R.N. Clark & G.H. Stankey. 2007. An assessment of frameworks useful for public land recreation planning. Gen. Tech. Rep. PNW-GTR-705, U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, OR.
- Naylor, L.M., M.J. Wisdom & R.G. Anthony. 2009. Behavioral Responses of North American Elk to Recreational Activity. In: Journal of Wildlife Management (73), p328-338.
- Sutherland, W.J. 2007. Future directions in disturbance research. In: Ibis (149), p 120-124.
- Van Turnhout, C., J. Aben, P. Beusink, F. Majoer, H. Van Oosten & H. Esselink. 2007. Breeding succes and feeding ecology of the declining Dutch Wheatear *Oenanthe oenanthe* population. In: Limosa (80), p 117-122.
- Van Turnhout, C.A.M. 2005. The disappearance of the Tawny pipit *Anthus campestris* as a breeding bird from the Netherlands and Northwest-Europe. In: Limosa (78), p 1-14.
- Wilhere, G.F. 2002. Adaptive management in habitat conservation plans. In: Conservation Biology (16), p 20-29.
- Yalden, P.E. & D.W. Yalden. 1990. Recreational disturbances of breeding golden plovers *Pluvialis apricarius*. In: Biological Conservation (51), p 243-262.
- Young, J., A. Watt, P. Nowicki, D. Alard, J. Clitherow, K. Henle, R. Johnson, E. Laczko, D. McCracken, S. Matouch, J. Niemela & C. Richards. 2005. Towards sustainable land use: identifying and managing the conflicts between human activities and biodiversity conservation in Europe. In: Biodiversity and Conservation (14), p 1641-1661.

## Spatial overlap of biodiversity and recreational use in protected areas

Pirkko Siikamäki<sup>1</sup>, Katja Kangas<sup>2</sup>, Stuart Cottrell<sup>3</sup>, Susanna Schroderus<sup>4</sup>

Keywords: biodiversity, conservation, nature-based tourism, recreation, spatial ecology

Recreation and tourism in protected areas have a long history (Eagles et al. 2002, Rytteri & Puhakka 2009). Protected areas are attractive tourism destinations and the number of protected areas (Eagles et al. 2002), as well as the visitor numbers to protected areas, have increased worldwide (Eagles 2007). In Finland since the beginning of the 1990s, the number of visits in national parks has increased by an average of 6.5-fold (Puhakka 2008). In 2008, there were almost 1.8 million visits to Finnish national parks (Metsähallitus 2009). However, the increase has not been distributed evenly among parks and the development has been stronger in the parks that are situated close to major routes and tourist attractions, like ski resorts (Saarinen 2005). Also the main nature type in the park and the provision of tourism facilities within, as well as outside the park, can affect the number of visits to national parks (Puustinen et al. 2009). Indeed, in Finland, many tourism resorts are located very close to conservation areas, especially in Northern Finland (Saastamoinen et al. 2000, Puhakka 2008).

Tourism and recreation inevitably affects the terrestrial and aquatic environments. As nature conservation is generally the main purpose of the protected areas, the increased recreational use is challenging the management of these areas. In fact, recreational use is considered one of the major threats to the ecosystems of protected areas (Cole & Landres 1996) and it has become one of the main factors causing species endangerment (Czech et al. 2000). Therefore, it is essential to understand interrelationships between biodiversity and tourism to manage protected areas in a sustainable manner.

In this paper, our aim is to investigate the interrelationship between biodiversity and tourism in protected areas at two different levels. Firstly, we study whether the trails and recreational services of national parks are situated on areas with higher species richness within each park. Secondly, we will explore the relative importance of biodiversity, as well as the tourism service and facilities -related variables, in explaining the variation in number of visits to national parks in whole Finland. There are 35 national parks altogether in Finland with a total surface area of 8730 km<sup>2</sup> and varying from 4.3 to 2850 km<sup>2</sup> individually. In Finland one organisation, Metsähallitus, is managing all the national parks and thus a consistent practice is used in all the them for data collection. For the study we have obtained data on all 35 Finnish national parks from Metsähallitus. Data on parks includes information on the number of annual visits per park (in 2007), on the recreational facilities and services of parks and on the characteristics of natural features. As an indicator of species diversity we use the number occurrences of endangered species; for habitat diversity the number Natura2000 habitats; and for landscape level diversity we have calculated a Shannon-Wiener diversity index on the main components of the landscape. The tourism service and facilities include the length of recreational routes and the location of the park in relation to large cities (> 100 000 inhabitants) and tourist resorts. In the first part of the study, the number of endangered species and Natura2000 habitats within 200m wide buffers around each recreational route is compared to randomly picked control areas in 17 national parks. During the second part, it is investigated if the visitor numbers of Finnish national parks are related to biodiversity of protected areas as measured by different indicators of biodiversity.

According to the preliminary results, the number of red-listed species and habitat types were on average higher within the buffers around recreational routes than compared to control areas. Consequently, there is spatial overlap between biodiversity and recreational use within Finnish national parks. Preliminary results of generalized linear models show that the occurrences of red-listed species and the number of Natura200 habitats were associated with the number of visits parks received annually, i.e. its attractiveness. In addition, the distances from the closest city with > 100 000 inhabitants and resorts as well as the length of trails were related to visitor numbers of Finnish national parks. Thus, biodiversity features such as species-

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<sup>1</sup> Metsähallitus, Natural Heritage Services, Ostrobothnia, P.O. Box 26, FI-93601 Kuusamo, Finland, [pirkko.siikamaki@metsa.fi](mailto:pirkko.siikamaki@metsa.fi)

<sup>2</sup> Oulanka Research Station and Department of Biology, P.O.Box 3000, FI-90014 University of Oulu, Finland, [katja.kangas@oulu.fi](mailto:katja.kangas@oulu.fi)

<sup>3</sup> Colorado State University, Human Dimensions of Natural Resources, 1480 Campus Delivery, Fort Collins, CO 80523, USA, [cottrell@warnercnr.colostate.edu](mailto:cottrell@warnercnr.colostate.edu)

<sup>4</sup> Oulanka Research Station, Liikasenvaarantie 134, FI-93999 Kuusamo, Finland [susaschr@mail.student.oulu.fi](mailto:susaschr@mail.student.oulu.fi)

rich habitats, should be considered more carefully in the planning of protected area use. If new trails or tourism service infrastructure is planned, areas with simultaneously high species richness and vulnerable habitats should be ideally avoided or otherwise taken into account.

## References

- Cole, D.N. & Landres, P.B. (1996) Threats to wilderness ecosystems: Impacts and research needs. *Ecological Applications* 6: 168–184.
- Czech, B., Krausman, P.R. & Devers, P.K. (2000) Economic associations among causes of species endangerment in the United States. *BioScience* 50: 593–601.
- Eagles, P. (2007) Global trends affecting tourism in protected areas. In: Bushell R & Eagles PFJ (eds) *Tourism and Protected Areas: Benefits Beyond Boundaries*. CABI, p. 27–43.
- Eagles, P.F.J., McCool, S.F. & Haynes, C.D. (2002) Sustainable tourism in protected areas: Guidelines for planning and management. The World Conservation Union (IUCN).
- Metsähallitus (2009) Metsähallituksen luontopalvelut vuosikertomus 2008. Erweko painotuote oy, Helsinki
- Puhakka, R. (2008) Increasing role of tourism in Finnish national parks. *Fennia* 1: 47–58.
- Puustinen, J., Pouta, E., Neuvonen, M. & Sievänen, T. (2009) Visits to national parks and the provision of natural and man-made recreation and tourism resources. *Journal of Ecotourism* 8(1): 18–31.
- Rytteri, T. & Puhakka, R. (2009) Formation of Finland's National Parks as a Political Issue. *Ethics, Place and Environment* 12(1): 91–106.
- Saarinen, J. (2005) Tourism in the Northern wildernesses: wilderness discourses and the development of nature-based tourism in northern Finland. In: Hall CM & Boyd S (eds) *Nature-based tourism in peripheral areas. Development or disaster*. Clevedon UK, Channel View Publications, p. 36–49.
- Saastamoinen, O., Loven, L. & Sievänen, T. (2000) Nature-based tourism in forested North-Europe: the case of Finland. *Finnish Forest Research Institute, Research Papers* 792: 7–17.

# The frequency of scraping trees by kayaking in mangrove estuary in Okinawa, Japan

Masaki Toyama<sup>1</sup>, Masanori Take<sup>2</sup>, Tetsuya Aikoh<sup>3</sup>, Takao Kadekaru<sup>4</sup>, Tatsuo Terasaki<sup>1</sup>

Keywords: kayaking, kayakers' behavior, ecological impact, guided tour

## Introduction

Okinawa is the southernmost prefecture of Japan. Subtropical natural features attract a lot of tourists from all around the world. About six million people visit Okinawa annually. Gesashi river is located in northern part of Okinawa main island. In the estuary of Gesashi River, there is rich mangrove forest which is designated as a National Natural Monument. Tourists enjoy seeing the mangrove forests through kayaking led by the guides. The number of tourists in the river has increased recently and there are concerns about ecological impact by kayaking on the mangrove forest. Recently the association of guided tour operators is developing rules of kayaking recreation, whereas the exact information about visitors and the ecological on the forest is limited. In this study we examined the frequency of scraping on mangrove trees by kayaking via interviews and questionnaire surveys to examine the ecological impact of kayaking for the mangrove forests.

## Method

We conducted interviews of guided tour operators and questionnaire survey of visitors. Seven companies or personal guides are operating guided kayaking tours in Gesashi river. Three operators accepted our requests of interviews about the tour operation and ecological impacts. We asked them about the scraping frequency on mangrove trees by kayaks during guided tours. We conducted questionnaire survey with the corporation of tour operators. Visitors were asked to answer the questionnaire after the kayaking tour. We asked them their demographic attributes, the past kayaking experience, and about the recognition of scraping on mangrove trees by their kayaks or paddle; Respondents were 194 kayakers (114 male, 80 female). 70 percent of respondents kayaked for the first time and 95 percent of respondents kayaked in Gesashi River for the first time. We also counted the number of tour groups and kayaks during questionnaire surveys. The density of kayaks on the river was estimated.

## Results

Guided tour operators did not consider kayakers' scraping on mangrove trees frequently (do they mean the 'tour operators did not frequently consider' as in they never thought about it, or that the 'tour operators did not consider that the kayakers' were frequently scraping' as in they did not think it happened often?). They had different opinions about the ecological impacts of kayaking on the mangrove forests. Some of tour guides pointed out the impact of evacuating fish-boats and fishing nets during the brunt of the typhoon rather than kayaking.

More than 70 percent of respondents answered that their kayak or kayak's paddle scraped the mangrove trees (44% = only kayak, 58.7% = only paddle). First timers reported more frequencies of scraping on mangrove trees than experienced respondents (47.6% = first timers; N = 147, 36.2% = experienced respondents; N = 47). The size of the tour group and the density of kayaks also affected the frequencies of mangrove scraping by visitors. The respondents who attended larger size of tour groups reported more frequencies of mangrove scraping. In addition, the respondents who visited the river on the crowded time reported more frequencies of scrapings.

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<sup>1</sup> Japan Travel Bureau Foundation, Japan, 9F, Daiichi Tekko Bldg. 1-8-2, Marunouchi, Chiyoda-ku, Tokyo, Japan, [toyama@jtb.or.jp](mailto:toyama@jtb.or.jp), [terasaki@jtb.or.jp](mailto:terasaki@jtb.or.jp)

<sup>2</sup> The University of Tokyo, Japan, 5-1-5 Kashiwanoha, Kashiwa Chiba, Japan  
[take@nenv.k.u-tokyo.ac.jp](mailto:take@nenv.k.u-tokyo.ac.jp)

<sup>3</sup> Hokkaido University, N9 W8 Kita-ward, Sapporo, Japan, [tetsu@res.agr.hokudai.ac.jp](mailto:tetsu@res.agr.hokudai.ac.jp)

<sup>4</sup> Okinawa Prefectural Government., 1-2-2 Izumizaki, Naha, Okinawa, Japan, [kadetaka@pref.okinawa.lg.jp](mailto:kadetaka@pref.okinawa.lg.jp)

## **Conclusion**

According to the results, scraping on mangrove trees by kayaking occurred frequently, and it was affected by the degree of kayaking experience, the size of tour group, and the density of kayaks. The results provide several implications for guided tour operators to formulate better rules for recreational kayaking. However, the correlation between the frequency of scraping and the mangrove forest's damage is not clear. There are many possible factors of ecological impact on vegetation ( Kuss et al., 1990). Further research needs to be conducted to clearly establish the ecological impact of the mangrove forests that this frequency of scraping has on the mangrove forests.

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## **References**

- Kuss, F. R., Graefe, A. R. & Vaske, J. J. (1990). Visitor Impact Management – a review of research. Vol.1, National Park and Conservation Association. Washington, DC. Johnston, F.M. & Pickering, C.M. (2001). Alien plants in the Australian Alps. In: Mountain Research and Development (21), p 284-291.

# On the stone footpath - Reactions to abrasion reducing measures at Besseggen, Jotunheimen National Park, Norway

Cathrine Restad<sup>1</sup>, Øystein Aas<sup>2</sup>, Line C. Wold<sup>2</sup>

Keywords: abrasion reducing measure, visitor survey, user satisfaction

National parks are popular areas for outdoor recreation. An increased commitment to enhance nature based tourism and sustainable use of national parks has put nature areas under increasing pressure in several places. Besseggen is one of Norway's most popular mountain hikes, and is therefore exposed to significant user pressure which has led to extensive wear and erosion damage (figure 1). Annually, approximately 40.000 persons complete the hike. A path project was initiated in 2005 on the most used entry paths to Besseggen, and the aim was to reduce the impacts and restore the hiking paths by laying stones in the most exposed areas up and down from the ridge. The project sparked discussion in regional media and newspapers as well as among professionals, mostly about the appropriateness of such a measure; partly also about the fact that the project would import foreign expertise on stone laying technique.



Figure 1: Overview showing Gjendeosen and the beginning of the *Besseggen* path from Gjendesheim. The eroded path is clearly visible in the terrain, even at a great distance. Photo taken summer 2008 by Cathrine Restad.

The aim of our study was to assess user satisfaction and other experiences related to the consequences of the management measure, viewed in context of factors in which recreational research is known to influence people's satisfaction and behavior. These are often grouped in situational (resource, social and managerial setting) and subjective factors (including demographic, experience, norm and attitude characteristics, Manning (1999)).

The study is based upon an on-site user survey conducted in the summer season of 2008. In total, 566 individuals participated in the survey. The survey instrument was based on the purpose of the study, and builds on recommendations made by Kajala et al. (2007). The sample is strictly considered a convenience sample, yet it covers most of the relevant user segments at Besseggen. However, the possibility of under-sampling early- and late season visitors and visitors avoiding peak season days remains.

<sup>1</sup> Former master student, UMB – Norwegian University of life sciences, Ås, Norway. [cathrine@restad.com](mailto:cathrine@restad.com)

<sup>2</sup> Norwegian Institute for Nature Research (NINA), Fakkellgården, NO-2624 Lillehammer, Norway. [oystein.aas@nina.no](mailto:oystein.aas@nina.no), [linecamilla.wold@nina.no](mailto:linecamilla.wold@nina.no); Contact person

Generally, the respondents are predominantly positive to the stone path (figure 2), and their hiking trip satisfaction does not seem to be influenced negatively to any particular degree. However, we documented significant differences in degree of satisfaction between segments based on sociodemographic and attitudinal characteristics. Women, persons over 45 years of age, persons on shorter day trips and visitors with the more “urbanistic” attitudes were shown to be the most positive ones. Respondents with previous experience with the hike reported reduced impacts and improved environmental conditions following the measure. Interestingly, the respondents view the stone path more as an ecological restoration project rather than as a project enhancing use and providing better access.

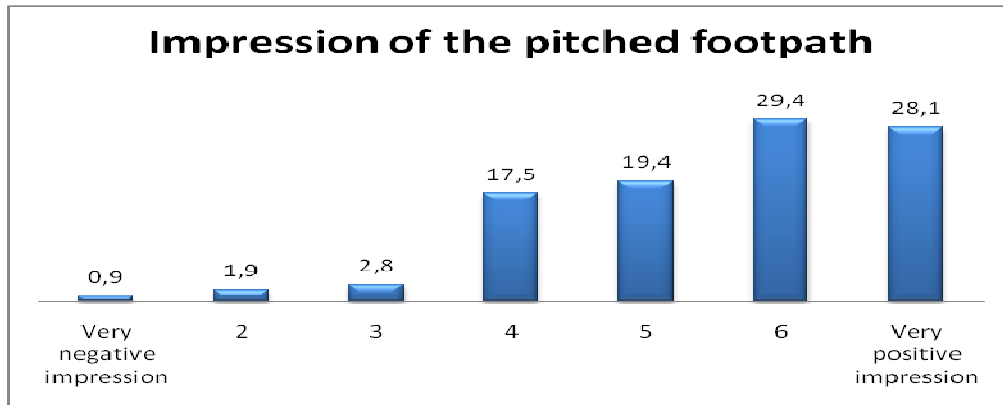


Figure 2: Respondents' impression of the stone footpath, distribution in percent (N=357).

In further research, there is a need for greater knowledge about the relationships that are found. Especially to what extent situational variables - such as high use levels - justify and modify more general values and attitudes needs to be examined. Projects such as the Besseggen stone footpath also need to be studied from an ecological point of view, especially investigating effects on soil and vegetation.

## References

- Kajala, L., Almik, A., Dahl, R., Diksaite, L., Erkkonen, J., Fredman, P., Jensen, F. S., Karoles, K., Sievanen, T., Skov-Petersen, H., et al. (2007). Visitor monitoring in nature areas – a manual based on experiences from the Nordic and Baltic countries. Copenhagen: TemaNord. 534 p.
- Manning, R. E. (1999). Studies in outdoor recreation: search and reasearch for satisfaction. Corvallis, Oregon: Oregon State University Press. 374 p.

# Recreation impact research in Turkish Mediterranean; Studies in Olimpos-Beydağları National Park

**Meryem Atik<sup>1</sup>**

Keywords: recreation impact, Olimpos-Beydağları National Park, Antalya

## **Abstract**

Recreation is a pleasant activity that people realise as a function of enjoyment, relaxation and refreshing themselves. Recreational activities often take place in natural settings and could create various impacts on the natural environment. Impact is defined as an undesirable change and even the most careful visitor can cause various forms of damage such as soil compaction, alteration of plant cover, disturbance of fauna etc. On the other hand the quality of recreation activity highly depends on the integrity and naturalness of the recreation settings.

Antalya is the most important tourism site in Turkey and Olimpos-Beydağları National Park serves a great contribution to the tourism potential of the region and is widely visited due to its rich diversity in natural features and recreational facilities since its establishment in 1972. However there is no detailed study on the impacts of recreational activities. The aim of this study is to investigate the impact of recreational activities in Turkish Mediterranean in case of Olimpos-Beydağları National Park in Antalya region. Vegetation and soil characteristics were chosen as impact indicators and recreation impacts were examined in picnic sites and hiking trails.

Since trampling impact has been diverse and severe, vegetation and soil response to trampling can be characterised by different ways. Impacts on vegetation were analysed according to Kutiel et al. (1999) and Whinam & Chilcott (2003) while impacts on soil were assessed by Kutiel et al. (1999) and Monz et al. (2000). Relevantly sampling design was based on Cole and Monz (2004) in picnic sites and Hall and Kuss (1989), Marion & Leung (1997), Kutiel et al.(1999), Whinam & Chilcott (2003) in hiking trails. Based on two methodological approaches, impacts were measured by the comparison of used and unused (control) sites.

Information on the number of plant species, overall percentage of vegetation cover, plant height, relative percentage of each species and bare ground were collected for vegetation analysis. Attributes such as soil compaction level, soil moisture and organic matter content were evaluated for the soil analyses. Information on visitor numbers was available for picnic sites but not existing for the hiking trails. In order to relate impact results with user density and to produce recommendations for carrying capacities, visitor monitoring studies were carried out in the trails and crowding studies both in picnic and beach sites and hiking trails according to Manning & Freimund (2004) and Manning (2007).

## **Impacts on Vegetation**

Study results showed that trampling impacts on species richness, vegetation cover and height was already evident by being higher on controls and lower both in picnic sites and trails. Due to characteristics of the Mediterranean climate there were seasonal differences. Species richness and vegetation cover were measured highest in spring, whereas vegetation height was measured in summer.

## **Impacts on Soil**

Trampling impacts on soil was rather diverse in picnic sites and trails. Soil moisture levels were very similar in used and unused plots in trails whereas soil compaction level was higher in used plots. On the other hand soil moisture and compaction levels were higher in used plots in picnic sites. However, organic matter content was found higher on unused plots both in picnic sites and hiking trails as expected due to trampling and correspondingly soil compaction in the trails.

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<sup>1</sup> University of Akdeniz Faculty of Agriculture, Department of Landscape Architecture 07070 Antalya, Turkey, [meryematik@akdeniz.edu.tr](mailto:meryematik@akdeniz.edu.tr)



### **Estimating Visitor Flows in Hiking Trails**

Two approaches were tested to estimate visitor flows in hiking trails. The first approach was using a visitor monitoring board - a kind of self-registration notice board that asking visitors to write the number of people in their group that using the trail. The second approach was using a wide-view photo camera sensitive to movement. Visitor numbers provided by the self registration boards were generally higher than photo camera records in all trails. Comparing this two approaches, the data on visitor flows maintained by photo camera with the details of date, hour and second were more efficient than the data received by visitor monitoring board based on the solidity of the information provided by the visitors.

### **Crowding Studies for Picnic - Beach Sites and Hiking Trails**

Crowding studies showed that number of people that visitors like to see simultaneously changes between 15 to 45 people in beach sites and 12 to 48 people in picnic sites. On the other hand, visitors' preference for crowding in hiking trails was between 0 to 4 people that they would like see at once.

Understanding the nature of the recreation impacts enables us to set up principles for management plan towards a better environmental protection and maintaining recreation quality in the national park. With regards to study results and extensive size, management plans for Olimpos-Beydağları National Park need to be both site specific and activity specific. Hereby based on the visual assessment of different levels of users' densities acceptable crowding capacities can be also an effective tool in visitor management initiatives in the national park.

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### **References**

- Cole, D.N. & Monz, C.A. (2004). Spatial Patterns of Recreation Impact on Experimental Campsites. *Journal of Environmental Management* 70, 73-84.
- Hall, C.N. & Kuss, F.R. (1989). Vegetation Alteration along Trails in Shenandoah National park, Virginia. *Biological Conservation* 48 (3): 211-27.
- Kutiel, P., Zhevelev, H. & Harrison, R. (1999). The Effect of Recreational Impacts on Soil and Vegetation of Stabilised Coastal Dunes in the Sharon Park, Israel. *Journal of Ocean & Coastal Management*, 42: 1041-1060.
- Manning, R.E. & Freimund, W. (2004). Use of Visual Research Methods to Measure Standards of Quality for Parks and Outdoor Recreation. *Journal of Leisure Research* 36 (4): 552-79.
- Manning, R.E. (2007). *Parks and Carrying Capacity*. Island Pres ISBN -13:978-1-55963-104-4, 313 pp.
- Marion, J. & Leung, Y.F. (1997). An Assessment of Campsite Conditions in Great Smoky Mountains National Park. Resources Management Report, Atlanta, USID National Park Service.
- Monz, C.A., Pokorny, T., Freilich, J., Kehoe, S. & Ayers-Baumeister, D. (2000). The Consequences of Trampling Disturbance in two Vegetation Types at the Wyoming Nature Conservancy's Sweetwater River Project Area. USDA Forest Service Proceedings RMRS-P-15-VOL-5.
- Whinam, J. & Chilcott, N.M. (2003). Impact After Four Years of Experimental Trampling on Alpine/Sub-Alpine Environments in Western Tasmania. *Journal of Environmental Management* 67: 339-351.

# Moving forward through looking back – Early recreation ecology research in German-speaking Europe

Christopher Garthe<sup>1</sup>

Keywords: recreation ecology, visitor impacts, protected areas, science history, Germany

## Background

Recreation ecology as a scientific discipline could look back on a long tradition of research in Northern America and the United Kingdom. The situation in the German-speaking area of Europe appears to be somewhat different: The impacts of recreation have gained no wide-spread attention within the scientific community, and research from the United States or the United Kingdom was seldom recognized and incorporated in own research approaches. Only in recent years a considerable amount of studies have been published in this field. With the dominant influence of approaches, methods, research findings and conclusions of studies from the U.S. and the UK, the roots of this research field in German-speaking Europe is often forgotten. By identifying early studies on recreation ecology in German-speaking Europe interesting conclusions could be made for future approaches of recreation ecology research.

## Methods

Firstly, the body of literature was systematised with the help of various criteria. These criteria comprised of the ecosystem analysed in the study, the ecological component and the user types who caused the impacts or the activities of these users. Furthermore, the literature was categorised regarding different forms of publications. This categorisation shows that at the beginning of this research field the studies focused mainly either on areas for local recreation or on mountains (e.g. Jacsman 1971, Schulz 1978). Most studies looked at soil or ground vegetation (e.g. Ellenberg 1972, Seibert 1974) and only a few studies on other ecological components like water or wildlife (Reichholf 1975). Before the background of the numbers and the scope of these publications, the development of recreation ecology as a scientific field in German-speaking Europe is outlined.

Secondly, the literature was analysed regarding research design, methods and findings. An aggregation of the publications focuses at the research approaches used as well as the methods applied. These approaches and methods are presented and related to other recreation ecology studies. It is noticeable that the majority of the studies applied qualitative methods. Furthermore the reception of these studies at the time of their publication is discussed. Also the main findings of these studies are presented and evaluated. In doing so it becomes clear that a review of findings in summary is difficult, because within the limited number of publications only a few studies share the same research approach and are therefore comparable. Thus, results from key studies are presented in more detail (e.g. Danz et al. 1978, Czinke et al. 1974, Fritz et al. 1977). The earliest article found which used the literal translation of recreation ecology was published in 1973 (Kaspar 1973).

Thirdly, the literature was used to identify differences in the field of recreation ecology between German-speaking Europe and the United Kingdom as well as the United States. This shows that the key issues within recreation ecology research were somewhat different (e.g. Fritz et al. 1977, Turowski 1972).

## Conclusion

The paper discusses the relevance of approaches, methods and findings from early recreation ecology studies in the German-speaking area for recreation ecology research today. Before this background recommendations for research design in the field of recreation ecology are deduced. Besides, the findings of this paper clarify why research tradition and approaches in Europe differ from them in the United States.

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<sup>1</sup> Institute for Environmental Planning, Leibniz University Hannover, Herrenhäuser Str. 2, 30419 Hannover, Germany, [christopher.garthe@gmx.de](mailto:christopher.garthe@gmx.de)

## References

- Czinke, L.; Grossmann, K.; Schmidt, P. (1974): Landschaft und Erholungseignung und Belastung der Landschaft. Bonn (Berichte über Landwirtschaft, 52).
- Danz, W.; Ruhl, G.; Schemel, Hans Joachim (1978): Belastete Fremdenverkehrsgebiete. Bonn (Schriftenreihe Raumordnung des Bundesministeriums für Raumordnung, Bauwesen und Städtebau, 06031).
- Ellenberg, H. (1972): Belastung und Belastbarkeit von Ökosystemen. In: Tagungsbericht der Gesellschaft für Ökologie. Gießen, S. 19–26.
- Fritz, Georg; Lassen, Diethard; Mrass, Walter (1977): Untersuchungen zur Belastung der Landschaft durch Freizeit und Erholung in ausgewählten Räumen. Bonn-Bad Godesberg: Bundesforschungsanst. für Naturschutz und Landschaftsökologie (Schriftenreihe für Landschaftspflege und Naturschutz, 15).
- Kaspar, C. (1973): Fremdenverkehrsökologie - eine neue Dimension der Fremdenverkehrslehre. In: Ender, W. A. (Hg.): Beiträge zur Fremdenverkehrsforschung. Festschrift für Dr. P. Bernecker. Wien, S. 139–144.
- Jacsman, J. (1971): Zur Planung von städtischen Erholungswäldern. Zürich (Schriftenreihe zur Orts-, Regional- und Landesplanung, 8).
- Reichholf, Josef H. (1975): Der Einfluß von Erholungsbetrieb, Angelsport und Jagd auf das Wasservogelschutzgebiet am unteren Inn und die Möglichkeiten und Chancen zur Steuerung der Entwicklung. In: 3. Tagungsbericht der Akademie für Naturschutz und Landschaftspflege (ANL). Laufen: Akademie für Naturschutz und Landschaftspflege, S. 69–81.
- Schulz, H. J. (1978): Naherholungsgebiete. Grundlagen der Planung und Entwicklung. Berlin, Hamburg: Parey.
- Seibert, P. (1974): Die Belastung der Pflanzendecke durch den Erholungsverkehr. In: European Journal of Forest Research, Jg. 93, H. 1, S. 35–43.
- Turowski, Gerd (Hg.) (1972): Bewertung und Auswahl von Freizeitregionen.

# Evaluate trail surfacing effectiveness in Yangmingshan National Park, Taiwan ROC: an index approach

Hsiu-Chuan Lin<sup>1</sup>, Yu-Fai Leung<sup>2</sup>, Sheng-I Hsu<sup>1</sup>

Keywords: trail surfacing, impact management, Yangmingshan National Park, Taiwan

Trails and recreational activities occurring on them have negative effects on soil and vegetation resources in national parks and other protected areas (Leung and Marion, 2000; Pickering et al., 2010). Surfacing of trail treads using rocks, gravels, and other materials is a common solution which park managers use to control resource degradation on and around formal trails. However, there is a paucity of research on the environmental impacts resulting from different types of trail surfacing and on the effectiveness of trail surfacing in minimising trail degradation (Hill and Pickering, 2006; Nepal and Way, 2007). This study explored ways in which the effectiveness of trail surfacing can be evaluated and examined. The specific objectives are:

- to construct an index to quantify trail surfacing effectiveness;
- to compare the effectiveness of different trail surfacing options based on the index and other common measures;
- to identify factors that are important in explaining the variation in trail surfacing effectiveness.

Yangmingshan National Park (YMSNP) (Figure 1) is located in northern Taiwan adjacent to the Taipei metropolitan area where over 6 million people reside. It is one of the most popular attractions on the island, attracting over 4 million foreign and domestic tourists every year (YMSNP, 2009). The park contains high biodiversity levels with more than 1,300 plant species recorded (Chen2004). A network of trails has existed in the park for long time. According to the YMSNP, different types of trail surfacing were paved from 1990 to 2003 in the hope to control soil erosion and provide trail users with higher quality of recreation experiences.

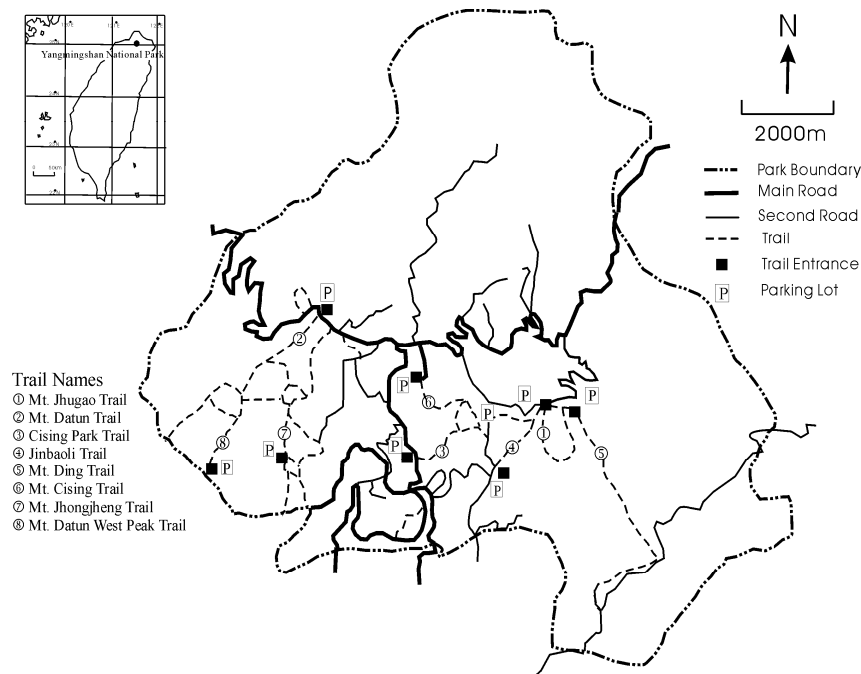


Figure 1: Trail network in Yangmingshan National Park.

<sup>1</sup> Department of Geography, National Taiwan Normal University, Taipei, Taiwan ROC, [89423001@ntnu.edu.tw](mailto:89423001@ntnu.edu.tw) (Lin) and [sihsu@ntnu.edu.tw](mailto:sihsu@ntnu.edu.tw) (Hsu)

<sup>2</sup> Department of Parks, Recreation and Tourism Management, North Carolina State University, Raleigh, NC, USA, [Leung@ncsu.edu](mailto:Leung@ncsu.edu)

We adopted an after-the-fact approach to investigate the trail conditions, taking samples at every 20m on eight trails with a total length of 16km. We constructed the Surface Effectiveness Index (SEI) to quantify trail surfacing effectiveness based on two main parameters: the designed surfaced width and the bare soil width beyond the surfaced tread. The SEI was calculated for six different surfacing types, including rock slabs, rock steps, wooden frame turnpike, wooden frame steps, gravel and concrete. The SEI values were analysed in association with environmental (topography and vegetation), trail design (surface width and materials) and use-related variables using multiple regression and other statistical techniques.

Our results show that the dominant forms of recreation impact on surfaced trails of Yangmingshan National Park are widening and erosion around surfaced trail treads. In terms of tread widening, the average bare soil width beyond the surfaced treads is greater at wooden frame turnpikes. Trails surfaced with rock steps and wooden frame steps exhibit higher levels of soil erosion. Surfacing with gravel appears to be more effective in controlling bare soil width than that with rock slabs. Results from multiple regression analysis indicate that slope alignment angle (angle between trail slope and landform slope) and lateral expansion potential along trail corridors had a significant relationship with trail surfacing effectiveness as represented by SEI, with slope alignment angle showing a positive influence on surfacing effectiveness and lateral expansion potential showing a negative influence. Trails surfaced with rock slabs or rock steps appear to be more effective in minimising trail impacts in open grassy areas than in forest areas.

While this empirical study was limited to a small number of trails in one protected area, our work illustrates the utility of examining trail surfacing effectiveness by applying the SEI and reveal some interesting relationships between trail surfacing effectiveness and environmental attributes. The research findings may inform future decisions of trail surfacing and maintenance in high-use protected areas in Taiwan and East Asia.

## References

- Chen, J.-X. (2004). Guide to Yangmingshan National Park—Vegetation. YMSNP Administrative Bureau.
- Hill, W., & Pickering, C. M. (2006). Vegetation associated with different walking track types. *Journal of Environmental Management*, 78(1), 24-34.
- Leung, Y.-F., & Marion, J. L. (2000). Recreation impacts and management in wilderness: A state-of-knowledge review. In Cole, D. N., McCool, S. F., Borrie, W. T., and O'Loughlin, J. (comps.), *Wilderness Science in a Time of Change Conference - Volume 5: Wilderness Ecosystems, Threats, and Management* (pp. 23-48). Ogden, UT: USDA Forest Service, Rocky Mountain Research Station.
- Nepal, S.K., & Way, P. (2007). Characterizing and comparing backcountry trail conditions in Mount Robson Provincial Park, Canada. *Ambio* 36(5), 394-400.
- YMSNP (Yangmingshan National Parks) (2009). YMSNP website – <http://www.ymsnp.gov.tw/>
- Pickering, C. M., Hill, W., Newsome, D., & Leung, Y.-F. (2010). Comparing hiking, mountain biking and horse riding impacts on vegetation and soils in Australia and the United States of America. *Journal of Environmental Management*, 91(3), 551-562.

# Future opportunities in recreation ecology research: Lessons learned from the USA

**Christopher Monz<sup>1</sup>**

Keywords: recreation ecology, visitor impacts, protected area management

Recent trends in outdoor recreation in the United States suggest that public interest in nature-based recreation and appreciation of natural areas continues to grow (Cordell 2008). Participation in most outdoor activities has increased significantly since 1960, with activities such as camping, bicycling, canoeing and skiing increasing as much as tenfold during this time (Cordell et al. 2008). Worldwide, participation in recreation and tourism in protected areas exhibit similar trends, although no global tabulation of park usage is available (De Lacy & Whitmore 2006). Associated with this increasing visitation are human disturbances and impacts to the environmental conditions of public parks, forests, wilderness, and private lands open to visitation.

Over the same timeframe, the field of recreation ecology has developed, largely in response to land managers' needs to maintain natural resource conditions in the face of rising demand for outdoor recreation opportunities. Despite a considerable effort that now amounts to over one thousand studies (Liddle 1997; Hammitt & Cole 1998; Newsome et al. 2001), most investigations seem to do little to move the field forward conceptually. Largely this is the result of studies not being theory-based and seldom building on previous work. To some degree, this reflects the fact that there have been few attempts to define the 'cutting-edge' of recreation ecology research or to articulate a vision for where it should go in the future.

This paper provides both a retrospective—a synthesis of what is well studied in recreation ecology—and a commentary on future directions that appear the most promising for continued development of the field. In order to fulfill these objectives, we provide a concise summary of the primary research generalisations in recreation ecology, and identify and describe four primary themes to guide the further development of recreation ecology research. With a focus on these future research themes, recreation ecology research will occupy a more primary role in sustainable recreation/tourism and protected area conservation strategies.

First, further theoretical development is needed, both in terms of testing existing theory and in developing new generalizations for parameters and systems thus far unexamined conceptually. The use-impact relationship (Hammitt & Cole 1998) stands as one of the few well-developed research generalisations and future work could continue to test this relationship and explore new response variables.

Second, recreation ecology has limited predictive capabilities and expansion of these capabilities is essential for further growth of the field. Many opportunities exist to expand predictive capabilities, including modelling specific stress responses of additional ecosystem attributes to spatially-based models that offer landscape level predictive capabilities of ecosystem responses under varying use scenarios. Liddle (1997) described this opportunity as a combination of the Cole & Bayfield (1993) experimental design and mapping techniques, but to date little work of this nature has been conducted.

Third, the effects of recreation on large-scale processes should be a consideration for protected area managers and scientists. In recreation ecology, we currently have knowledge of the stress response of variables at only one spatial scale— the small plot level. It has been suggested that some recreation impacts, such as grazing by recreational animals, displacement of wildlife, and exotic species introductions and dispersal, do have large spatial scale implications (Hammitt and Cole 1998; Cole 2002), but currently these impacts are some of the least studied. Moreover, emerging recreation activities, such as off highway vehicle use (OHVs), clearly have the potential to affect very large areas and alter ecosystem processes.

Last, the scope of recreation ecology needs to be broadened to include less easily observable responses and a wider geographic representation of research studies. Some relatively unstudied aspects include

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<sup>1</sup> Department of Environment and Society and The Ecology Center, Utah State University, Logan, UT 84322, USA, [chris.monz@usu](mailto:chris.monz@usu)

trampling effects on soil biota and the effects of harassment on the reproductive capacity of animal populations. In particular, the effects of recreation on ecological processes, such as biogeochemical cycling and plant-soil interactions, are poorly understood. Although some recreation ecology research has been conducted on every continent, relatively few studies have been conducted outside Europe, Australia and North America. Enlarging the geographic scope of work should provide insights into the generalisability of findings (Pickering et al. 2010), factors that cause variation in stress response, and unique impact issues.

## References

- Cole, D.N. & Bayfield, N.G. (1993) Recreational trampling of vegetation: standard experimental procedures. *Biological Conservation* 63:209-215.
- Cole, D.N. (2002) Ecological impacts of wilderness recreation and their management. In: J. Hendee & C. Dawson (eds) *Wilderness management: stewardship and protection of resources and values*, p 413-459. Fulcrum Publishing, Golden, CO.
- Cordell, H.K. (2008). The latest on trends in nature-based outdoor recreation and tourism. *Forest History Today* Spring:4-10
- Cordell, H.K., Betz, C.J. & Green, G.T. (2008) Nature-based outdoor recreation trends and wilderness. *International Journal of Wilderness* 14(2):7-13.
- De Lacy, T. & Whitmore, M. (2006) Tourism and recreation. In: M. Lockwood, G. Worboys & A. Kothari (eds) *Managing protected areas: a global guide*, p. 497-527. Earthscan, London.
- Hammitt, W.E. & Cole, D.N. (1998) *Wildland recreation: ecology and management*. Second Edition. John Wiley, New York.
- Liddle, M.J. (1997) *Recreation ecology: the ecological impact of outdoor recreation and ecotourism*. Chapman and Hall, London
- Newsome, D., Moore, S.A. & Dowling, R.K. (2001) *Natural area tourism: ecology, impacts, and management*. Channel View Books, Clevedon.
- Pickering, C.M., Hill, W., Newsome, D. & Leung, Y-F. (2010) Comparing hiking, mountain biking and horse riding impacts on vegetation and soils in Australia and the United States of America. *Journal of Environmental Management* (91/3), p 551-562.

# Public support for the protection of nature and landscape explained by ethnicity and images of nature

Birgit Elands<sup>1</sup>, Arjen Buijs<sup>1</sup>

Keywords: images of nature, nature bonding, ethnicity, public support, lay people

Despite the growing cultural diversity in many European countries, nature recreation is still a very “white” activity; immigrants scarcely visit non-urban green areas. Nature conservation organisations have also recognised a lack of immigrants in their memberships (Natuurmonumenten, 2007). In this context, the Dutch Ministry of Agriculture, Nature and Food Quality has expressed concern about the limited support that the expanding immigrant community shows for protecting natural landscapes. They wish to gain deeper insight into the type of Dutch landscapes that immigrants prefer.

Some 11% of the Dutch population consists of non-Western migrants, of which the majority originates from two Islamic countries, Turkey and Morocco (CBS, 2007). Prior research has suggested that different perceptions of nature and landscape may be related to this limited nature bonding and support for nature and landscape protection (amongst others Zube and Pitt, 1981; Johnson et al., 2004; Stodolska and Livengood, 2006). Using the concept of images of nature (Buijs, 2009), cultural differences in meanings attached to nature can be explored. Our aim is to gain insight into the images of nature amongst native Dutch people and immigrants from Turkey and Morocco, and to relate this to nature bonding and public support for nature and landscape protection.

Table 1: Interaction with nature as well as support for nature and landscape protection of native Dutch and immigrants and people with different images of nature

	Nature interaction				Support for protection	
	Know about (% yes)	If known, use (amount of visits / year)	Attach-ment (scale from 1-10)	Future concern (scale from 1-10)	Nature (scale from 1-5)	Landscape (scale from 1-5)
<i>Origin</i>						
Native Dutch people	93	22.9	6.7	8.0	4.6	4.0
Immigrants	57	6.2	5.3	6.0	4.3	3.9
<i>Within immigrants</i>						
First-generation	51	5.5	5.4	6.0	4.3	4.0
Second-generation	74	7.6	5.2	6.1	4.2	3.7
<i>Images of nature</i>						
Wilderness	85	17.6	6.4	7.5	4.5	3.9
Inclusive	73	18.0	6.5	7.7	4.5	4.2
Functional	64	9.9	5.7	6.7	4.2	3.9

Figures in italics are not statistically significant. Know about: Cramer's V = 0.41 \*\*\* (origin), 0.22 \*\*\* (within immigrants), 0.20 \*\*\* (images of nature). Use:  $\eta^2$  = (origin). Attachment:  $\eta^2$  = 0.11 \*\*\* (origin) 0.02\* (images of nature). Future concern:  $\eta^2$  = 0.23\*\*\* (origin), 0.05\*\*\* (images of nature). Support for nature protection:  $\eta^2$  = 0.04 \*\*\* (origin), 0.04 (images of nature). Support for landscape protection:  $\eta^2$  = 0.04 (within immigrants), 0.03 (images of nature).

A quantitative survey was carried out amongst residents of three Dutch cities, namely Utrecht, Haarlem and Arnhem. Both native Dutch people and people of Moroccan or Turkish origin were questioned about their relation with two well-known nature areas close to the city they live, their images of nature and their support for nature and landscape protection. In total, 300 immigrants and 318 native Dutch people were interviewed; in each town, each group comprised a minimum of 100 people of each group. The overall response rate was 47%.

Three images of nature were described: (i) the wilderness image, which focuses on ecocentric values and the independence of nature; (ii) the functional image, which focuses on anthropocentric values and intensive

<sup>1</sup> Forest and Nature Conservation Policy Group, Wageningen University, P.O. Box 68, Wageningen, The Netherlands, [birgit.elands@wur.nl](mailto:birgit.elands@wur.nl), [arjen.buijs@wur.nl](mailto:arjen.buijs@wur.nl)



management and (iii) the inclusive image, which focuses on ecocentric values and an intimate relationship between humans and nature. Native Dutch people are strong supporters of the wilderness image, while immigrants generally support the functional image. Second-generation immigrants seem to take a middle position between first-generation immigrants and native Dutch in their support for the various images of nature. These results could be a first sign of acculturation of second-generation immigrants, where they begin incorporating values from native Dutch culture into their own culture (see also Buijs et al., 2009).

It appears that ethnicity plays an important role in relation to nature interaction and public support for nature and landscape protection. Autochthonous people more often know nearby nature areas, make more use of it (see also Peters et al., 2010), are more attached to it and are more concerned about the future development of it. They are also more in favour of support of nature and landscape protection.

Again, acculturation processes seem to play some role in the sense that immigrants who are born in the Netherlands know more often about the existence of nearby nature areas and seem to visit slightly more often these areas. However, their support and future concern is not higher than those immigrants who are born in Turkey or Morocco. People with a wilderness and inclusive nature view have a more intensive relation with nature, although there is not much difference with people with a functional image if support for nature and landscape protection is considered.

The limited attachment of immigrants to and future concern for nearby nature might be a reason for concern. Notably, with respect to the non-existing differences between first and second generation immigrants. Forest and nature managers need to take notice of it and search for possibilities to strengthen the relation with immigrants groups.

## References

- Buijs, A. E. (2009). *Public Natures. Social Representations of Nature and Local Practices*. Wageningen University. Wageningen, Wageningen University. PhD.
- Buijs, A.E., B.H.M. Elands, & F. Langers (2009) No Wilderness for Immigrants: Cultural Differences in Images of Nature and Landscape Preferences. *Landscape and Urban Planning* 91(3): 113-123.
- CBS (2007). *Demographic statistics of Dutch cities*, CBS, Voorburg (in Dutch).
- Johnson, C.Y., Bowker, J.M., Bergstrom, J.C., Cordell, H.K. (2004). Wilderness values in America: does immigrant status or ethnicity matter? *Society and Natural Resources* 17, 611–628.
- Peters, K., Elands, B. & Buijs, A. (2010). Social interactions in urban parks: Stimulating social cohesion? *Urban Forestry and Urban Greening* 9(2): 93-100.
- Stodolska, M., Livengood, J.S. (2006). The influence of religion on the leisure behavior of immigrant Muslims in the United States. *Journal Of Leisure Research* 38: 293–320.
- Zube, E.H., Pitt, D.G. (1981). Cross-cultural perceptions of scenic and heritage landscapes. *Landscape Planning* 8: 69–87.

## Adolescents' outdoor recreation – a comparative study

Sandra Gentin<sup>1</sup>

Keywords: ethnic groups, scouts, case-study, Denmark

When visiting Danish parks and landscapes it becomes obvious that the outdoor recreation of immigrants and their descendents differs from that of ethnic Danes. Since the beginning of 1980s North American Scholars have investigated the differences in recreational behaviour and needs of African, Hispanic, Asian and European Americans (e.g. Washburne 1978, Carr & Williams 1993, Floyd 1998, Stodolska 2000, Walker et al. 2001). However, this tradition has not had any impact on studies of outdoor recreation in Denmark although it dates back to the 1970s (e.g. Koch 1978, Jensen 1999, Kaae & Møller Madsen 2003) and probably comprises of information about the habits, preferences and demands also of non-ethnic Danes. Consequently, Danish policy makers and park- and landscape planners and managers are not able to satisfy the recreational demands of immigrants and their descendents on an informed basis.

This comparative study of adolescent ethnic Danes, immigrants and descendents encounter with outdoor recreation is the first study of its kind in Denmark. Results show that there seems to be a need for re-thinking the planning for outdoor recreation in the municipalities. The existing administrative system, where each department of a municipality is only responsible for one aspect of life, seems not to work for non-ethnic Danes as they describe barriers for participation in outdoor recreation crossing administrative boundaries. To overcome these barriers, collaboration between the different departments of the municipalities (culture and leisure; social and health; and park and landscape) seems to be necessary.

The study has been conducted as a qualitative case-study (Kvale 1983, Yin 2003) of two scout groups, one in Varde (Western Jutland) and one in Copenhagen. The first group was initiated in the neighbourhood and the latter by an organisation. Preliminary findings show that the group originating from the neighbourhood was the most successful in maintaining adolescent immigrants and descendents as members. Part of the reason was found to be in the first contact between a new member and the organisation and the way outdoor recreation is introduced. Interviews showed further that fear of dangerous animals in nature is one of the reasons why adolescent immigrants and descendents do not engage in outdoor recreation as often as adolescent ethnic Danes do. However, embodiment of outdoor recreation skills and the development of these are therefore important for especially the adolescent immigrants and descendents, because embodiment of outdoor recreation activities leads to lesser or no fear of animals in nature. The results will be further analysed with regard to adolescents' motivation for outdoor recreation and potential barriers with respect to participation in outdoor recreation activities. Results of the interviews will be validated through questionnaires with 8<sup>th</sup>-10<sup>th</sup> grade pupils (age 14-17 years) in schools in both case areas.

### References

- Carr, D.S. & Williams, D.R. (1993). Understanding the Role of Ethnicity in Outdoor Recreation Experiences. In: *Journal of Leisure Research*, 25 (1): 22-38.
- Floyd, M.F. (1998). Getting beyond marginality and ethnicity: The challenge for race and ethnic studies in leisure research. In: *Journal of Leisure Research*, 30 (1): 3-22.
- Jensen, F.S. (1999). Forest recreation in Denmark from the 1970s to the 1990s. The Research Series, Vol. 26. Danish Forest and Landscape Research Institute, Hørsholm. 166p.
- Koch, N. E. (1978). Forest Recreation in Denmark, Part 1. The use of the country's forests by the population. København.
- Kvale, S. (1983). The Qualitative Research Interview - A Phenomenological and A Hermeneutical Mode of Understanding. In: *Journal of Phenomenological Psychology*, 14(2): 171-196.
- Stodolska, M. (2000). Looking beyond the invisible: Can research on leisure of ethnic and racial minorities contribute to leisure theory? In: *Journal of Leisure Research* (32/1), p 156-160.

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<sup>1</sup> Forest & Landscape Denmark, University of Copenhagen, Rolighedsvej 23, 1958 Frederiksberg C, Denmark, [sgentin@life.ku.dk](mailto:sgentin@life.ku.dk)

Walker, G.J., Deng J.Y. & Dieser R.B. (2001). Ethnicity acculturation, self-construal, and motivations for outdoor recreation. In: *Leisure Sciences* (23/4), p 263-283.

Washburne, R. (1978). Black under-participation in wildland recreation: Alternative explanations. In: *Leisure Sciences* 1(3): 175-189.

Yin, R.K. (2003). *Case study research. Design and methods*. 3. ed. California.

# **Migrants' perspectives on urban forests: the influence of a migration background on patterns of forest use and perception**

**Marion Jay<sup>1</sup>, Ulrich Schraml<sup>1</sup>**

Keywords: empirical social research, forest recreation, Germany, migration

## **Introduction**

Throughout the world, big cities are attractive destinations for migrants of all origins. The urban population is increasingly characterized by a great diversity, especially regarding its cultural and ethnic composition. In the same time, the global trend of urbanization amplifies the use of urban green spaces and city forests for recreation. In this context, it has become a crucial task for forests managers and local planers to understand the values of forests for people.

In Germany, almost 20 % of the population are considered to have a migration background, being either immigrants or descendants of immigrants. Until now, very few studies on outdoor recreation focused on migrant groups, which indicates a need for further research (Dömek et al. 2006, Jay and Schraml, 2009). The present study aims at expanding the knowledge by exploring the following questions: how do people with a migration background perceive and use urban forests? Is it possible to identify typical patterns of perception and use? To what extent does the migration background influence the perception and the recreational use of urban forests?

## **Theoretical approach**

Given the lack of an appropriate and developed theory, the conceptual framework is based on three different theory fields comprising of the forest recreation research, the sociology of leisure and the critical sociology of migration, ethnicity and identity. In the forest recreation research, the recreational forest use is defined as a leisure activity characterized by its frequency, the activity practiced, the place visited, the social pattern and the motives of the visit. In this study, leisure is considered to be structured by social dimensions such as age, gender, social status, ethnic or religious belonging (Lüdtke 2001). Finally, migration is conceptualized as a socially constructed notion. Accordingly, the motives for everyday action are complex and various; they depend on a range of different factors rather than only on the migration background (Riegel 2004, Sackmann et al. 2005, Schmidt-Lauber 2007).

## **Material and methods**

The authors chose a qualitative approach in order to thoroughly explore the various subjective perspectives on urban forests. Face-to-face and problem-centered interviews were conducted in the city of Berlin and the metropolitan area of Stuttgart, Germany. At both sites, the study concentrates on three groups: people with a Turkish migration background, people with a Russia-German migration background and people without a migration background. The interviewees were selected through a theoretical sampling based mainly on the criteria of age, gender, neighborhood, relationship to forests, profession, life situation and migration background (e.g. 1st or 2nd generation). In total, 42 interviews were conducted, the distribution over the 3 cited groups was equal and a great variety of cases could be achieved.

## **Outline of the results**

The interview covered three main topic areas: 1) the perception and recreational use of urban forests; 2) abstract views on forests and nature and their construction in relation to the interviewees' childhood and youth; 3) general leisure patterns, especially the priorities in leisure activities and the use of other city green spaces.

On the one hand the results will provide an insight in everyday practices of migrants and non-migrants concerning their outdoor recreation patterns. On the other hand, the broadened theoretical framework which includes aspects of the leisure organization will allow to analyze the social construction of these

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<sup>1</sup> Institute of Forest and Environmental Policy, Albert-Ludwigs-Universität Freiburg, Tennenbacherstraße 4, D-79085 Freiburg i.Br. / Germany, Marion.Jay@ifp.uni-freiburg.de; Ulrich.Schraml@ifp.uni-freiburg.de

practices. Beyond a mere description of similarities and differences in perception and use patterns, a comparison of different influencing factors will then be possible among them the migration background.

## References

- Dömek, C., Guleş, O., Piniek, S. and Prey, G. (2006). In: Hohn, U. und Keil, A. (Eds.), Kurzbericht zum Projekt Stadtnatur –Wahrnehmung, Bewertung und Aneignung durch türkische MigrantInnen im nördlichen Ruhrgebiet unter besonderer Berücksichtigung von Industriewaldflächen. Ruhr-Universität Bochum, Universität Dortmund, Land Nordrhein-Westfalen.
- Jay, M. and Schraml, U. (2009). Understanding the role of urban forests for migrants – uses, perception and integrative potential. In: *Urban Forestry and Urban Greening* (8): 283-294.
- Lüdtke, H. (2001). *Freizeitsoziologie. Arbeiten über temporale Muster, Sport, Musik, Bildung und soziale Probleme*. Wissenschaftliche Paperbacks, 5. LIT Verlag, Münster.
- Riegel, C. (2004). *Im Kampf um Zugehörigkeit und Anerkennung. Orientierungen und Handlungsformen von jungen Migrantinnen. Eine sozio-biographische Untersuchung*. IKO Verlag für Interkulturelle Kommunikation.
- Sackmann, R., Schultz, T., Prümm, K. and Peters, B. (2005). *Kollektive Identitäten. Selbstverortungen türkischer MigrantInnen und ihrer Kinder*. Peter Lang, Europäischer Verlag der Wissenschaften, Frankfurt am Main.
- Schmidt-Lauber (2007). *Ethnizität und Migration. Einführung in Wissenschaft und Arbeitsfelder*. Reimer Verlag.

# Contemporary Dutch literature and nature images: Analyses of nature images in Dutch literature of autochthonous writers and allochthonous writers with a Moroccan background

Marjolein Kloek<sup>1</sup>, Matthijs Schouten<sup>1</sup>

Keywords: nature images, literature, ethnic groups, Morocco, the Netherlands

## Introduction

Since the second half of the twentieth century, the role of the ordinary citizen in nature conservation has become more important in The Netherlands. The combination of a new awareness of nature and the environment and the trend of democratization has led to critical individuals wanting to influence decisions in the use and management of nature. Consequently, it is important to understand how citizens perceive, interpret and evaluate nature. Traditionally, research is directed towards native Dutch people. Considering the growing percentage of allochthonous people (immigrants) in The Netherlands – currently around 20%, and it is expected to grow to 29% in 2050 (Garsen & van Duin 2009) – it is important to gain insight into their understanding of nature as well; especially of allochthonous people from the Islamic cultural area, as most non-western immigrants in the Netherlands originate from this region.

## Theory

An often used concept to analyze individuals' perceptions, interpretations and evaluation of nature is 'images of nature' (for example Keulartz et al. 2000, Buijs et al. 2009). The 'images of nature' concept emphasizes that there is no singular objective idea of nature (Macnaghten & Urry 1998). As Schouten (2005:9) explains: "Nature does not know itself as nature. We call her as such. In the appointment of nature lies an image: our image of nature". Nature images consist of a cognitive, normative and expressive dimension (Keulartz et al. 2000).

Empirical studies in the Netherlands have shown that cultural background influences nature images (Buijs et al. 2009). However, empirical research incorporating all three dimensions of nature images is scarce and almost all research is done using questionnaires or interviews. Another way to research nature images is by analyzing literature. Literary artefacts emanate from society and are symbolic practices implicitly or explicitly expressing a culture's norms and values (Beheydt 2002). Literary texts are never totally new, but are based on 'cultural materials': values and beliefs in society, such as ideas about nature (Korsten 2002). The analysis of literary texts makes it possible to penetrate cultures and social practices.

## Methods

In the presented empirical study, based on Kloek (2008), nature images in contemporary Dutch literature of autochthonous writers and allochthonous writers of Moroccan background are analyzed in three steps. First what is written about nature is analyzed by means of a phenomenological 'close reading'. Hereby the concept of nature is taken very broad, to include as many ideas on nature as possible. Secondly, the function of nature in the text is analyzed, using elements of story analysis. Finally, applying discourse analysis, nature images are derived from the text fragments.

Four novels of autochthonous writers (Weijts, Giphart and Enter) and six novels of allochthonous writers (Benali, Bouazza and Novaire) coming from the Islamic cultural area, namely Morocco, are analyzed. All novels are written between 2003 and 2007 and all authors are nominated for one of the three most well-known Dutch literary awards (AKO literatuurprijs, Libris Literatuur Prijs or NS Publieksprijs).

## Results

On the cognitive dimension of nature images, differences between novels of allochthonous and autochthonous writers are found. In novels of allochthonous writers, nature is especially seen as nature-for-use and human beings are part of nature. Natural elements are often given human characteristics (personification).

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<sup>1</sup> Nature Conservation and Plant Ecology Group, Wageningen University and Research, PO Box 47, 6700 AA Wageningen, The Netherlands, [marjolein.kloek@wur.nl](mailto:marjolein.kloek@wur.nl), [matthijs.schouten@wur.nl](mailto:matthijs.schouten@wur.nl)

Personification of natural elements forms a classical motive in Arabic literature (Schouten 2005). In novels of autochthonous writers wilderness is valued very positive, while in novels of allochthonous writers Arcadian nature is evaluated more positively. The appreciation of wilderness is a rather recent phenomenon in the Netherlands – until Romanticism wilderness was usually depicted as a frightful place (Schouten 2005, Buijs 2009). In the Islamic cultural area, the Romantic body of thought has not been very present.

Regarding the normative dimension, both differences and similarities between novels of allochthonous and autochthonous writers are found. Nature images in analyzed books of allochthonous and autochthonous writers are often moderately anthropocentric or ecocentric. Only in books of allochthonous writers does nature has a religious or ritual function. Explicit ethical conflicts regarding nature are only found in books of autochthonous authors.

The expressive dimension of nature images is the least present dimension in analyzed books. When present, the subjective, affective experience of nature is the most common form of experience. In the analyzed novels the expressive dimension is not closely related to the other two dimensions of nature images.

## References

- Beheydt, L. (2002). Culturele identiteit, taal en artistieke expressie. Rede uitgesproken bij de aanvaarding van het ambt van bijzonder hoogleraar, vanwege het Fonds A.N.V.-Tijmen Knecht, op het vakgebied van De Nederlanden in de wereld aan de Universiteit Leiden op vrijdag 1 maart 2002. <https://openaccess.leidenuniv.nl/bitstream/1887/5261/1/OR026.pdf>
- Buijs, A.E. (2009). Public natures: social representations of nature and local practices. PhD-thesis Wageningen University. Wageningen.
- Buijs, A.E., Elands, B.H.M. & Langers, F. (2009). No Wilderness for Immigrants: Cultural Differences in Images of Nature and Landscape Preferences. *Landscape and Urban Planning*, 91(3): 113-123.
- Garsen, J. & van Duin, C. (2009). Allochtonenprognose 2008-2050: naar 5 miljoen allochtonen. In: *Bevolkingstrends* (2/2009), p 14-21.
- Keulartz, J., Swart, S. & van der Windt, H. (2000). Natuurbeelden en natuurbeleid. Theoretische en empirische verkenningen. NOW Ethiek & Beleid 00/1. Den Haag.
- Kloek, M.E. (2008). Natuurbeelden in de hedendaagse Nederlandse literatuur: een vergelijking tussen autochtone schrijvers en allochtone schrijvers afkomstig uit het islamitisch cultuurgebied. MSc-thesis Wageningen University. Wageningen.
- Korsten, F. (2002). *Lessen in Literatuur*. Nijmegen.
- Macnaghten, P. & Urry, J. (1998). *Contested natures*. London.
- Schouten, M.G.C. (2005). *Spiegel van de natuur: het natuurbeeld in cultuurhistorisch perspectief*. Utrecht.

## **What enables or prevents diverse groups, including black and ethnic minorities, from using and enjoying British woodlands?**

**Liz O'Brien<sup>1</sup>, Bianca Ambrose-Oji<sup>2</sup>, Jake Morris<sup>1</sup>**

Keywords: black and minority ethnic groups, diversity, social inclusion, trees, woods

The Social and Economic Research Group is part of Forest Research, the research agency of the Forestry Commission in Britain. The group is engaged with a wide range of research exploring how trees, woods and forests (TWF) impact on people's well-being and quality of life, how they can contribute to community development, and how knowledge from research feeds into policy, practice and the governance processes that contribute to and inform various forest management and decision-making processes.

This presentation will report on a range of research undertaken by the group and funded by the Forestry Commission, including an evaluation of woodland-based 'Active England' projects, the 'Equality and inclusion of social diversity review' and the 'Urban health inequalities review' and draw out some key issues and trends relating to diverse social groups and their engagement with TWFs in Britain (Ambrose-Oji, 2009; O'Brien and Morris, 2009; O'Brien et al. 2010). We will outline some of the current policies and legislation that are driving these trends. For example, there are now nine protected categories in the equality bill in Britain including: age, disability, gender, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion/belief and sexual orientation. Some of these categories have specific legislation associated with them. Another potential strand, social deprivation, is currently also being considered for inclusion.

A further key focus of our presentation is the social distribution of well-being and health benefits associated with use of TWF. This is particularly relevant to key social policy agendas within contemporary Britain, where there are increasing concerns about rising obesity levels, associated low levels of physical activity amongst the general population and critically, the social distribution of these health problems. A recent strategic review of health inequalities in England called the Marmot Review (2010) outlines that health inequalities are entrenched in particular parts of the country. The Review identifies a role for trees and green space in reducing health inequalities by acknowledging the importance of green infrastructure for urban healthy living and encouraging physical activity for recreation and active travel. Well designed and maintained green spaces are said to encourage social interaction, exercise, play and contact with nature.

Qualitative and quantitative data will be presented as we explore questions such as: What barriers do particular groups face in accessing and enjoying woodlands?; What activities and approaches might enable excluded or under-represented groups to use and benefit from woods?; What are the appropriate policy and management responses by public agencies and organisations such as the Forestry Commission? Our research highlights important issues concerning accessibility and illustrates a range of barriers that prevent particular groups from visiting woodlands. These include psychological barriers such as concerns about personal safety and lack of confidence. Socio-cultural barriers include social/cultural norms of use for different groups; there can also be apprehension about other types of users in woodlands and their activities which may cause conflict between different groups. There are a range of physical and structural barriers including a lack of transport to reach woodlands and concerns about sites that appear to be poorly managed and show evidence of anti-social behaviour such as rubbish dumping and car abandonment (Morris, et al., 2010). We conclude that outreach, and led and supported activities, and specifically designed and targeted projects can be useful approaches in engaging 'hard-to-reach' audiences. These types of interventions will often require organisations such as the Forestry Commission to adopt an adaptive approach to policy and management, requiring them to work in greater partnership with other organisations who have more experience and skill in working with specific groups. Investing in training, new skills and knowledge amongst existing staff will also be important. Focusing on issues of the quality of woods and their accessibility is important, rather than solely on proximity and size. Promoting the well-being benefits of

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<sup>1</sup> Forest Research, Social and Economic Research Group, Alice Holt Lodge, Farnham, Surrey GU10 4LH, [liz.obrien@forestry.gsi.gov.uk](mailto:liz.obrien@forestry.gsi.gov.uk), [jake.morris@forestry.gsi.gov.uk](mailto:jake.morris@forestry.gsi.gov.uk)

<sup>2</sup> Forestry Commission Wales Office, Social and Economic Research Group, Gwydr Uchaf, Llanrwst, Conwy, Wales LL26 0PN, [Bianca.ambrose-oji@forestry.gsi.gov.uk](mailto:Bianca.ambrose-oji@forestry.gsi.gov.uk)



woodlands to diverse groups is less about providing large scale spaces and more about providing places where people have easy and routine access where they feel at ease.

## **References**

- Ambrose-Oji, B. (2009). Equality and Inclusion of Social Diversity with respect to Woods and Forests in the UK: An Evidence Review. Research Report, Forest Research. Alice Holt Lodge Farnham, Surrey.
- Marmot Review. (2010). Fair society, healthy lives. A strategic review of health inequalities in England. Marmot Review, London.
- Morris, J., O'Brien, L., Lawrence, A., Carter, C., Ambrose-Oji, B. and Peace, A. (in preparation 2010). Access for all? Barriers to accessing woodlands and forests in the UK.
- O'Brien, L. and Morris, J. (2009). Active England: The Woodland Projects. Report to the Forestry Commission, Edinburgh.
- O'Brien, L., Williams, K. and Stewart, A. (2010). Urban health and health inequalities and the role of trees, woods and forests in Britain: a review. Report to the Forestry Commission, Edinburgh.

## Urban public spaces: Different people, different wishes, different expectations?

**Karin Peters<sup>1</sup>**

Keywords: urban public spaces, ethnicity, meanings

Many leisure activities, from walking and cycling to sunbathing and having a picnic, take place in public spaces. Leisure spaces are dynamic settings defined by spatial and social circumstances (Slavin, 2004). Some places are repositories for long histories of visitor interaction with, and creation of, place (Stedman, 2006). Sometimes the places where we practice leisure are chosen because of the fact that these spaces fit with our demands e.g. walking in a forest takes place in a forest. Besides, often places are not chosen accidentally but chosen because we have a relation to certain places. Leisure spaces can provide the context for personal, communal, and political growth, particularly in a culturally safe and relevant context. Therefore “individuals interested in leisure cannot ignore the control of space, the segregation of space, and the effective exclusion of certain social groups from certain leisure spaces and places at particular times” (Henderson and Frelke, 2000, p.23).

As public spaces are used for leisure activities, these spaces can be contested social arenas, sites of division as well as cohesion, of negative as well as positive engagement, and of unequal power relations (Brewer, 2005; Bridge and Watson, 2002). Several researchers (Gobster, 2004; Ravenscroft & Markwell, 2000) have paid attention to urban public spaces, such as parks and streets, as places where inter-ethnic interactions take place. Urban parks are seen as relevant because they are often accessible to all groups and therefore different identities can be represented in these urban parks. Moreover they can be seen as possibly favourable spaces for social interaction, because urban parks are visited equally by various ethnic groups. This is in contrast to, for example, nature areas, which are visited more by non-immigrants (Buijs et al., 2009). Next to urban parks, other public spaces in neighbourhoods can be seen as safe places: a space between the safe homes and the unknown places further away. It can be seen as a kind of transitional space in which women especially can walk freely, and which is perceived as being safe, familiar and comfortable to spent time.

This study aims at creating a better understanding of the use and meanings of urban public spaces in a multicultural neighbourhood in the Netherlands. It is based on qualitative research in a neighborhood of a middle-sized city in the Netherlands. The research can be characterized as explorative and involved an interpretive approach in which the findings were interpreted in terms of the meanings that people bring to them. As such, it was an appropriate way to understand and examine the meanings that people construct and use to make sense of their experiences within a phenomenon (Denzin & Lincoln, 2003). I used observations and semi-structured interviews to gather information about the interactions in, and the meaning of, spatial settings for their users. In the course of the interviews issues of use, meaning, and interactions in public spaces were touched upon. Examples of questions are: How often are you in this park? Do you have any contact with others? What kind of contact? How do you feel about these contacts? Because I was interested in a cross-section of perspectives based on ethnicity and gender, I used a stratified purposeful sampling to capture major variations rather than to identify a common core, although the latter may also emerge in the analysis.

From my research it became clear that public spaces are important spaces for the identity of a neighbourhood. Moreover, public spaces can be seen as everyday spaces and as transitional spaces. In some public spaces, people were confronted with diversity, while other public spaces were inhabited by “people like me” as one respondent answered. I will show that the inhabitants appreciate cultural diversity but that this appreciation of diversity does not lead often to multicultural interactions that go beyond small talk in shops. However, positive feelings for and experience with diversity have a significant impact on peoples’ attitudes because it contributes to a more realistic view of multiculturalism based on everyday experiences. By taking individual experiences as a starting point, I will illustrate how various aspects like socio-cultural background and involvement in the neighbourhood intersect and can expose different leisure experiences in urban public spaces. Cultural integration occurs in common spaces and is furthered by

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<sup>1</sup> Wageningen University, PO Box 47, 6700 AA Wageningen, [Karin.Peters@wur.nl](mailto:Karin.Peters@wur.nl)

mutual understanding. In an increasingly multi-ethnic society, the challenge for local governments is to support these processes of cultural change. Thus, a better understanding of the role that urban public places can play in these processes is very valuable.

## References

- Brewer, J.D. (2005). The public and private in: C. Wright Mills' life and work. *Sociology*, 39 (4),: 661-677.
- Bridge, G., Watson, S. (2002). Lest power be forgotten: Networks, division and difference in the city. *Sociological Review*, 50 (4), p. 505-524+657.
- Buijs, A. E., Elands, B. H. M., & Langers, F. (2009). No Wilderness for Immigrants: Cultural Differences in Images of Nature and Landscape Preferences. *Landscape and Urban Planning*, 91: 113-123.
- Denzin, N. K. & Lincoln, Y. S. (Eds.) (2003). *Collecting and interpreting qualitative materials*, 2nd edition, Sage: London.
- Gobster, P.H. (2004). Managing Urban Parks for a Racially and Ethnically Diverse Clientele. *USDA Forest Service, Leisure Sciences* 24: 143-159.
- Henderson, K.A. and Frelke, C.E. (2000). Space as a vital dimension of leisure: The creation of place. *World Leisure*, 3: 18-24
- Ravenscroft, N. and S. Markwell (2000). Ethnicity and the integration and exclusion of young people through urban park and recreation provision. *Managing Leisure* 5(3):135-150.
- Slavin, S. (2004). Drugs, space, and sociality in a gay nightclub in Sydney. *Journal of Contemporary Ethnography*, 33 (3): 265-295.
- Stedman, R.C. (2006). Understanding Place Attachment Among Second Home Owners. *American Behavioral Scientist* 50-2: 187-205.

## Mountain bikers in forests and wildlife habitats

**Christiane Brandenburg<sup>1</sup>, Hemma Tomek<sup>1</sup>, Wolfgang Lexer<sup>2</sup>, Friedrich Reimoser<sup>3</sup>, Felix Heckl<sup>2</sup>, Andreas Muhar<sup>1</sup>**

Keywords: mountain biker, participatory research, decision process, visitor monitoring, visitor management

Forests are subject to different land use demands by various user groups. In particular recreational activities cause manifold impacts on wildlife, forests and their management. Balancing the production, protection, welfare and recreation functions of forests with their habitat function for wildlife and hunting interests poses enormous challenges to multiple-purpose and sustainable forestry. An integrated approach to the management of resulting land use conflicts requires balancing the interests of foresters with those of other land user groups and with public interests, based on a comprehensive view of the different user demands, conflict potentials and existing conflicts on a regional scale.

In the Biosphere Reserve Wienerwald - a multiple-use forest landscape in a peri-urban area - mountain bikers are perceived as one of the most problematic user groups both by land owners and most other land user groups. Within the participatory research project "Integrated Sustainable Wildlife Management in the Biosphere Reserve Wienerwald" - funded by the Academy of Sciences Austria within the MAB Program - cross-sectoral and integrated approaches to the management of conflicts between mountain bikers, forest and wildlife management have been developed. The project was embedded in a stakeholder participation process that was based on a multidisciplinary stakeholder panel (regional experts, NGOs, land owners, forest managers, active citizens, reserve managers, local authorities, hunters etc.). The applied methods of participatory research involved all major stages of participation: information, consultation, collaborative research, and participation in decision-making. A range of socio-empirical methods such as in-depth interviews, internet, mail and on-site visitor surveys were applied to identify both general conflict and synergy potentials and to evaluate their significance and consequences for sustainable land use in the Biosphere Reserve. Therefore location or trail related investigations towards specific locations had not been done.

From 14 in-depth interviews, evaluated by a content analysis, four main groups of problems have been identified: game damage and vulnerability of forests and agricultural crops to game damage, communication, behaviour patterns of land users in the forest and wildlife habitat leading, e.g., to spatio-temporal (seasonal, daily) overlapping of recreational activities with the life cycle of wildlife species; impacts on quality and usability of habitats for wildlife (e.g., due to tourist infrastructure, areas of high use intensity) (Reimoser et al. 2008). Among recreationists, mountain bikers were identified as the user group with a high conflict potential towards wildlife and sustainable forestry with the same conflict potentials Ingold mentioned (2005). The reasons, why mountain biking has such a negative impact on wildlife are for instance off trail biking, high speed and high surprising moment cause of low moving noises (Ingold 2005).

In addition to the in-depth interviews, 1134 on-site interviews have been done. Age distribution as well as types of occupation are similar to several other studies dealing with mountain biking. Mountain bikers are mainly between 20 and 40 years old, high educated and therefore have challenging positions (Cessford 1995).

The survey results indicate that the identified conflicts are mainly related to poor acceptance of existing temporal and trail-related restrictions for recreation activities, as well as to a lack of awareness about the impacts of recreational activities on wildlife and forests. About 80% of the interviewed mountain bikers know that temporal restrictions exist in the Biosphere Reserve, but only around 20% of the sample accept them. Mountain biking is forbidden during the winter and in the early morning or late evening. Still, 94% of the

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<sup>1</sup> University of Natural Resources and Applied Life Sciences – BOKU, Department of Spatial Landscape, and Infrastructure-Sciences, Institute for Landscape Development, Recreation and Environmental Planning, Peter Jordan Str. 82, 1190 Vienna, Austria, [christiane.brandenburg@boku.ac.at](mailto:christiane.brandenburg@boku.ac.at)

<sup>2</sup> Umweltbundesamt GmbH Wien, Department of Sustainable Development, Spittelauer Lände 5, 1090 Vienna, Austria

<sup>3</sup> Research Institute of Wildlife Ecology, University of Veterinary Medicine Vienna, Savoyenstraße 1, 1160 Vienna, Austria

interviewees practise their activity during the winter season, and a rate of about 40% (in spring and autumn) to 53% (in summer) cycle in the late evening. Regarding spatial regulations, 96% of the mountain bikers know that special trails have to be used. However, 67% of the cyclists state that they nevertheless leave the designated trails regularly; 64% out of that group cycle off-trail although they think that it strongly disturbs wildlife; 79% of all interviewed mountain bikers agree that disturbance of wild animals causes stress to them; 53% state that they know that disturbance hinders hunting, but only 16% are aware of any causal relationship between disturbance and game damage (Reimoser et al. 2008).

Based on the findings gained from the visitor surveys, tools and recommendations for conflict management have been developed that strongly take into account attitudes, knowledge, information, and behavioural aspects of recreationists. Results include sets of cross-sectoral sustainability criteria and indicators that aim towards an integrated conflict management strategy by explicitly considering interactions between visitor management and wildlife management.

## **References**

- Cessford, G. (1995). Off-road mountain biking: a profile of participants and their recreation setting and experience preferences, New Zealand.
- Ingold, P. (2005). Freizeitaktivitäten im Lebensraum der Alpentiere. Bern: Haupt Verlag.
- Reimoser, F., Lexer, W., Brandenburg, Ch., Zink, R., Heckl, F., Bartel, A., Ferner, B., Muhar, A. (2009). Integrated Sustainable Wildlife Management in the Biosphere Reserve Wienerwald. ISBN\_Online: 978-3-7001-6626-9 .

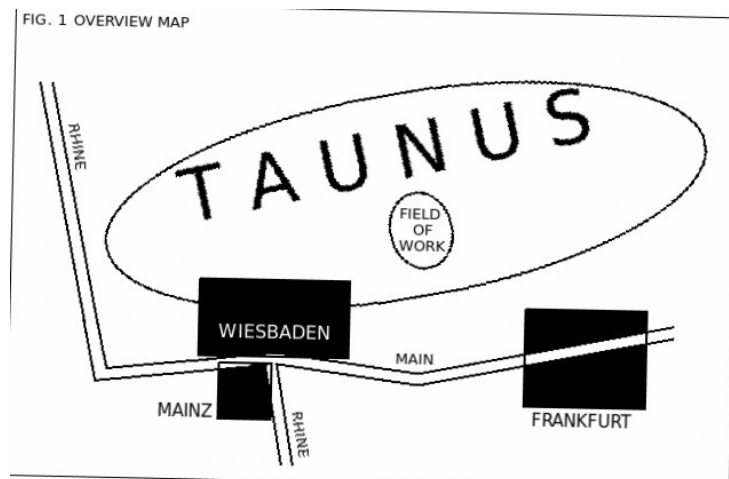
# Mountain Bikers' personal responsibility and knowledge versus the setting of close legal limits and standards in nature and landscape

Tilman Kluge

Keywords: mountain bike, tourism, outdoor sports, nature conservation, forestry law

Within Germany, federal national law (FRG 2009) guarantees rights of access to nature for recreation. For bikers these rights are limited to paths and/or roads (more Kluge 2004). However, people who enjoy the use of a mountain bike (MTB) increasingly go off the beaten path due to individual sporting ambitions, journalistic presentations of off-path biking and the need for training sites; These practices are in conflict with nature conservation law and ownership rights. Quite often, bikers do not see the negative consequences of their behaviour as they lack legal and ecological knowledge. Decision-makers on the other hand, who intend to regulate MTB practices, do not sufficiently understand the demands of properly operated MTB sports. Both factors contribute to a mutual distrust in a number of areas.

In order to solve these problems, concerted work aims to achieve win-win situations for outdoor sports, land management, nature conservation and wildlife ecosystems. This must replace an attitude of distrust by one of mutual understanding. Concerted action is needed to solve conflicts.



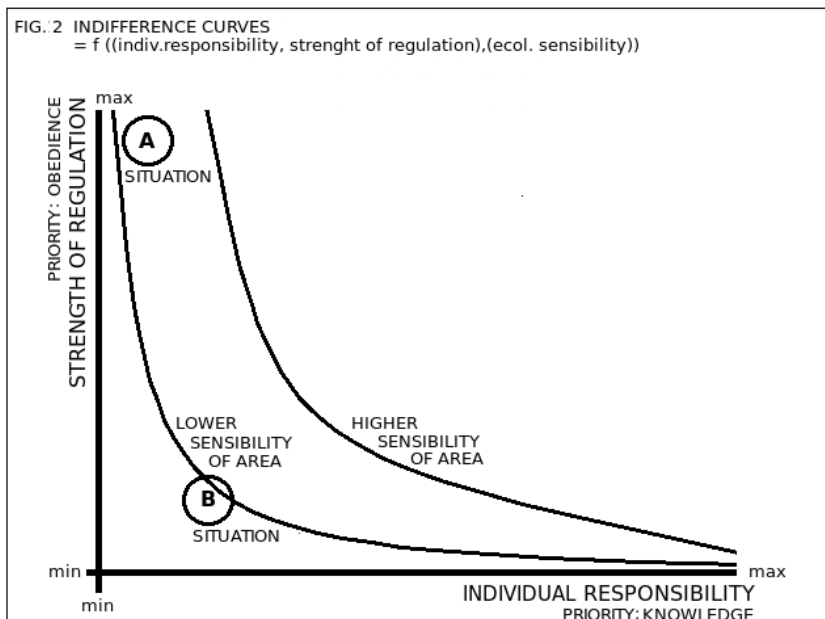
## Main actors

Three main groups, "bikers", "administration" and "forest owners" participate in this concerted work. Bikers are represented to a significant part by the German Mountain Biking Initiative (Deutsche Initiative Mountain Bike, DIMB, 20.000 members). The DIMB is also active in the region "Feldberg", which is situated in the Taunus mountains (Figure 1). It was induced as primary stakeholder to organise clarifying procedures on their own. As well, it was expected that DIMB should promote a prosperous coexistence of bikers with other people in the Feldberg-Region (IHK 2009). Administration, especially forest administration and the local county authority, assumes a high expertise to the bikers. Forest owners have to make essential decisions concerning their property.

Principally, these actors have to use legal instruments as an essential base for compulsory decisions-making. Agreements can support but not replace legal solutions. Solutions must comply with the status of protected areas as Natura 2000 habitats and nature reserves. The public authorities can enact further specifying access-regulations (Sammer et al. 2006).

## Pathways

There is a split in opinion between authorities and forest owners on one hand and DIMB on the other hand about the strength of regulating the possibility of trail use off-path and off-road with the MTB.



The following requirements are essential ingredients for successful work to avoid conflict: maximum transparency, avoiding bureaucracy, establishing citizen orientated management and respect for all partners, besides an administrative and expert supervision by public authorities and forest owners. The most strict approach is a "positive" solution (Kluge 2009) preferred by the authorities, but regularly disliked by the bikers. Routes are mapped by authorities: as standard tracks, for which a bike access is legally guaranteed and as special bike trails depending from local adapted official decisions (Fig. 2 - situation "A") like "single trails". Leaving those mapped routes by bike were an offence against relevant right and subject of penalty.

An alternative approach is the "negative" solution by locking out only specific routes, which cross ecological sensitive areas or where the use of the routes evidently effects a disturbance of deer or other ecosystems. Every biker will be made responsible and accountable, to demonstrate knowledge as which routes can be detected as legally guaranteed for use by bike. Developing new routes exceeding this guarantee would need the preceeding landowners' and authorities' permission. A written guideline concerning route qualities could be helpful. This solution shows an increasing risk of offences caused by biking off admissible routes.

A second alternative pathway - free of additional regulations - was the best solution based on a maximum of individual responsibility. It would require a high ecology awareness of bikers and consequently would set high standards for an ecological functional empathy of the users. A written guideline concerning not only route qualities, but moreover ecological items is required. DIMB is extrapolating existing relevant publications and says, this could be effective in a predictable time.

## Conclusions and outlook

Aspects for an effective strategy shall be taken in account as follows:

- The main goal means as little restrictions as possible and a maximum of individual responsibility (Fig.2 situation "B"), especially avoiding the absolute 'positive approach'.
- 'Round tables' (solving conflicts and misunderstanding) have no sustainable chance, to solidify themselves in a selfish culture. Therefore they shall be replaced quickly by workshops with common win-win goals based on a fair contest of different opinions and a possible synergy of the pathways. Participants of the entire procedure must be authorized to make decisions and need full information about progress and experiences.
- Contracts, although legally advised, can and will not be compulsory for unorganised bikers. Therefore public regulations are necessary to control outdoor sports.
- A developed outline of a first route system in the most sensible areas of the region is discussed primarily with forest owners and the authority for monument protection.
- DIMB shall strengthen the flow of knowledge and also legal R&D activities on how to define route types as subjects of open access.

Establishing mountain biking in nature and landscape on a sustainable basis needs best practice of applied ecological *and* legal analysis.

### **References**

DIMB - Deutsche Initiative Mountain Bike e.V. (2009), Legalize Downhill and Freeride, Schrobenhausen.

FRG - Federal Republic of Germany (2009). Constitution - Art. 14 (BGBl. III, 100-1), Federal Nature Conservation Law 29-7-2009 (BGBl. I p. 2542) - ch. 6, Federal Forestal Law 31-7-2009 (BGBl. I p. 2585) - §14, Berlin.

IHK – Industrie- und Handelskammer Frankfurt (2009). Faszination Taunus, Frankfurt

Kluge, T. (2004). Im Wald, da sind die Raeuber (Radfahren und Forstrecht), Essen.

Kluge, T. (2009). Mountainbike und Naturschutz im Hochtaunuskreis (Projektstatus), Status Conference Mountainbike im Deister, Region Hannover 14-12-2009, Bad Homburg vdH.

Sammer, G., Proebstl, U., [Ed.] (2006). Conference Tourismus und Schutzgebiete - Hemmschuh oder Partner?, BOKU Vienna, Proj. AlpNaTour, Vienna.

All to be found in <http://www.mtb-rheinmain.de/W.htm>



# Mountain Bikers, recreationists, land owners and conservationists: Multiple conflicts in Hannover's Deister region

Frauke Lehrke<sup>1</sup>, Eick von Ruschkowski<sup>1</sup>, Stefan Rüter<sup>1</sup>

Keywords: mountain bikers, conflicts, forest, Germany, Deister

## Introduction

Mountain biking is an activity that is still relatively new and has shown a growing economic importance in many areas world-wide within the last decade. With its growing popularity, the environmental impact of mountain biking has become an issue for park and recreation managers, especially in forest habitats. Whereas quite a number of studies has been done in North America (Marion & Wimpey, 2007 (with extensive references); Chavez et al., 1993) or in Australia and New Zealand (e.g. Goeft & Alder, 2001), only few studies exist in Europe. Although a number of conflicts between mountain bikers, other recreational uses, land owners and nature conservation is reported from urban (such as Munich) or rural areas (notably the forest national parks), only one major study in Germany (Wöhrstein, 1998) exists. Thus, park and recreation managers still need to address a number of questions that require further research to better understand the sociological conflict potential and ecological impacts of mountain biking. This paper illustrates the current research needs in Germany based on a currently running pilot case study in Northern Germany.

## Study Area and Methods

The Deister is a mountain range located 20 km in southwesterly direction of the city of Hannover in Lower Saxony. It is approximately 23 km long and about 4 km wide with the highest elevation being 405 meters above sea level. Due to its convenient location within Hannover Region (population about 1.1 million people), it can easily be reached by car or public transport within 30 minutes travel time. While hiking has been the most popular activity for many decades, more recently, mountain bikers have discovered the Deister mountains as prime recreational area. The Deister forests, mainly comprised out of beech, oak and fir communities, are both publicly and privately owned and used for logging. Additionally, parts of the publicly owned forest are part of the European habitat network NATURA 2000 and thus are protected under the Federal German Nature Conservation Act (BNatSchG).

Since early 2009, reports about verbal and physical conflicts between mountain bikers and foresters have been appearing in the local media. Foresters prefer to ban mountain bikers from the forests, whereas recreationists urged authorities to develop a new trail system parallel to existing hiking trails. As conflicts seemed to be on the verge of escalation, all stakeholders agreed to several measures to allow mitigation: The local recreation planning authority started a dialogue process with the stakeholders involved. A round table was initiated in December 2009, accompanied by a quantitative pilot survey to collect data about mountain bikers in the Deister region. The Leibniz University Hannover also launched a pilot study which now focuses – due to the lack of substantial data – on the following aspects:

- mountain biker and hiker counts, both manually and assisted by electronic counters;
- mapping existing mountain bike trails;
- expert interviews with involved stakeholders to identify existing and potential conflicts;
- developing a second quantitative survey to be used during spring and summer of 2010 to determine recreational uses, use patterns and preferences in the Deister mountains;
- integrating the results in a GIS model in order to identify conflict areas;
- The objective is to gather data that provides the background for a conflict management strategy in the Deister region.

## Preliminary results

At the current time (January 2010), only few preliminary results are available, but more will become available by late spring. The use of electronic counters (Eco Counter Twin Logger) is still in a test phase. Expert interviews will be conducted in February of 2010. Expected results from the pilot studies are on

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<sup>1</sup> Institute of Environmental Planning, Leibniz Universität Hannover, Herrenhäuser Straße 2, 30419 Hannover, Germany, [ruschkowski@umwelt.uni-hannover.de](mailto:ruschkowski@umwelt.uni-hannover.de),

overview of the existing network of mountain bike trails, potential areas of conflicts between mountain bikes and other recreational uses. Based on the data derived from visitor counts, survey areas for a secondary survey to be launched later in 2010 will be identified.

### **References**

- Chavez, D., Winter, P.; Baas, J. (1993). Recreational mountain biking: A management perspective. *Journal of Park and Recreation Administration* 11 1: 7.
- Goeft, U. & Alder, J. (2001): *Journal Of Sustainable Tourism*, Vol. 9, No. 3, 2001 193 – 211.
- Marion, J. & Wimpey, J. (2007): Environmental Impacts of Mountain Biking: Science Review and Best Practices. In: Weber, P. (ed.): *Managing Mountain Biking. IMBA's Guide to Providing Great Riding*. Boulder: International Mountain Biking Association. 94 – 111.
- Wöhrstein, T. (1998): *Mountainbike und Umwelt*. Saarbrücken: Pirrot-Verlag.

# VISIMAN. Development of a flexible visitor management tool for national and regional natural parks

**Dominik Siegrist<sup>1</sup>, Christophe Clivaz<sup>2</sup>, Susanne Gessner<sup>1</sup>, Mathias Manz<sup>1</sup>, Andreas Rinkel<sup>1</sup>, Reto Rupf<sup>3</sup>, Nathalie Stumm<sup>4</sup>, Michael Wernli<sup>4</sup>**

Keywords: visitor management, visitor monitoring, parks and protected areas, management tool, IT

## Abstract

Within the scope of the VISIMAN project a new IT-based tool for visitor management in national and regional natural parks will be developed. The product comprises a system-based management platform with interfaces to the four functional units: 'visitor information', 'expert information', 'visitor monitoring', and 'data management'. By keeping the interfaces open, the management can be extended for other functional units and applications on demand. Visitor monitoring was implemented and counting methods advanced.

## Introduction

Nature parks are in conflict between nature protection and tourism attraction. On one hand, nature parks are very attractive as tourism destination with increasing visitor numbers (Reinius & Fredman, 2007); on the other hand, nature protection is an important task of nature parks. The park management must find a way between the interests of protection and adding value out of tourism. Park management is a very complex mission. IT systems can support decision making and help prepare and provide the information needed in an efficient way. Unfortunately few broad IT-tools are existent on the market. Therefore an interdisciplinary project was launched to start data collection and develop such IT software, storing and processing data for park management uses. The IT tool will be developed in collaboration with four project areas in Switzerland: the Swiss National Park, Wilderness Park Zürich, Regional Nature Park Pfyn Finges and nature reserve Tanzboden. The requirements of the different regions will be worked out and the tools will be adapted for these partners. The project is co-financed by CTI, the Swiss innovation promotion agency.

## Project aim

In the project areas there is an important demand on visitor monitoring data and information for managers and visitors. In this project visitor monitoring will be started respectively extended. The aim of the project is to design and develop a working IT-system that can be adapted to the special requirements of the user parks. With this IT-tool it will be possible to get quickly required information about visitor monitoring data, actual research results and to prepare and provide detailed information for visitors. Fig. 1 gives a schematic view of the IT-tool. A software system alone does not satisfy the needs of the project partners. A broad package consisting visitor monitoring, data management and support is needed.

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<sup>1</sup> University of Applied Sciences Rapperswil, 8640 Rapperswil, Switzerland, [dominik.siegrist@hsr.ch](mailto:dominik.siegrist@hsr.ch)

<sup>2</sup> University Institute Kurt Bösch, 1950 Sion, Switzerland

<sup>3</sup> Zurich University of Applied Sciences, 8820 Wädenswil, Switzerland

<sup>4</sup> University of Applied Sciences Western Switzerland, 3960 Sierre, Switzerland

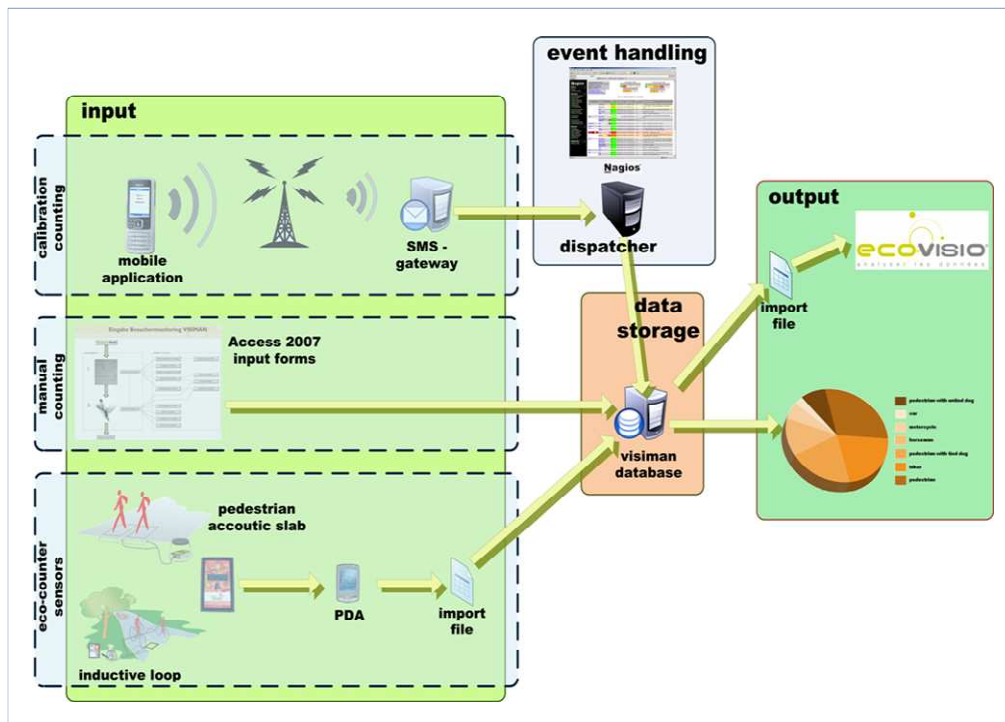


Fig. 1: Scheme of the IT working tool VISIMAN

## Project design

Firstly, interviews with project partners were conducted to get to know their requirements for the product. Visitor monitoring had to be designed for the project areas. In the Swiss National Park visitor monitoring had already started, but methodological perfection was performed (Rupf et al. 2008). In the nature reserve Tanzboden, mountabike monitoring has been started (Iten & Siegrist 2006). An overview of monitoring methods is given in Cessford & Muhar (2003). As it is not possible to count every person visiting the park, it is necessary to formulate the main purpose and questions to be answered. Regarding these definitions, counting sites and methods were defined in each park. Manual counting, automatic counting with acoustic slab sensors and pyro lenses of ecocounterTM took place. As automatic counting turned out to be less accurate than expected, special attention was paid to these methods (Rupf et al. 2006). External data like parking revenue, restoration turnover, data of public transport use etc. will be used and integrated in monitoring. In areas with complex path networking it will be necessary to build a visitor flow model based on manual and automatic counting.

## Expected Results

The functionality of the IT-system is designed in different modules and centralized data storage to keep the system extendable and adaptable for special park requirements. Nagios was chosen as the central element of the system. The nagios system is freeware, distributed under the GPL license and therefore the source code is available and the system offers maximum of flexibility for adaption of special requirements. The central management platform will be designed with open interfaces to the different modules, data management, visitor monitoring, expert information and visitor information. All incoming data, for example monitoring data or even an email notification, is dispatched by the nagios system. In case of monitoring data, the central management will call an appropriate event handler and stores the monitoring information in a database (MySQL) or committed directly to evaluation procedures (see Fig. 1). The user interface is designed for park rangers or managers and realised as a web application. Therefore there are, apart from the server installation, no additional installations on client side. That means, the system can be easily used with any browser and without further knowledge or costly training.

## References

- Cessford G., Muhar A. (2003): Monitoring options for visitor numbers in national parks and natural areas. J. Nat. Conserv. 11, 240-250  
 Hunziker, M./Clivaz, C./Siegrist, D. (eds). (2006). Monitoring and

- management of visitor flows in recreational and protected areas. For. Snow Landsc. Res. 81, 1/2. Haupt Verlag, Berne. 238p.
- Hunziker, M./Clivaz, C./Siegrist, D. (eds). (2006). Monitoring and management of visitor flows in recreational and protected areas. For. Snow Landsc. Res. 81, 1/2. Haupt Verlag, Berne. 238p.
- Iten, S., Siegrist, D. (2006). Monitoring of Mountain Bikers in a Sensitive Bird Area around the Tanzboden, Switzerland. In: Siegrist, D., Clivaz, C., Hunziker, M. & Iten, S. (Ed.). Exploring the Nature of Management. Proceedings of the Third International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas. University of Applied Sciences Rapperswil, Switzerland, 13 – 17 September 2006, p 358 – 360. Rapperswil.
- Reinius, S.W., Fredman, P. (2007): Protected areas as attractions. Annals of Tourism Research, Vol. 34, No. 4, 839-854.
- Rupf, R., Wernli, M., Haller, R. (2008): How to elaborate precise visitor numbers? Proc. Monitoring and Management of Visitor Flows in Recreational and Protected Areas 4, pp. 160-164.
- Rupf, R., Wernli, M., Filli F. (2006): Visitor Counting with Acoustic Slab Sensors in the Swiss National Park. Proc. Monitoring and Management of Visitor Flows in Recreational and Protected Areas 3, pp. 72-77.

# Customer service metrics as a basis for segmentation of forest recreationists

James Absher<sup>1</sup>, Donald English<sup>2</sup>, Robert Burns<sup>3</sup>

Keywords: customer service, forest recreation management, visitor segmentation

Management of US National Forest lands for recreation is guided by a number of approaches, which mostly focus on the resource conditions (e.g., vegetation loss, miles of trails built to standard) and not on visitor experiences, per se. While resource conditions are clearly important, in order to respond to the changes in outdoor recreation we propose an approach that incorporates customer service metrics (e.g., Crompton et al. 1991, Absher 1998). Such metrics are widely used in other settings (especially tourism and commercial sectors). Various studies have adapted the customer service approach with an emphasis on visitor management (e.g., Absher et al. 2000, Baker et al. 2002, Burns et al. 2003, Burns & Greafe 2006) or on serving diverse use (Li et al, 2008, Li et al . 2010). Previous research with customer service concepts is incorporated into an agency-led national visitor use monitoring program (NVUM) (USDA Forest Service 2008). This survey is repeated every five years for each forest and includes respondents from a variety of settings across all seasons. With approximately 200 sampling blocks per forest survey the data is comprehensive and representative on a forest level. Data from two iterations for each forest has been completed for most forests.

Apropos to this study, about a quarter of the respondents were asked an extra set questions geared toward measuring customer satisfaction, and it is this targeted subset of the NVUM survey that contains the data we will use. These questions represent the most important aspects of a forest recreation experience. For this analysis we chose four forests, two urban-proximate and two more remotely situated, that are from northern, central and southern California. It is important to note that the 14 customer satisfaction items were in themselves specifically chosen to represent the most important experiential factors that are, to some degree, under managerial influence.

Of the 4,139 respondents to the larger, four-forest NVUM dataset we analysed data from the satisfaction surveys (n=1,158). First we derived four customer service domains from 16 items on the NVUM surveys. (Two items were dropped in the confirmatory factor analysis stage.) These domains are (1) management/safety, which included items asking about the importance of staff helpfulness, site cleanliness and safety; (2) nature composed of questions about scenery and natural environment; (3) signs/information representing displays, information quality and signage; and (4) facility/roads based on items that asked about roads, developed facilities and parking. Then we calculated domain scores for each respondent and used them to profile users across the four forests and the four primary user segments used in the NVUM sampling protocol, namely day use and overnight developed sites, designated wilderness visits and general forest (dispersed) use. Finally we compared these across the four forests to gauge geographic and rural/urban differences.

Results show both forest-to-forest differences and user segment differences. For example, developed site users placed more emphasis on signs/information than general forest or wilderness users. By contrast, no differences across these user groups were observed for the service domain of nature orientation. In a forest to forest comparison, the most rural forest was the only one with significantly lower scores for either of these experience domains suggesting a more self-reliant visitor is the norm in this area, i.e., a geographic difference without regard to user group status. Additional results are presented for the other service domains as a function of forest or use setting in a more comprehensive analysis.

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<sup>1</sup> USDA Forest Service, 4955 Canyon Crest Drive, Riverside, CA, 92507, USA., [jabsher@fs.fed.us](mailto:jabsher@fs.fed.us)

<sup>2</sup> USDA Forest Service, 1400 Independence Ave SW, Washington, DC 20250, USA. [denglish@fs.fed.us](mailto:denglish@fs.fed.us)

<sup>3</sup> West Virginia University, 6125 Percival Hall, Morgantown, WV, 26525, USA. [Robert.burns@mail.wvu.edu](mailto:Robert.burns@mail.wvu.edu)

Overall, these results show that customer service metrics provide a useful way to evaluate visitor flows with a focus on recreation experience outcomes in a managerially useful way. In particular, urban proximity and experience preferences seem to be linked. The customer service approach takes management beyond measures of sociodemographics or physical resource attributes to incorporate social factors in recreation decision-making. It provides focused, substantive input to agency goals that seek to achieve recreational use outcomes based on actual experiences. For instance larger parks or forests will likely have sub-zones where visitors are substantially different based on customer service metrics and can manage to encourage or discourage use more accurately.

The results support the possibility to construct easily understood customer service based experiential monitoring and program evaluations using regional or forest-based domains. That notwithstanding, this analysis also shows that this approach is still a “work in progress.” The datasets are smaller than desired for some site-specific analysis and the domain measures are not yet completely satisfactory across diverse settings. This suggests that more work is required to address methodological issues. Also, the most useful way to present the results needs refinement in order to bring this approach to a forest or site specific level and facilitate managerial responsiveness.

## References

- Absher, J.D. (1998). Customer service measures for national forest recreation. *Journal of Park and Recreation Administration*, 16(3), 31-42.
- Absher, J.D., Baker, D., Green, T., & Virden, R. (2000). Outdoor recreation service quality items: Tonto National Forest and Land-Between-The-Lakes National Recreation Area. Unpublished technical report. Riverside, CA: USDA Forest Service, Pacific Southwest Research Station.
- Baker D., Absher, J., Andereck, K., & Knopf, R. (2002). Red Rock Ranger District monitoring study. Unpublished technical report. Riverside, CA: USDA Forest Service, Pacific Southwest Research Station.
- Burns, R.C. & Graefe, A.R. (2006). Outdoor Recreationists in Oregon and Washington: A Comparison of Recreationists' Perceptions of Experience Satisfaction Across Two US Pacific Northwest States. In: D.Siegrist, C. Clivaz, M. Hunziker & S. Iten, S. (eds.). *Exploring the nature of management. Proceedings of the third international conference on monitoring and management of visitor flows in recreational and protected areas.* University of Applied Sciences Rapperswil, Switzerland, 13-17 September 2006. Rapperswil.
- Burns, R.C., Graefe, A.R., & Absher, J.D. (2003). Alternate measurement approaches to recreational customer satisfaction: Satisfaction-only versus gap scores. *Leisure Sciences*, 25(4), 363-380.
- Crompton, J.L., MacKay, K.J., & Fesenmaier, D.R. (1991). Identifying dimensions of service quality in public recreation. *Journal of Park and Recreation Administration*, 9(3), 15-27.
- Li, C., Absher, J.D., Zinn, H.C., Graefe, A.R. & Chick, G.E. (2010). A multi-ethnic comparison of perceptions of forest recreation service quality. *Journal of Tourism and Leisure Studies*, 15(3), 213-238.
- Li, C., Absher, J.D., Graefe, A.R., Hsu, Y. (2008). Research reflections— services for culturally diverse customers in parks and recreation. *Leisure Sciences*. 30(1): 1–6.
- USDA Forest Service. (2008). National Visitor Use Monitoring results, national summary report, data collected through FY 2007. [updated 28 October 2008]. Available at: [http://www.fs.fed.us/recreation/programs/nvum/nvum\\_national\\_summary\\_fy2007.pdf](http://www.fs.fed.us/recreation/programs/nvum/nvum_national_summary_fy2007.pdf)

# Exploring relationships between visitor motives, satisfaction, recreation quality and attitudes towards protected area management in the Gesaeuse National Park, Austria

Arne Arnberger<sup>1</sup>, Renate Eder<sup>1</sup>, Brigitte Alex<sup>1</sup>, Petra Sterl<sup>2</sup>, Robert C. Burns<sup>3</sup>

Keywords: attitudes, motives, National Park, visitor survey

## Introduction

Managing recreational use in national parks requires information about general visitation, visitor motivation, satisfaction, social impacts, perceived quality of the recreation experience, and attitudes towards protected area management (Manning 1999). Unfortunately, such knowledge does often not exist in Europe for natural resource management (Arnberger & Mann 2008, v. Ruschkowski 2009). This study explored relationships between visitor motives, satisfaction, recreation quality and attitudes towards protected area management in the Gesaeuse National Park, Austria.

## Study site

Situated in the north of Styria, the National Park is the most recent of the Austrian National Parks. It was founded in 2002 and accredited by the IUCN in 2003. Since 2006, 94% of the National Park area is part of the Natura 2000 network according to the Birds- and Habitats-Directive of the EU. With an area of about 11,000 hectares, it stretches for about 10 km along the river Enns, surrounded by several high mountains. The difference in elevation of approximately 1800 m between the river and mountain peaks results in a high relief-energy.

## Method

On-site interviews were conducted in the National Park at the main access points of trails on nine days during the summer and autumn of 2008. The interviews took place on randomly selected workdays and randomly selected Sundays covering the holiday and off-holiday season. The small sample of days may be seen as a limitation of the study. The sample size was 405 visitors. The response rate was close to 60%. One main reason for refusal was that the user group of cyclists was less likely to stop for an interview. The study was financed by the Gesaeuse National Park (Arnberger et al. 2009).

The survey instrument asked socio-demographic characteristics such as age, origin, education, and visit-related questions such as length of stay, trip and area satisfaction, the role the park played for destination choice, frequency of visit, as well as motivations, perceived crowding, crowding expectations, and attitudes towards protected area management. Fifteen visiting motives such as solitude, experiencing nature, meeting family, friends, observing fauna and flora, quietness and stress reduction were surveyed using an answer scale from very important (1) to very unimportant (5). Attitudes towards protected area management addressed the topics of dead wood, visitor management, nature conservation and regional effects of the national park, using an answer scale ranging from totally agree (1) to totally disagree (5). A factor analysis was employed to determine the underlying dimensions of the respondents' motives.

## Results

Mostly pairs of hikers were interviewed. The majority (88%) were from Austria, predominantly from Styria. The average age was 47 years. About 57% were day tourists and one third of the overnight

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1 Institute of Landscape Development, Recreation and Conservation Planning, Department of Spatial, Landscape and Infrastructure Sciences, University of Natural Resources and Applied Life Sciences, Vienna, Peter-Jordan-Straße 82, 1190 Vienna, Austria, [arne.arnberger@boku.ac.at](mailto:arne.arnberger@boku.ac.at), [renate.eder@boku.ac.at](mailto:renate.eder@boku.ac.at), [brigitte.alex@boku.ac.at](mailto:brigitte.alex@boku.ac.at)

2 Gesaeuse National Park, Weng 3, 8913 Weng/Gesaeuse, Austria, [petra.sterl@nationalpark.co.at](mailto:petra.sterl@nationalpark.co.at)

3 West Virginia University, 6125 Percival Hall, Morgantown, WV 26506-6125, USA, [Robert.Burns@mail.wvu.edu](mailto:Robert.Burns@mail.wvu.edu)



tourists stayed in mountain huts. More than 20% were first time visitors. For about 7% of the respondents the National Park played a crucial role for their decision to come to the area (explicit national park visitors), for further 26% it played an important role, while for the others, the status of the Gesaeuse as National Park had not influenced their destination choice.

The factor analysis of the motives resulted in 4 factors explaining about 59% of the total variance. Factor 1 included motives which indicated fun and escape; Factor 2 addressed nature experience; Factor 3 recreation; and Factor 4 solitude. Reliability analysis resulted in acceptable values for all the factors except for Factor 4.

Relationships between motives and satisfaction, crowding, and attitudes towards protected area management were found. The motive dimension "nature experience" was particularly related to attitudes towards the area management. The more important this motive dimension, the more visitors agreed to a management which prioritises nature conservation, while the motives "fun and escape" and "solitude" showed correlations with crowding. Visitors who were specifically attracted by the National Park were more in favour of a management which prioritises nature conservation and scored higher on the motive dimensions "nature experience" but lower on the "fun and escape" dimension.

The results indicate that for the majority of visitors the existence of the National Park had not influenced their destination choice. This group is less interested in nature conservation related topics and was less likely to support visitor management measures. On the other hand, approximately one-third of the respondents were interested in nature conservation and national parks. The study results support the Gesaeuse National Park administration in managing recreation use and developing public awareness campaigns targeted on visitor types.

## References

- Arnberger, A., & Mann, C. (2008). Crowding in European forests: a review of recent research and implications for forest management and policy. *Forestry*, 81(4), 599-571.
- Arnberger, A., Eder, R. & Alex, B. (2009). Besuchermonitoring im Nationalpark Gesäuse 2008. Project report on behalf of the Gesaeuse National Park. Vienna: University of Natural Resources and Applied Life Sciences.
- Manning, R. (1999). *Studies in outdoor recreation* (2nd Edition). Corvallis: Oregon State University.
- v. Ruschkowski, E. (2009). Ursachen und Lösungsansätze für Akzeptanzprobleme von Großschutzgebieten. Dissertation. Hannover: Leibniz Universität.

# Segmenting US Forest recreationists: river users, front country users and wilderness users

Robert Burns<sup>1</sup>, Alan Graefe<sup>2</sup>, James D. Absher<sup>3</sup>

Keywords: forest recreation, segmentation, outdoor recreation management

## Introduction

US Forest Service managers have recognised that systematic resource monitoring and management is needed to sustain high quality recreation opportunities and respond to the increasing and dynamic demand for both river and land-based recreational resources (Donnelly et al., 1992; Drogin et al., 1986; Stankey et al., 1985). To this end, a systematic and comprehensive system of measurements was developed to gather information on visitors' opinions about existing recreation services and an understanding of the effects of use patterns. The US Forest Service (USFS) recently implemented a new policy regarding recreational outfitter/guide (OG) special permit uses. The changes to outfitter and guiding directives were made for four specific reasons. These are, the desire to provide a suitable term length for ongoing business operations; to offer the same terms and conditions to any entity conducting ongoing business operations; to facilitate greater participation by youth, educational and religious groups, and to simplify the application process and administration of temporary use permits.

## Research

A comprehensive study of US Forest Service recreationists in the US western states of Oregon, Washington, and Colorado was undertaken during the 2009 Summer recreation season (n=2947). This study methodology made use of on-site, face-to-face interviews with visitors to identify perceptions of crowding, acceptable number of times to see others, acceptable time to wait before starting their activity, reasons for recreating, quality of facilities and services, and how others impact their experience. The purpose of this analysis was to understand differences in recreation use patterns across three distinct types of visitors: River users (n=1226), Front Country users (n=1220), and Wilderness users (n=488). River users showed distinctly different use patterns than the two land-based user groups, although some differences were noted across all three groups of recreationists.

- Group characteristics: River users were younger, visited in larger groups, were more likely to be first time users and least likely to be overnight visitors, and were much more likely to be participating as part of a commercially outfitted/guided trip. Wilderness users spent more days annually where they were surveyed, and Front Country users spent more days recreating in general and reported longer duration trips.
- Main motivations: all users sought a traditional outdoor experience to get away from their routine, although River users were more motivated to participate in challenge and skill building experiences.
- Crowding/Conflict: Overall, about 40% of users saw about the number of visitors they expected, and users in all three groups reported a low level of crowding on their recreation trip. Wilderness users, however, reported a slightly higher degree of crowding, and reported stronger expectations than River or Front Country users. For the most part, user expectations did not exceed performance regarding crowding, conflict or waiting times (critical to River users).

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<sup>1</sup> West Virginia University, 6125 Percival Hall, Morgantown, WV, 26525, USA., Robert.burns@mail.wvu.edu

<sup>2</sup> Penn State University, 801 Ford Hall, University Park, PA, 16805, USA, gyu@psu.edu

<sup>3</sup> US Forest Service, 4955 Canyon Crest Drive, Riverside, CA, 92507, USA., jabsher@fs.fed.us

## **Conclusions**

Understanding differences in user groups is important to recreation managers. Results from this study will provide forest natural resource managers with a profile of their visitors and express how crowding and conflicts may impact their experience. Segmentation of forest recreationists can assist managers in determining appropriate land use. Many agencies are now focusing on understanding social impact upon the biological resources on a forest. Understanding the various motivations and differing expectations of key forest users can assist managers to improve their experiences. This information can also be used to encourage visitors to recreate in areas that may be less environmentally sensitive, or less crowded. In addition, forest managers will have knowledge about the users who are (or are not) recreating on a forest or at a specific recreation area. This can facilitate connections with key user groups to encourage recreation participation. Segmentation is not limited to these three broad categories. Socio-demographic segmentation (gender, age, first time versus repeat visitor, local versus destination users and so forth) may all be examined to better understand use patterns of visitors. In closing, monitoring of use levels and visitor needs, expectations and perceptions should be continued as an investment into existing and future social conditions in US forests.

## **References**

- Donnelly, M., Vaske, J., Shelby, B. (1992). Measuring backcountry standards in visitor surveys. Defining wilderness quality: The role of standards in wilderness management. USDA Forest Service, General Technical Report PNW- 305:38-52
- Drogin, E.B., A.R. Graefe, J.J. Vaske, and F.R. Kuss. (1986). Recreation impacts and carrying capacity: A bibliography and literature analysis. Washington, DC: National Parks and Conservation Association. 341 p.
- Stankey, G.H., D.N. Cole, R.C., Lucas, M.E. Petersen, and S.S. Frissell. (1985). The limits of acceptable change (LAC) system for wilderness planning. General Technical Report INT-176. Ogden, UT.

# Visitor counting and surveys in a dispersed-use mountain area in Norway

Vegard Gundersen<sup>1</sup>, Oddgeir Andersen<sup>1</sup>

Keywords: visitor monitoring, visitor counting, visitor survey, automatic counters, GPS tracking

Studies of disruption on wildlife populations have previously treated human activity largely as an effect with constant magnitude. One has rarely had the possibility to apply a more nuanced approach where the intensity of human travel varies in time, space or among different user groups. Without a description of the dynamic use of infrastructure, it has been difficult both to predict the effect that disturbance will have on wildlife populations, and to come up with precise understanding of threshold or cumulative effects of human travel. Such knowledge is absolutely necessary to agree on management goals for acceptable use and its effects on wildlife populations in alpine areas in Norway; particularly wild reindeer. Obtaining accurate and usable visitor counts and information in backcountry remote settings is challenging, especially if the use is dispersed at a temporal as well as a geographical scale (Kajala et al. 2007). Knowledge about the visitors characteristics is important to be included in a final management strategy and planning tool for the DS. A four year (2009-2012) monitoring project at Dovrefjell-Sunndalsfjella (DS) management area is in this context used as an example of spatiotemporal use in a large mountain area (6830 km<sup>2</sup>) with an limited rate of visitors (approx. 30 000 in 2009). The project uses a wide range of monitoring methods, depending on the kind of visitor groups and data needed to test the level of impact they have on wild reindeer. We present here some preliminary results from 2009.

Our data shows how human travel's spatiotemporal attributes can be described with a combination of different methods. Data from DS in 2009 show that to a large degree (80 %), people use existing travel routes and the intensity is concentrated in a few important areas and along the main trail network; travel is therefore relatively tied to areas with a great degree of organization. But the results from DS also show that human travel varies temporally according to seasons, high-low intensity seasons, weekends vs. weekdays, day vs. night, hunting season vs non hunting season, and according to weather and trail conditions. This is further complicated by the fact that the strength of these factors varies spatially. Visitors to DS generally want wilderness experiences to a higher degree than for example more "comfortable wanted" visitors in nearby national parks. In 2009, eight main visitor groups were identified by a combination of data from three methods: quantitative field survey (24 self-registration boxes), follow-up internet survey (by 2500 e.mail addresses) and automatic counters at main entrances (20).

The first three visitor groups, that are short stop travel, day visit and overnight stay, use mainly the fringe of the management area, mostly along gravel roads or short walks from well designated parking lots. These visitor groups were monitored by on site interviews and data from parking / entrance fees as well as data reported to the project through local tourism agencies or companies (incl. lodging, wildlife safaris, organized hiking trips, horsebackriding).

The two visitor groups of backcountry comfortable and backcountry adventure have a much more integrated use of the area, but still mainly along marked paths. Intensively used marked paths may function as barriers for wild reindeer migratory patterns in some areas. To monitor these visitor groups we used a combination of self-registration boxes and automatic counters at the main entrances in the DS. A short questionnaire was answered by self-registration, including how people visit (including drawing route on a map) the area, as well as purpose of the visit and demographics. The visitors were also asked to leave their email addresses to be contacted later for a more detailed internet survey.

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<sup>1</sup> Norwegian Institute for Nature Research (NINA), Human Dimension Department, Fakkeltgården, NO-2624 Lillehammer, Norway, [vegard.gundersen@nina.no](mailto:vegard.gundersen@nina.no), [oddgeir.andersen@nina.no](mailto:oddgeir.andersen@nina.no)

The last three visitor groups are: backcountry remote experience, traditional subsistence harvest and thrill seeking. These visitor groups have a much more area - consuming - behavior, mainly walking off marked paths and in more remote areas than the former groups, which to a larger extent may overlap and come in interaction with the wild reindeer area use and habitat selection. To get adequate spatial information from these visitor groups are challenging, and we plan to use GPS tracking of representative samples of the respective visitor groups to supplement the information from automatic counters and self-registration boxes.

The oral presentation will summarize results from each visitor group based on self-registrations boxes and automatic counters from the field season of 2009. Preliminary results show that approximately 19 % of the visitors can be classified in the latter three groups; backcountry remote experience, traditional subsistence harvest and thrill seeking. The main resources in the project for the remaining three years will be used to get accurate and usable visitor counts and information from these three visitor groups.

### **References**

Kajala, L., Almik, A., Dahl, R., Dikšaitė, L., Erkkonen, J., Fredman, P., Jensen, F. Søndergaard, Karoles, K., Sievänen, T., Skov-Petersen, H., Vistad, O. I. & Wallsten, P. (2007). Visitor monitoring in nature areas – a manual based on experiences from the Nordic and Baltic countries. TemaNord 2007: 534

## **Wilderness purism revisited: The value of a simplified standardised scale for monitoring purposes**

**Odd Inge Vistad<sup>1</sup>, Marit Vorkinn<sup>2</sup>**

Keywords: visitor monitoring, wilderness purism, standardized questions

One of the most obvious elements that management authorities can influence in, for example, a national park, is the type, amount and location of physical facilities. Knowledge about preferences or tolerance for amount and type of other visitors (social conditions) is especially important these days, due to tourism development ambitions. This paper shortly reviews the development of the monitoring measure called Purism level, followed by a presentation of relevant findings from 10 Norwegian studies (during the period 1999-2009) where a simplified and standardised purism scale was used, based on attitudes towards physical facilities and social conditions.

In Norway and Scandinavia several researchers have been inspired by the work on ideal wilderness attitudes that Hendee et al (1968) and Stankey (1973) introduced: To measure the personal level of 'Wildernism' or 'Purism'. This is not because the concept is well founded theoretically (Heberlein 1973, Stankey 1973). It has also been controversial, partly because a normative elitist connotation was attached to purism as a segmentation tool in recreation and wilderness management (Stankey & Schreyer 1987). The rationale behind the concept has been quite practical and intuitive, and based on the experience that visitors, even in designated Wilderness areas, are quite different in their attitudes concerning environmental conditions, recreation experiences and wilderness management.

The early popularity of the Purism concept in Norway is due to another intuitively felt relationship: the similarity between traditional Scandinavian outdoor recreation (called 'friluftsliv') and 'puristic wilderness recreation'. The strong purist has close similarities with the skilled and lonesome hiker, fisherman or hunter, staying in a pristine environment for several days, without any need for service facilities, namely the archetype (or stereotype) of a Norwegian outdoor recreationist. And it is also easy to see the elite aspect of both 'friluftsliv' and purism, when interpreted like this.

The early attempts to measure levels of purism used many items. Hendee et al (1968) used 60 initial items in order to segregate the Purists from the Urbanists. Although being a multidimensional concept (wilderness qualities, activities, personal benefits), an aggregated numerical value (level of 'wilderness purism') for each individual was calculated. Several later studies have confirmed that the purism scale holds a combination of several (interdependent) dimensions, but that it is still meaningful to calculate total purism score (Jaakson & Shin 1993, Shafer & Hammitt 1995, Vistad 1995). In the early Norwegian studies the chosen purism items were somewhat different from one study to another. Since 1999 the scale has been shortened (8 items), simplified, standardised (6 items covering attitudes towards physical service facilities and 2 items covering social attitudes) and measured with a 7-point Likert scale (Vorkinn 2003, 2003a).

This gives us a unique possibility to study the variation between visitor segments and whole visitor populations in different settings, and also to find out whether visitor preferences in one location change over time. Figure 1 shows one way of presenting the preferences for facilities and for meeting other visitors, through the average scores from 10 different Norwegian visitor and recreational studies (e.g. Vorkinn 2003, 2003a, Vistad 2009, Vorkinn & Andersen 2010). A high score in this figure means a non- or low-purist attitude (earlier called 'urbanistic' attitude).

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<sup>1</sup> Norwegian Institute for Nature Research (NINA), Human Dimension Department, Fakkeltgården, NO-2624 Lillehammer, Norway, [oddinge.vistad@nina.no](mailto:oddinge.vistad@nina.no)

<sup>2</sup> Oppland County Governor, Environmental Department, Statens Hus, NO-2626 Lillehammer, Norway, [mvo@fmop.no](mailto:mvo@fmop.no)

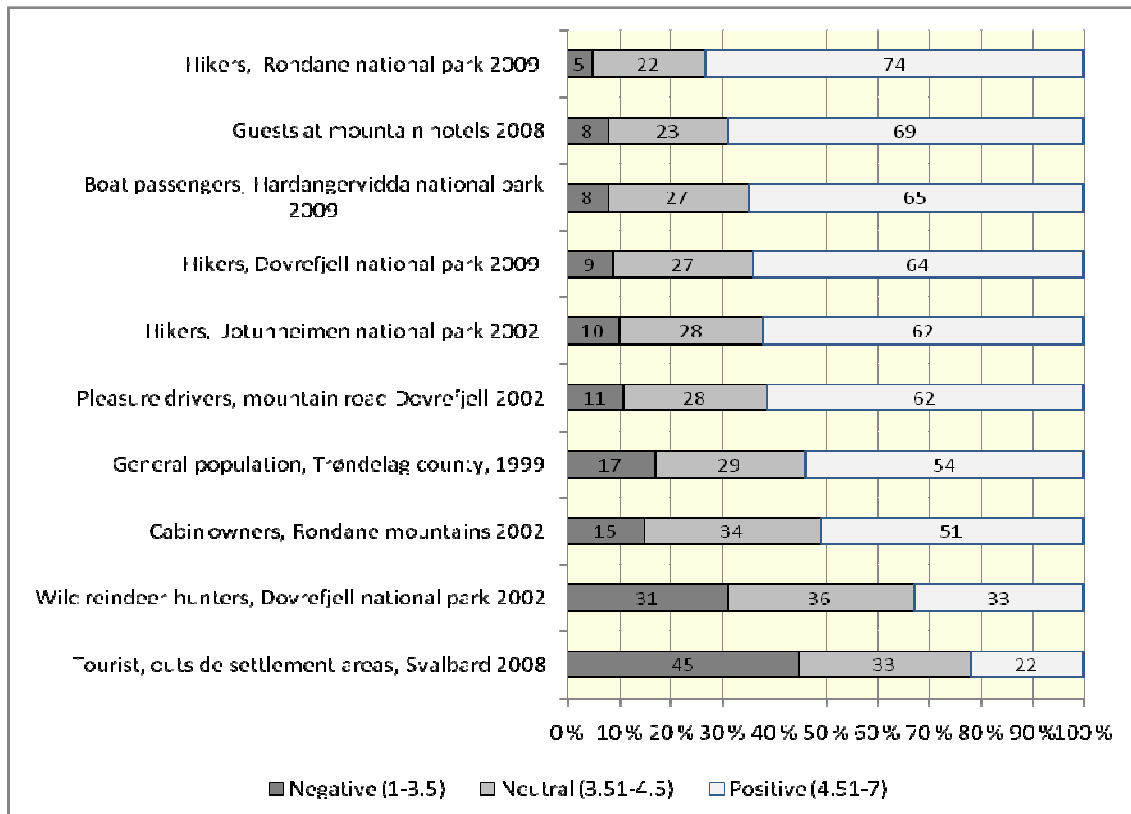


Figure 1: Social tolerance and preferences for physical facilitation in ten visitor or recreational studies in Norway (1999-2009) based on average scores (7-point Likert scale) in a standardized 8-item Purism attitude scale.

The most recent study presented in fig. 1 is interesting: The average national park visitor (in Rondane) is a low-purist and expresses a high general preference for physical service facilitation and a high social tolerance/preference (Vorkinn & Andersen 2010). Even guests in roadside mountain hotels are slightly more puristic than the national park visitors (Vistad 2009). This is important information for the management authorities. Another surprise for many Norwegians is that the Norwegian visitors are less puristic than visitors from any other country; and this applies to both of the most extreme findings in fig. 1: Rondane national park 2009 (see fig. 2) and Svalbard 2008. This finding does not fit with the image of the (arche-)type of the Norwegian mountain hiker presented above! These differences in preferences are a challenge for the managers, but also for the tourism actors since their ambitions are very much based on the foreign market.

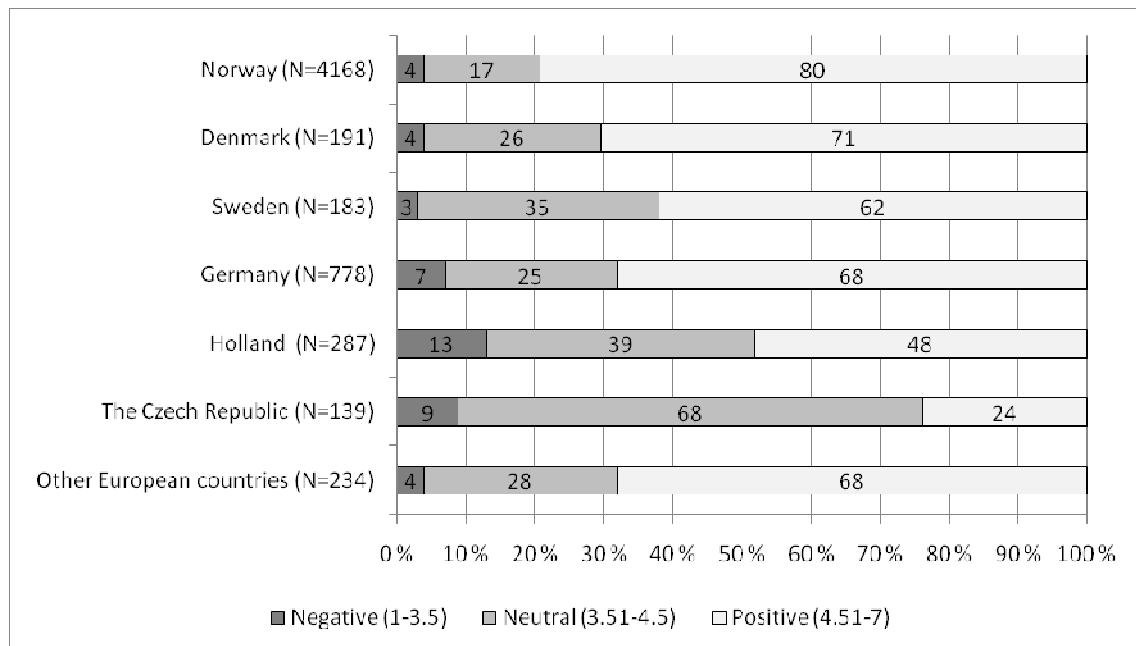


Figure 2. Differences in social tolerance and preferences for physical facilitation between visitors from different countries in Rondane national park, 2009. Average scores, 7-point Likert scale (Vorkinn & Andersen 2010)

This standardized Purism scale seems to be very relevant and useful for management purposes. It distinguishes between different areas and different visitor groups, and it also appeals to the respondents in the interview situation.

## References

- Heberlein, T.A. (1973). Social Psychological Assumptions of User Attitude Surveys: The Case of the Wilderness Scale. *Journal of Leisure Research* 5: 18-33.
- Hendee, J.C., Catton Jr., W. R., Marlow, L. D. & Frank Brockman, C. (1968). Wilderness users in the Pacific Northwest – Their characteristics, values, and management preferences. USDA Forest Service, Research Paper PNW-61, Portland, Oregon.
- Jaakson, R. & Shin, W.S. (1993). Purism and Wilderness Campers. *Journal of Social Psychology* 133: 489-493
- Shafer, C.S. & Hammitt, W. E. (1995). Purism Revisited: Specifying Recreational Conditions of Concern According to Resource Intent. *Leisure Sciences* 17: 15-30
- Stankey, G. H. (1973). Visitor perception of wilderness recreation carrying capacity. USDA Forest Service, Research Paper INT-142, Ogden, Utah.
- Stankey, G. H. & Schreyer, R. (1987). Attitudes Toward Wilderness and Factors Affecting Visitor Behavior: A State-of-knowledge Review. In: *Proceedings – National Wilderness Research Conference 1985*. G T Report INT-220, Ogden, Utah.
- Vistad, O. I. (2009). *Ferdslut frå fjellnære reiselivsbedrifter*. – NINA Rapport 441
- Vistad, O. I. (1995). *I Skogen og i skoltten. Ein analyse av friluftsliv, miljøoppleving, påverknad og forvaltning i Femundsmarka, med jamføringar til Rogen og Långfjället*. Dr. polit avhandling, Geografisk institutt, Universitetet i Trondheim.
- Vorkinn, M. (2003). *Ferdslut frå hytter i Rondane midt og sør*. Lillehammer: Oppland og Hedmark Fylkeskommuner, Fylkesmennene i Oppland og Hedmark.
- Vorkinn, M. (2003a). *Bruk og brukere i Jotunheimen. Endringer fra 1992 til 2002*. Foreløpig notat. Lillehammer: Østlandsforskning.
- Vorkinn, M. & Andersen, O. (2010). *Besøkende til Rondane og Dovre nasjonalparker – sommeren 2009*. Resultater fra selvregistreringskasser og automatiske ferdselstellere. Underveisnotat. Lillehammer: NINA
- Wagar, J.A. (1964). *The carrying capacity of wild lands for recreation*. Washington, DC.



- Johnston, F.M. & Pickering, C.M. (2001). Alien plants in the Australian Alps. In: *Mountain Research and Development* (21), p 284-291.
- Cole, D. (2004). Impacts of hiking and camping on soils and vegetation: a review. In: R. Buckley (ed.) *Environmental Impacts of Ecotourism*, p 41-60. Oxford.
- Monz, C.A., Meier, G.A., Welker, J.M., Buckley, R.C., Cole, D.N. & Loya, W.M. (1996). Responses of moist and dry arctic tundra to trampling and warmer temperatures. In: *Bulletin of the Ecological Society of America* (77/3), p 311.

## Simulation of tourism strategies for alpine destinations

Veronika Wirth<sup>1</sup>, Ulrike Pröbstl<sup>1</sup>, Wolfgang Haider<sup>2</sup>

Keywords: destination choice, Alps, discrete choice, summer tourism, tourism strategies

Tourists have become more sophisticated consumers over the last decades. They are better informed, use various information sources and tend to be more critical in their choice of destination. For destinations it becomes vitally important to develop adequate strategies in order to reach interested visitors. This is especially relevant in mature tourism regions as the Alps. Key elements of the tourism product in the Alps are natural integrity and landscape beauty, cultural characteristics and the opportunity to pursue various sport activities.

This study investigates the choice behaviour of tourists selecting an Alpine destination. Based on this understanding of tourist preferences, we will investigate tourism planning and marketing strategies for alpine destinations with the following research questions:

- What are possible planning and marketing strategies for a destination?
- Which options are suitable and which are unsuitable for a destination?

The study is based on a representative random sample of German tourists and investigates their choice for summer vacations in the Alps. German visitors constitute the largest market share of summer tourism in Austria (Statistik Austria 2007). A central element of the survey is a stated choice survey in which respondents made a choice between two different alpine destinations disguised as web sites with changing destination and landscape descriptions. Attributes described various alpine landscapes, protected areas, different village sizes and activity and cultural offers. For the analysis, Latent Gold Choice 4.0 (Vermunt and Magidson 2005) was used which produces a regular multinomial logit model, as well as latent class segmentation (Boxall and Adamowicz 2002; Train 2002). Latent classes are characterized by maximizing homogeneity within classes and maximizing differences between classes.

The results show very heterogenic preferences and three different segments emerging out of the latent class analysis:

- Social and activity oriented tourists (56%)
- Nature oriented tourists (30%)
- Relaxing oriented tourists (14%)

In a decision support system (DSS) based on the part-worth utilities of the multinomial logit model, it is possible to calculate market shares for different development scenarios for each one of the segments and the entire sample (n=1006). Below, two development options are shown for a lively alpine community with 4000 inhabitants and shopping possibilities with good offers for hiking and swimming. One possible strategy is to increase hiking and nature experience offers (see changes from Alternative A to Alternative B in Fig.1).

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<sup>1</sup> University of Natural Resources and Applied Life Sciences, Vienna, Institute of Landscape Development, Recreation and Conservation Planning, Peter-Jordan-Str. 82, A-1190 Vienna, Austria, [veronika.wirth@boku.ac.at](mailto:veronika.wirth@boku.ac.at); [ulrike.proebstl@boku.ac.at](mailto:ulrike.proebstl@boku.ac.at)

<sup>2</sup> Simon Fraser University, Burnaby, B.C., Canada, School of Resource and Environmental Management  
8888 University Drive, Burnaby, B.C. V5A 1S6, [wolfgang\\_haider@sfu.ca](mailto:wolfgang_haider@sfu.ca)

	Alternative A	Alternative B	Neither
Size of location	4000 Inhabitants	4000 Inhabitants	
Character of location	lively location with shopping offers	lively location with shopping offers	
Nature experience	none	<b>Nature experience offers</b>	
Protected area	none	none	
Landscape	alpine 1	alpine 1	
Sunny days	55 sunny days	55 sunny days	
Price	no price difference	no price difference	
Hiking	good offer	<b>very good offer</b>	
MTB	none	none	
Climbing	none	none	
Riding	none	none	
Golfing	none	none	
Swimming	good offer	good offer	
Indoor	none	none	
Tradition	none	none	
Culture	none	none	
Events	none	none	
Group and Social oriented	19%	26%	55%
Nature oriented	25%	58%	16%
Relax oriented	26%	31%	43%

Figure 1: Development scenario for a destination with 400 inhabitants: strategy to increase nature experience and hiking offers, market share in %, n=1006

In that case, the overall market share for the destination increases, especially for the nature oriented segment (58%); only 25% would choose the status quo scenario and 16% would select neither of the alternatives. Also, for the other segments the market share increases (group and social oriented tourists 26% and relaxing oriented 31%) but still 55% and 45% respectively would choose neither of the options.

A very different strategy would be to increase shopping and nightlife offers as well as events (see Fig.2).

	Alternative A	Alternative B	Neither
Size of location	4000 Inhabitants	4000 Inhabitants	
Character of location	lively location with shopping offers	<b>busy location with shopping and nightlife offers</b>	
Nature experience	none	none	
Protected area	none	none	
Landscape	alpine 1	alpine 1	
Sunny days	55 sunny days	55 sunny days	
Price	no price difference	no price difference	
Hiking	good offer	good offer	
MTB	none	none	
Climbing	none	none	
Riding	none	none	
Golfing	none	none	
Swimming	good offer	good offer	
Indoor	none	none	
Tradition	none	none	
Culture	none	none	
Events	none	<b>very good offer</b>	
Group and Social oriented	18%	29%	53%
Nature oriented	44%	28%	28%
Relax oriented	27%	28%	45%

Figure 2: Development scenario for a destination with 400 inhabitants: strategy to increase nightlife offers and events, market share in %, n=1006

The results show that in contrast to the first scenario the market share clearly decreases. Even for the social and activity oriented segment only 29% would choose this option, whereas 53% select none of the alternatives. Generally for this segment shopping facilities and events are attractive. However, in this option varied sport activities are missing which are also very important for this target group (with additional good climbing and very good swimming offers 46% of this segment would choose this option). The nature oriented segment would prefer the status quo alternative (44%) and 28% decide for none of the options. Also most tourists of the relaxing oriented segment would choose neither alternative (45%).

Summarizing, the results show very heterogeneous preferences and partly contradictory demand patterns by the identified segments. Apparently, for destinations it is vitally important to develop consistent tourism strategies based on their natural and existing offers that address clear target

groups. Analysing the trade-offs of tourists in their decision making process, the results also show a high relevance of landscape based offers and activities compared to built or event based offers. The study also documents the importance of investigating preferences of potential visitors and identifying suitable target groups, not only on national or regional scales, but especially on the level of the resort community as it is there where important image formation occurs. For the purpose of destination management and marketing – a decision support tool proves to be a very useful and versatile tool.

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### **References**

- Boxall, P. C. und Adamowicz, W. L. (2002): Understanding Heterogeneous Preferences in Random Utility Models: A Latent Class Approach. *Environmental and Resource Economics* 23(4), 421-446.
- Statistik Austria (2007): Tourismus in Zahlen. Österreich 2006/07 [cited 30 April 2008]. Available from World Wide Web:  
<[http://www.statistik.at/web\\_de/statistiken/tourismus/beherbergung/index.html](http://www.statistik.at/web_de/statistiken/tourismus/beherbergung/index.html)>
- Train, K. E. (2002): *Discrete Choice Methods with Simulation*. Cambridge University Press, Cambridge.
- Vermunt, J. K. and Magidson, J. (2005): *Latent GOLD 4.0 User's Guide*. Statistical Innovations Inc, Belmont, Massachusetts.

## **Mediating the tourist experience and appropriate levels of interpretation– Exploring reaction to the transformation of Irish nature-based tourism**

**Noel Healy<sup>1</sup>**

Keywords: commodification, regulation, transforming destinations, visitor experience

Ireland's natural environment is increasingly packaged, commoditised and exploited for tourism purposes. Notably, a critical management issue surrounding the extent, appropriate form, and scale of visitor facilities has caused some of the most acrimonious environmental disputes in its history. Focusing on visitor centre and interpretative developments within the Burren region in the West of Ireland and in particular the €31.5million visitor centre development at the Cliffs of Moher, this paper probes two key areas: firstly it analyses the shift in the social, cultural and physical transformation of nature-based tourism destinations and the production of tourist space; and secondly it investigates how visitors react to this transformation process, exploring what constitutes the most appropriate level of interpretation. Using an innovative multi-method approach to data collection and analysis that combines survey data, interviews and observation, this paper also integrates the reaction of local communities, professional stakeholders and 'lay knowledges' to present a holistic, multi-layered analysis of visitor experience.

Highlighting the transformation process occurring within Ireland's protected areas this paper argues that tourism spaces are now being rationalised, regulated, commoditised and radically reinvented to become 'natural' spaces for leisure. This transformation of Irish tourism landscapes and the construction of tourism products are increasingly informed by globalising discourses of conservation, theming and regulation. In order to frame the shift in the social, cultural, and physical transformation of nature-based tourist destinations and the production of tourist space, aspects of Edensor's (1998) exploration of enclavic and heterogeneous spaces are utilised. The core argument of this paper is that radical reinvention and regulation of nature-based tourist sites as spaces of leisure and control, through the processes of commoditisation, rationalisation and representation, illustrates the conscious attempt to transform Irish destinations from unregulated heterogeneous dominated tourist spaces to more regulated enclavic dominated tourist spaces. The reconfigurations of Irish tourist spaces have resulted in more systematic, centralised forms of regulation and spatial purification, whereby exclusionary policies attempt to remove character, idiosyncrasies, individualism and supposedly unattractive local features, and to replace them with a rationalised, homogenised product.

The benefits and drawbacks of high or low intensity use of on-site media at natural areas and their considerable potential for conflict are also central to the interpretative debate. The fundamental problem of knowing when the entertainment stops and the education starts is a difficult planning conundrum for protected area managers. Exploring the key issues of visitors' preferred experiences in protected areas, and their reactions to various levels of low and high-tech interpretative provision, (from basic interpretative displays to more sophisticated ones represented by virtual reality) this paper revealed 'expert' and political decision-makers' mistaken presumptions about how visitors actually want to experience the landscape.

Irish policy makers and planners seem to over-emphasise the need for state-of-the art facilities, the 'spick and span' philosophy which is frequently far removed from the untouched, 'authentic' natural expectation of Irish tourist destinations. This paper thus highlights the failure in the Irish tourism planning system to identify who the visitors are, what their expectations might be, and how they might react to the kind of experiences provided. Specifically, this research shows that Ireland seems fixated on developing visitor centres and high-tech, high-intensity interpretative facilities despite the fact that evaluative research into visitor centres' effectiveness was never conducted.

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<sup>1</sup> Department of Geography, National University of Ireland, Galway, University Road, Galway City, Ireland, [noel.healy@nuigalway.ie](mailto:noel.healy@nuigalway.ie)

Although a certain amount of interactive displays and interpretative facilities were welcomed by visitors and key actors, many preferred to experience the landscape with less facilitation and with simple, low-intensity interpretation.

Ireland needs to re-think its approach to tourism and to create a shift away from the state's sole focus on 'honeypot' sites and their management for exclusively touristic purposes. Instead of developing producer-orientated, state-of-the-art developments which are politically driven and promoted as signifiers of progress and wealth, we need to allow visitor centre developments to be market-driven whereby all stakeholders — particularly local communities and visitors — are involved in the design and vision of the facility. In order for visitor centre developments to be viable and effective mechanisms for supporting sustainable tourism development, they require a radical transformation in their design, planning, governance, role, and function within communities and regional tourism development.

### **References**

Edensor, T. (1998) *Tourists at the Taj: Performance and Meaning at a Symbolic Site*, London, Routledge.

# Submerging in the Antarctic tourist experience: analysing the diverse expectations and experiences of diving and non-diving tourists in Antarctica

Machiel Lamers<sup>1</sup>, Hans Gelter<sup>2</sup>

Keywords: tourist, experience, diversification, management, Antarctica

Since the mid-1980s, the annual number of people visiting Antarctica for tourism purposes has increased rapidly from a few hundred to over 45.000 in 2008 (Lamers 2009). Antarctic tourism has also become more diverse. Tourism operations are largely ship-based, with a much smaller number of tourists travelling to Antarctica by air. The traditional expedition-cruises involving small to medium-sized ships, rubber boat landings and educational programmes, have been complemented with large cruise liners making no landings, overflights, fly-sail operations, as well as some land-based tourism using aircraft for transportation. In the context of expedition cruises and land-based itineraries, an increasing range of adventurous activities are offered including helicopter excursions, camping, kayaking, scuba diving, mountain climbing, and cross-country skiing (Stonehouse & Crosbie 1995, Bastmeijer & Roura 2004, Lamers 2009). A shift has been noted from location-based tourism (i.e. the focus on wildlife and historic sites), to activity-based tourism (i.e. the focus on activities) (Lamers 2009). In other words, the experiences provided to tourists are becoming increasingly diversified, which presents a topic that is in need of further research (Stewart et al. 2005).

The diversification of Antarctic tourism has been criticised by those who claim that new activities may pose safety risks, erosion of intrinsic Antarctic wilderness values (e.g. Antarctica becoming a playground) and even strategic judicial challenges in the longer term. The case of high-risk adventure activities, the use of existing scientific facilities for tourism, or the development of permanent land-based tourism infrastructures are examples of developments that might pose such challenges (Lamers 2009). It is suggested that different types of activities might bring tourists and tour operators that are not as dedicated to the ecological integrity of the Antarctic as the present ones (Hemmings 2000, Hummel 1994); this highlights the potential need for future visitor management (Page 2003). In this article we intend to analyse this hypothesis.

The tourist experience is a multi-disciplinary topic. Various theories and studies exist and will be analysed to point out differences in experiences in the Antarctic context (see for example Maher 2005). For example, the theory of planned behaviour, or expectancy-satisfaction model (e.g. Maher 2005), visitor typologies (e.g. Snyder 2007), and the flow theory. Visitor management in Antarctica is also not a straightforward issue. Tourism is formally regulated by the Antarctic Treaty System (ATS), which are a group of countries with Antarctic scientific programmes that collectively manage activities in this region. Tourism policies have typically been ad hoc and reactive, targeting individual expeditions rather than clusters of activities, focusing on requirements rather than restrictions, and often responding to incidents and plans (Hemmings & Roura 2003, Bastmeijer & Roura 2004). In addition, tour operators in Antarctica have managed to maintain a relatively strong record on safety and environmental sensitivities (Lamers 2009). There is generally no funding available for onsite management, monitoring and enforcement, despite the fact that the Antarctic is designated as a nature reserve (Snyder 2007). These important tasks are now largely left for the tourism industry to cover.

The objective of the study is to understand the relation and implications of the diversification of Antarctic tourism for the tourist experience and onsite management efforts. In doing so, this paper hopes to contribute to the discussion on policy and management options. These objectives are

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<sup>1</sup> ICIS – Maastricht University, Netherlands, Postbox 616, 6200MD, Maastricht, Netherlands  
[Machiel.lamers@maastrichtuniversity.nl](mailto:Machiel.lamers@maastrichtuniversity.nl)

<sup>2</sup> Lulea University of Technology, 971 87 Luleå , Sweden, [Hans.Gelter@ltu.se](mailto:Hans.Gelter@ltu.se)

tackled by answering two interrelated questions: a) In what way is tourism in Antarctica diversifying, and what are the consequences? b) What are the implications of this diversification for Antarctic tourist experiences and onsite visitor management?

The paper presents the results of an extensive literature review and analyses visitor data regarding the diversification of Antarctic tourism. This study further attempts to analyse experiences of different types of Antarctic tourists. Empirical data will be presented from a survey based on these theories conducted during a combined scuba diving - tourist cruise in the Antarctic Peninsula Region, in March 2009. During this cruise, diving and non-diving tourists were asked to fill in three questionnaires regarding their experiences; the first immediately after embarking the ship, the second after a full day of activities in Antarctica, and the third just before disembarking (n=56). Using the independent T-test, the aim of the survey was to see if there are major differences in the way groups of tourists on board the ship undertaking different types of activities experience a range of factors during a multi purpose trip.

The results show that tourism in Antarctica is diversifying in several ways and causing a range of regulatory implications, including the safety and risks, the quality of crew, the development of guidelines, and the improvement of monitoring and compliance. The tourist survey suggests that significant differences can be detected in the way divers and non-divers experience the trip, especially regarding the expected service and amenities, the focus of attention, and the interaction with the guides. The limited scope of this survey will only allow us to develop hypotheses about the nature and implications of multiple tourist experiences in Antarctica for future research. Based on the findings, the paper will discuss the implications of diverse tourist experiences for Antarctic tourism governance and visitor management.

## References

- Bastmeijer, C. and R. Roura (2004). Regulating Antarctic Tourism and the Precautionary Principle. *The American Journal of International Law* 98(4): 763-781.
- Hemmings, A. (2000). *Icewatch*. Living Planet. Fall.
- Hemmings, A. and R. Roura (2003). A square peg in a round hole: fitting impact assessment under the Antarctic Environmental Protocol to Antarctic tourism. *Impact Assessment and Project Appraisal* 21(1): 13-24.
- Hummel, J. (1994). Kiezen voor bepaalde categorieën ecotoeristen. *Circumpolar Journal* 9(3-4).
- Lamers, M. (2009) *The Future of Tourism in Antarctica: Challenges for Sustainability*. Datayse/Maastricht University Press.
- Maher, P. (2005) *The Nature of the Sea: A Framework for Exploring Visitor Experiences in the Ross sea Region, Antarctica*, in Kylainen, M. (Ed.), *Articles on Experience 2*, Lapland Centre of Expertise for the Experience Industry (LCEEI), Rovaniemi: Finland.
- Page, S. (2003). *Tourism Management: Managing for change*. Oxford: Butterworth-Heinemann.
- Snyder, J. (2007). *Tourism in the Polar Regions: The Sustainability Challenge*. Paris: United Nations Environment Program.
- Stewart, E.J., Draper, D., & Johnston, M.E. (2005). A review of tourism research in the Polar Regions. *Arctic*, 58(4), 383-394.
- Stonehouse, B. and K. Crosbie (1995). *Tourist Impacts and Management in the Antarctic Peninsula Area*. In: C. M. Hall and M. Johnston (Eds.). *Polar Tourism*. New York: John Wiley.



## **A neglected component of Turkish National Park system: “Quality of the recreation experience”**

**Selcuk Sayan<sup>1</sup>**

Keywords: recreation quality, recreation framework, Turkish national parks

The parks and protected areas are increasingly important in modern society since they protect natural and cultural resources and enhance the quality of life by providing opportunities for recreation to an expanding population (Manning 2009). Recreational use of the parks and protected areas should bring solutions for the protection of resources and provide quality for the recreation experience. The principal measure of quality in outdoor recreation has traditionally been visitor satisfaction which is affected by situational variables (physical setting, social setting, management setting) and by subjective evaluations (socioeconomic and cultural characteristics, experience, attitudes and preferences, norms) (Manning, 1999). The capability of the resource base and the recreation setting to provide for recreational use raises the concept of carrying capacity (Pigram and Jenkins 1999) which refers to the amount and type of use that can be accommodated in parks and related areas without unacceptable impacts to park resources and/or the quality of the visitor experience. Best possible recreation conditions can be provided through the formulation of management objectives and the development of associated indicators and standards of quality (Manning 2001).

National park designation in Turkey initially started in 1956 with the “Forest Law”. Nearly 30 years later in 1983 the “National Parks Law” was adopted to establish the criteria for the selection and designation of national parks, nature parks, natural monuments and nature reserve areas of national and international value (Resmi Gazete 1983). To date, 40 national parks have been designated with a total area of 897,657 hectares (Ministry of Environment and Forestry 2009). A long term management plan for each park was prepared to determine the conditions of access, protection, development, management and services to be provided within the park area (Anonymous 1969). However, the management plans were not utilized and they were functioned only as inventory tools when needed (Cirik 2007). They included nothing about visitors, their management or the quality of recreation experiences. The demands of potential or actual visitors have never been integrated into the Turkish national park system, except in a recent circular (Çevre ve Orman Bakanlığı 2007) which was prepared to establish the rules for visitor management and nature tours, but still from the resource protection point of view. Therefore the quality of recreation experience has been a neglected part of Turkish national park system. This problem raises the need for establishing a recreation framework for managing outdoor recreation for the national parks of Turkey.

Several contemporary park and outdoor recreation frameworks have developed particularly for the parks in the U.S. such as Limits of Acceptable Change (LAC) (Stankey et al. 1985), Carrying Capacity Assessment Process (CCAP) (Shelby and Heberlein 1986), Visitor Impact Management (VIM) (Graefe et al. 1990) and Recreation Management Planning Process (Manning 1999). In 1992, the U.S. National Park Service began developing a similar planning and management framework ‘Visitor Experience and Resource Protection’ (VERP) that focuses on visitor use impacts on the visitor experience and the park resources (National Park Service 1997). VERP has nine integral elements as follows:

1. Assemble an interdisciplinary project team.
2. Develop a public involvement strategy.
3. Develop statements of park purpose, significance, and primary interpretive themes; identify planning constraints.

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<sup>1</sup> Department of Landscape Architecture, Akdeniz University, Faculty of Agriculture, Department of Landscape Architecture, 07070 Antalya Turkey, [sayan@akdeniz.edu.tr](mailto:sayan@akdeniz.edu.tr)

4. Analyze park resources and the existing visitor use.
5. Describe a potential range of visitor experiences and resource conditions (potential prescriptive zones).
6. Allocate the potential zones to specific locations in the park.
7. Select indicators and specify standards for each zone; develop a monitoring plan.
8. Monitor resource and social indicators.
9. Take management action.

The quality of a recreation experience is a component that has to be established for Turkish national park system. The park planning and management strategy has to be shifted from resource protection point of view to a dual approach considering both resources and recreation quality. On the other hand, conflicts with the local communities have been one of the major issues of the national park protection worldwide. VERP is a contemporary management framework that has strong public involvement strategy. VERP is considered suitable for the Turkish national parks but it has to be adapted to local conditions.

The interdisciplinary team could be created mainly with the environmental scientists who are specialized in the outdoor recreation. A public involvement strategy could be easily developed for the national parks that include rural settlements. However the implementation process could be problematic because of the accumulated problems and issues. Arguably the most important part of VERP is the park purpose and planning which has been under threat of tourism developments in Turkey. The four steps up to monitoring can be scientifically and technically completed according to the planning principles. The monitoring process could be a weak point of the system since continuity is an actual problem of national park agencies. This paper aims to evaluate the possibility of adapting VERP in detail for Turkish national parks.

## References

- Anonymous (1969), Termessos Milli Parkı Uzun Devreli Gelişme Planı. T.C. Orman Bakanlığı Orman Genel Müdürlüğü Milli Parklar Dairesi, Ankara, 55 pp
- Cırık U (2007) Milli Parklar ve Uzun Devreli Gelişme Planları. Planlama 2007(1): 45-50
- Çevre ve Orman Bakanlığı (2007), Ziyaretçi Yönetimi ve Doğa Turları Genelgesi. Çevre ve Orman Bakanlığı Doğa Koruma ve Milli Parklar Gn. Müd., 4 pp
- Graefe AR, Kuss FR, Vaske JJ (1990), Visitor Impact Management: The Planning Framework. Washington, D.C.: National Parks and Conservation Association.
- Pigram JJ, Jenkins JM (1999), Outdoor Recreation Management. Routledge Advances in Tourism, London, UK, 329 pp
- Resmi Gazete (1983), Milli Parklar Kanunu. Kanun No: 2873, 11 Ağustos 1983 Tarih ve 18132 Sayılı Resmi Gazete, Ankara
- Manning RE (1999), Studies in Outdoor Recreation: Search and Research for Satisfaction. Oregon State University Press, Corvallis, Oregon.
- Manning, RE (2001), Programs that Work Visitor Experience and Resource Protection: A Framework for Managing Carrying Capacity of National Parks. Journal of Park and Recreation Administration, Vol: 19(1):93-108.
- Manning RE (2009), Parks & People: Managing Outdoor Recreation at Acadia National Park. University of Vermont Press, Burlington, VT.
- Ministry of Environment and Forestry (2009), National Parks Information System. Accessed online October 15, 2009: <http://www.milliparklar.gov.tr/mpd/mp/millipark.asp>
- National Park Service (1997), The Visitor Experience and Resource Protection (VERP) Framework: A Handbook for Planners and Managers. Denver: Denver Service Center.
- Shelby B, Heberlein TA (1986), Carrying Capacity in Recreation Settings. Corvallis, Oregon: Oregon State University Press.

Stankey GH, Cole DN, Lucas RC, Peterson ME, Frissell SS, Washburne RF (1985), The Limits of Acceptable Change (LAC) System for Wilderness Planning. USDA Forest Service General Technical Report INT-176.

## Staatsbosbeheer's experiences with demand-driven working

Marloes L. Berndsen<sup>1</sup>

Keywords: demand-driven working, motive groups, recreational area analysis, cooperation, quality, diversity

Staatsbosbeheer, the Dutch State Forestry Service, was established in 1899 when the nation needed an organisation to plant trees in order to stop walking sand dunes from covering villages. Nowadays, it is more correct to describe Staatsbosbeheer as a 'public body guarding the natural heritage of the Netherlands'. The agency manages over 250,000 hectares of protected areas, including national parks, which amount to around 7% of the total surface area of this small, crowded country. Staatsbosbeheer has a tendency to try and please everyone, everywhere. For example, it tries to provide every facility in every area, from paths to equestrian trails, from picnic benches to information panels. This results in some places becoming overcrowded and a bland uniformity developing. In the meantime, a different method has been adopted based on the question: what do urbanites, tourists or recreationists want? This question is subsequently matched to the site qualities present or yet to be developed.

Three years ago, Staatsbosbeheer switched from provision to demand-driven methods. The organisation intends to be a host to everyone and visitors are welcome almost everywhere. 92% of our sites are open to the public. Because there is no such thing as the person seeking recreation, a target group subdivision was sought which provided sufficient differentiation: the motive group approach as developed by WUR-Alterra (Goossen & de Boer, 2008). On the basis of these motive groups, Staatsbosbeheer can state that it does not cater solely to nature lovers, but for example, also to fun seekers and mountain bikers (Staatsbosbeheer 2007), and you can't do that all in the same place. Demand-driven working provides us with tools for selection and enables us to provide more quality to the target group selected. This simultaneously leads to a more diverse range of products and services.

In recent years, Staatsbosbeheer has sought for an approach that would flesh out demand-driven working. Cooperation is central to this. The organisation cannot retreat to its own sites; we also look at what others provide. In order to get a grip on the recreational performance of a site, we have opted to carry out recreational site analyses on the basis of the 5 following characteristics (availability, accessibility, suitability, familiarity and involvement). For the suitability aspect in particular, we have differentiated various motive groups. Experiences so far have revealed that the motive groups can be easily translated into various site structuring wishes which reinforce the desired recreational experience. Moreover, the motive groups are easy to understand. Everyone – from administrators to entrepreneurs – can recognise themselves.

Trials with these recreational site analyses were held in a number of areas, for example in Schouwen-Duiveland (Leisure Result 2007). A number of steps were taken in order to arrive at a substantiated, regional vision:

Market analysis:

- Desk research;
- Inhabitant analysis by means of telephone questionnaires.

Policy analysis:

- Policy study;
- Input from stakeholders through face-to-face and telephone interviews.

Collecting this information provides insight into which opportunities and bottlenecks have to be taken into account. Personally involving stakeholders early on (by means of a meeting) creates

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<sup>1</sup> Project Manager Recreation at Staatsbosbeheer [Dutch State Forestry Service], P.O. Box 1300, 3970 BH Driebergen, The Netherlands, [m.berndsen@staatsbosbeheer.nl](mailto:m.berndsen@staatsbosbeheer.nl)

commitment which can, in the future, lead to good cooperation. This allows a properly substantiated development course to be set out which is promising and has regional support. Ultimately, the recreational site analyses lead to new structuring plans which include proposals per sub-area, for improving the way in which certain motive groups are served. All the cooperating parties contribute to the implementation.

The motive group approach also proves to work well internally. People share the same framework of reference and this makes it easier to talk to each other about the desired structuring of a site. This approach is particularly successful for the briefing of landscape architects. In order to concretise the various experiential atmospheres and the accompanying facilities, a digital image bank was used which contains reference images, good and bad practices, and examples of plans for sites. The motive groups have since been incorporated into the operational control system. The priority motive groups have been included in the 9 types of recreational management that we distinguish and have subsequently been translated into a particular level of facilities. The standard costs have been calculated per recreational management type. Every area demands a specific approach which suits it and the problems it faces. The search is therefore far from over, but the newly developed system and working with motive groups helps to further concretise demand-driven working.

### **References**

- Goossen, C.M. & T.A. de Boer, (2008) Recreatiemotieven en belevingssferen in een recreatief landschap; Literatuuronderzoek. (recreational motives and spheres of experience in a recreational landscape; literature study) Wageningen, Alterra. Alterra-rapport 1692.
- Goosen, C.M., Kruit, J., Donders, J. en Rooij, B. (2009) Smaakmakers voor landschappen op basis van recreatiemotieven. Eerste aanzet om belevingssferen in landschappen te creëren. (tasting landscape with recreational motives; First attempt to create experience spheres in landscapes) Wageningen, Alterra, Alterra-report 1932.
- Leisure Result, (2007) Schouwen-Duiveland "Van Zierik tot Zee", Gouda.
- Staatsbosbeheer (2007), Recreatie Taskforce prioriteiten in beheer, Driebergen.

# The tourist experience of out-there-ness: theory and practice

Birgit Elands<sup>1</sup>, Jaap Lengkeek<sup>2</sup>

Keywords: tourist experience, out-there-ness, typology, empirical research

The interest in tourist experiences is crucial for understanding tourism and has resulted in a number of typologies. In this paper, a new typology of tourist experiences is theoretically elaborated and empirically assessed in a variety of socio-spatial settings. A main source of inspiration was Eric Cohen's phenomenology of tourist experiences (Cohen, 1979).

The paper is based on a constructivist perspective on social life. Tourism creates a switch from the self-evident construction of everyday life to a temporarily different state of mind that transforms the experiential world. This transformation is conceived of as the experience of 'out-there-ness', which creates to varying degrees a new and unfamiliar experience of places, people, sounds, smells, different from everyday 'normality' (Schutz 1990, Lengkeek, 1996). We assumed that tourist modes of experiences are not only directly 'lived' during tourist and recreational outings, but also are anticipated and reflected on afterwards. These theoretical considerations formed the foundation of a new typology of tourist experiences. We distinguish between five different modes of experience: amusement (unproblematic ways of having fun); change (temporarily breaking loose from everyday reality in which out-there-ness has still little form); interest (fantasy is created through signs and stories, but out-there-ness is not fully understood); rapture (search for self-identification); and dedication (merge into out-there-ness).

In light of the complexity of the tourist experience, it would be natural to follow a qualitative research methodology. We wanted, however, to compare our results in a variety of socio-spatial settings and to make it work in an efficient and practical way for policy-making, management and design. Therefore, we needed to translate our phenomenological underpinned modes of experience stepwise into categories that are empirical measurable. Inevitably, this operation involves a reduction in the complexity of the phenomena. We developed a questionnaire in which each mode of experience was operationalised in five or six statements. A 5-point Likert scale response format was chosen as the form of measurement for each of the scale items (strongly disagree ↔ strongly agree).

We tested our typology in six different case studies, which vary from day visitors in National Parks in the Netherlands to tourist visiting National Parks in Costa Rica (Elands and Lengkeek, 2000). Factor analysis was applied to determine the underlying dimensions of modes of experiences. This was the basis for assessing the extent to which the factor results of each case study represent the modes of experience. Moreover, we were interested to know the distribution of respondents amongst the different modes of experiences within different socio-spatial settings. Each factor was recalculated based upon the average value of the original scale item values (1 = 'strongly disagree' to 5 = 'strongly agree') belonging to that factor. In order to assign respondents to a factor, representing a (component of a) mode of experience, we had to define a boundary value. We decided to set this value on 3.7 (the majority, though not all, of the responses needed to be at level 4 'agree').

To compare the studies with each other, we have tried to integrate all factors of all case studies into a figure (Figure 1). We can conclude that the graphs for all case studies are relatively similar. It is evident that the search for experiences within the context of different studies is universal. It is interesting that the amusement mode, especially in reference to comfort, is the strongest and most obvious in the Veluwe National Landscape tourists study. Perhaps this can be attributed to a

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<sup>1</sup> Forest and Nature Conservation Policy Group, Wageningen University, P.O. Box 47, 6700 AA Wageningen, The Netherlands, [birgit.elands@wur.nl](mailto:birgit.elands@wur.nl)

<sup>2</sup> Professor Emeritus Wageningen University, Molenstraat 4, 4011 EL Zoelen, The Netherlands

large group of respondents who chose for a reliable and safe environment nearby, in the Netherlands, and mostly for a short visit. Apart from this, amusement plays a minor role in this study. The change and interest modes form the dominant modes; the interest mode is largest in four studies. It should be noted that shock played a relatively minor role in the mode of rapture. This becomes logical when one reason is that this mode is driven by an explicit fascination for those unexpected and vehement events which are few and far in between. The dedication mode was also small in size. The strongly pronounced change and interest modes coincide with the tourist metaphor as mentioned in the introduction: a more or less shallow experience, mobilized by the desire to 'get out' and an off-hand curiosity.

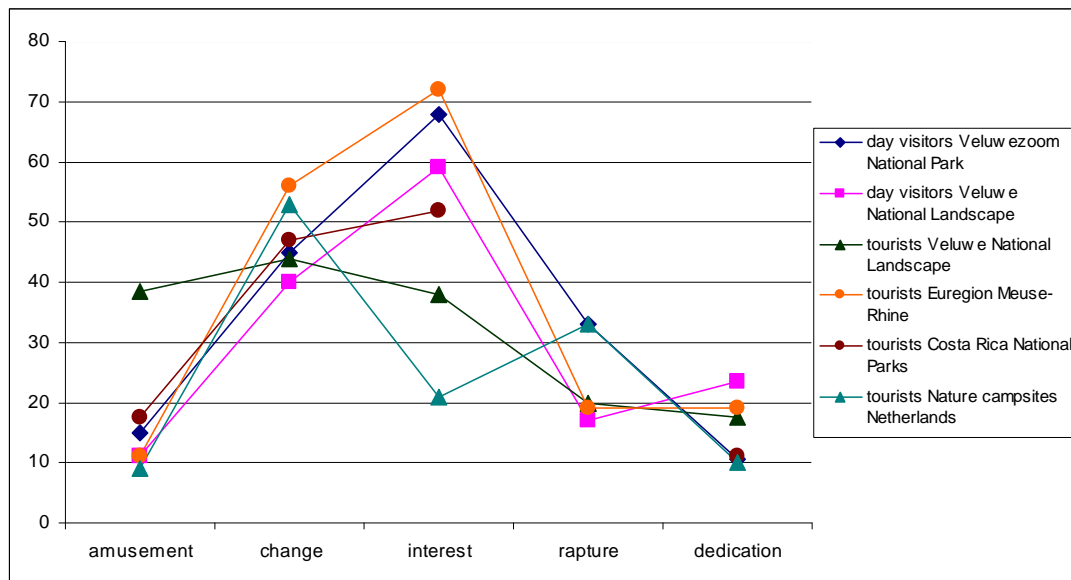


Fig. 1 Distribution of respondents amongst the modes of experience in different socio-spatial settings.

We can conclude that, despite the varied character of the case studies, a large continuity can be observed in appearance and contents of the modes of experience, which has guided us to the formulation of both a self-report questionnaire and recommendations for tourism development. So far, the results have inspired visitor management policies in the Netherlands (Cottrell et al., 2005). Future research will focus especially on the relation between modes of experiences and environmental quality conditions.

## References

- Cohen, E. (1979). A phenomenology of tourist experiences. *The Journal of the British Sociological Association*, 13, 179-201.
- Cottrell S.P., Lengkeek, J. and Van Marwijk, R. (2005). Typology of recreation experiences: application in a Dutch forest service visitor monitoring survey. *Managing Leisure* 10, 54-72 (January 2005)
- Elands, B. and J. Lengkeek (2000). Typical tourists. Research into the theoretical and methodological foundations of a typology of tourism and recreation experiences. *Mansholt Studies* 21, Wageningen University.
- Lengkeek, J. (1996). On the Multiple Realities of Leisure; A Phenomenological Approach to the Otherness of Leisure. *Loisir et société / Society and Leisure*, 19, 23-40.
- Schutz, A. (1990). *Collected Papers I - The Problem of Social Reality*. The Hague: Martinus Nijhoff.

## Development of recreational areas using spheres of experiences

**Martin Goossen<sup>1</sup>**

Keywords: experience, motives, design, recreation

Experiences seem to be the key-word of modern recreational use. These experiences are strongly related to the motives with which people recreate (Elands & Lengkeek 2000, Tyrväinen et al. 2007). In our research we distinguish five motives: amusement; having a break; interest; immersion and physical challenge. Research shows that each recreationist recreates with different motives during a year, but “having a break” is the most popular one (Goossen & de Boer 2008). The research question is: What must be added in recreational areas to design spheres of experiences according to the motives people have to recreate.

In a case-study we asked 117 recreationalists living in the densely populated Western part of the Netherlands to send by post or upload pictures (from their own photos or photos from magazines) of recreation destinations with, according to their ideas, a certain sphere of experience related to the motive. One of the questions in the attached questionnaire was also to describe why they had chosen that picture (Goossen et al. 2009). The 250 pictures which were sent in gives a first insight in common features of the sphere of experience related to the motives. Partly using the classification of Hunter (2008) and Oku & Fukamachi (2006) we classified the pictures into people, activity, objects, space, temporary, vista and nature. The photos differentiate highly between the various motives. Respondents with the motive “Amusement” sent pictures with people on it, relaxing and a lot of terraces. Walking, landscape and water were on the pictures of the respondents with the motive “Having a break”. Walking, heritage and landscape for “Interest”. Animals, detailed shots of plants and water for “Immersion” and people, hills and all kinds of sporting activities for “Challenge”. The images on the photos was fairly similar to what we have found in the literature (Goossen & de Boer 2008). The respondents with “Amusement” as motive pointed out that cozy, family, fun, together and pleasant were the most important reasons why they had chosen to send in that specific picture. The reasons of silence, enjoy, pleasant, close by, nature and beautiful were used the most for “Having a break”. Learn, flowers and animals, history and information are the reasons for “Interest”. The reasons enjoy, beautiful, observe, nature and birds are the most mentioned for “Immersion”. And challenge, tough, enjoy, exert, sport are the most important reasons for “Challenge”.

Interestingly, the respondents use the same words in a variety of reasons. The word “enjoy” is used in every motive but the respondents enjoy different elements however. The meaning of the word “enjoy” has different values related to the motive. The same results are similar with the words “pleasant” and “nature”.

The photos and reasons behind it seem to point out that the motives are not separated units, but slide into each other. They also point out that respondents use a combination of motives in a single trip. Another study (Goossen et al. 2010) supports this hypothesis. A vast majority (79%) of hikers use a combination of motives; on average 2,3. But the majority of the hikers (53%) has one main motive which counted for at least 50%.

On the basis of the pictures and reasons, we developed landscape additives to be used in design concepts. These additives are not static ‘blue prints’, but must be used to stimulate managers and landscape architects to create different spheres of experiences related to the motives. The most important additives in “Amusement” are things to do together, which are fun and create meeting places. In “Having a break” the sphere must be serene and silence, a contrast with daily life, beautiful and nearby. Additives in “Interest” must be authentic, interesting, relate to heritage and

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<sup>1</sup> Centrum landschap, Alterra, part of Wageningen UR, P.O. Box 6700 AA Wageningen, The Netherlands, [Martin.goossen@wur.nl](mailto:Martin.goossen@wur.nl)



biodiversity and where you can learn something. The sphere in "Immersion" must be a rather unique biodiversity and something to discover. The additives in "Challenge" are to stimulate physical experience, where you can reach a goal and a landscape which is rather challenging.

The conclusion is that the motives differ but the experience spheres could slide into each other, except for the motives "Amusement" and "Immersion"; they are almost opposite. The consequence is that a region should deliver a diversity of spheres of experiences according to the distribution of motives. A specific recreational or protected area does not have to deliver all experience spheres but must be able to complement the experience spheres in other areas in the region. An 'experience zoning' of a region is rather essential to create alternatives in the total recreational supply. This offers new opportunities to develop an integrated approach with other spatial functions like ecology, agriculture, culture history and sports.

## References

- Elands, B. and J. Lengkeek (2000). Typical tourists. Research into the theoretical and methodological foundations of a typology of tourism and recreation experiences. *Mansholt Studies 21*, Wageningen University.
- Goossen, C.M. & T.A. de Boer, (2008) *Recreatiemotieven en belevingssferen in een recreatief landschap; Literatuuronderzoek. (recreational motives and spheres of experience in a recreational landscape; literature study)* Wageningen, Alterra. Alterra-rapport 1692.
- Goossen, C.M., Kruit, J., Donders, J. en Rooij, B. (2009) *Smaakmakers voor landschappen op basis van recreatiemotieven. Eerste aanzet om belevingssferen in landschappen te creëren. (tasting landscape with recreational motives; First attempt to create experience spheres in landscapes)* Wageningen, Alterra, Alterra-report 1932.
- Goossen, C.M., R.J.H.G. Henkens, I. Woltjer, (2010) *Behoeftte aan vrijetijdsvoorzieningen in en om de stad. (Need for leisure facilities in and around the city).* Wageningen, Alterra, Alterra-report in print.
- Hunter, W. C. (2008). "A typology of photographic representations for tourism: Depictions of groomed spaces." *Tourism Management* 29 (2008) 354-365.
- Oku, H., K.Fukamachi (2006). "The differences in scenic perception of forest visitors through their attributes and recreational activity." *Landscape and Urban Planning* (75 (2006) ): 34-42.
- Tyrväinen, L., Mäkinen, K. and Schipperijn, J. (2007) Tools for mapping social values of urban woodlands and other green areas. *Landscape and Urban Planning* 79: 5-19.

## The green-space experience as a tool for planning at small scales

Christian Lindholst<sup>1</sup>, Jasper Schipperijn<sup>2</sup>, Ulrika Stigsdotter<sup>1</sup>

Keywords: experience, green-space, green-space management, method development, planning method

In traditional green-space planning approaches, we rely typically on characteristics such as form and function. However, for a visitor it must be his or hers experience of a green space that is important for the perceived quality and ultimately the value of a green space. But what is this experience? Can we measure it? And how can we use this knowledge in planning, designing and managing for quality in urban green-spaces?

In a Swedish context, Berggren-Bårring and Grahn (1995) developed eight park characteristics as a concept for urban green-space planning. The development was based on a large survey of urban park use in three Swedish cities. The eight characteristics were described with a mix of words related to both the abstract experience as well as the physical environment causing the experience. Since 1995, the eight park characteristics have been further developed by Grahn and his colleagues, slightly changing in content and exact wording over the years (see Grahn & Stigsdotter 2010). Compared to other versions of the experience perspective (see Lindström & Jönsson 2009), the work of Grahn and his colleagues can be characterized as a 'cognitive' perspective. Following this line of work, we now talk about the experience as a visitor's sense/feeling of 'nature', 'serene', 'richness in species', 'space', 'refuge', 'prospect', 'cultural/history' and 'social'.

The eight characteristics have not specifically been developed for use as a practical tool and using them in practice has proved to be difficult. Several practical applications have been developed over the years in Sweden, Finland and Denmark. These methods have in common that they use the characteristics of the physical environment associated with the experiences to identify green-space values. However, when green-space values are identified in this manner they should be 'translated' back into user experiences and benefits related to these experiences. Problems arise since the relation between physical characteristics and experiences is not 1:1. In other order words, the characteristics do not always lead to the same experiences and vice versa. Whether or not visitors get a certain experience when visiting a location with certain characteristics may depend on many factors such as personal and professional background, health, weather, season, other people present, state of mind, and how the elements are composed.

To overcome such problems, we have – on a preliminary basis – suggested an approach that takes its starting point in the 'other side' of park characteristics; the experience. We went back to the original eight park characteristics and sought to identify the 'experience' behind each of them. The assumption is that the value of a green-space is easier identified through mapping of experiences than mapping characteristics. In the mapping process some green-space experiences may be identified as lacking in the proximity of a residential area. Planning should therefore seek to promote such experiences through investments and/or maintenance in order to increase the value of the green-space. With this outset we have sought to develop a planning method based on integration of the experience with knowledge of local preferences and planning needs.

The method is developed through a number of 'tests' at smaller scales e.g. a park (in contrast to the application at the regional scale or the level of the overall green infrastructure, e.g. Caspersen and Olafsson 2009). The test has been undertaken with students, researcher and professionals.

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<sup>1</sup> University of Copenhagen, Forest & Landscape, Rolighedsvej 23, DK-1958 Frederiksberg C, [chli@life.ku.dk](mailto:chli@life.ku.dk) and [uks@life.ku.dk](mailto:uks@life.ku.dk)

<sup>2</sup> University of Southern Denmark, Institute of Sport Science and Clinical Biomechanics, Øster Farimagsgade 5A, 2.sa, DK-1353 København, [jsc@sdu.dk](mailto:jsc@sdu.dk)

Each test had a common outset in a specific urban green-space with the purpose to learn to identify and map experiences while highlighting development potentials. The tests have been organised slightly differently in each case. Based on our experiences with the tests, we presently suggest and discuss a four-step method for using the experience in urban green-space planning.

The four steps are:

1. *Planning context*: identification of the planning context and needs for a specific green-space. This can be done through either an expert or stakeholder approach.
2. *E-Mapping*: learning of the experience perspective in the local context, adjustment of measurements of experiences, and mapping of sites into 'E-maps'
3. *Deliberation*: discussions with experts and/or stakeholders about the development potential based on step 1-2, and development potentials
4. *Write-up of a final report* on the development potentials based on step 1-3

## References

- Berggren-Barring, A.M. and P. Grahn (1995) Grönstrukturens Betydelse För Användningen: En Jämförande Studie Av Hur Människor I Barnstugor, Skolor, Föreningar, Vårdinstitutioner M Fl Organisationer Utnyttjar Tre Städers Parkutbud. Alnarp: Sveriges lantbruksuniversitet.
- Caspersen, O.H. and A.S. Olafsson (2009) 'Recreational Mapping and Planning for Enlargement of the Green Structure in Greater Copenhagen', *Urban Forestry & Urban Greening*, In Press.
- Grahn, P. and U.K. Stigsdotter (2010) 'The Relation between Perceived Sensory Dimensions of Urban Green Space and Stress Restoration', *Landscape and Urban Planning*, In Press.
- Lindström, M. and S. Jönsson (2009) *How to Measure Landscape Experiences: From Quantitative to Qualitative Research*. Kalmar: Department of Human Sciences, University of Kalmar.

# Role of PAN Parks in local community development in Oulanka National Park, Finland – a mixed methods approach

Stuart P. Cottrell<sup>1</sup>, Pirkko Siikamäki<sup>2</sup>, Riikka Puhakka<sup>3</sup>

Keywords: mixed methods, discourse analysis, sustainable tourism, national parks, PAN Parks, Finland

## Mixed Methods in Tourism Research

Tourism is a multifaceted and complex phenomenon, thus difficult to study comprehensively. A mixed method analysis offers a promising yet little used (Decrop 1999) approach to understand tourism-related issues versus quantitative or qualitative analysis singularly. Although qualitative methodologies have substantially increased since Riley & Love's (2000) review of the state of qualitative tourism research in 1996 among the four major tourism journals at that time (i.e., *Journal of Travel Research*, *Annals of Tourism Research*, *Tourism Management*, and *Journal of Travel and Tourism Marketing*), sole methods continue to dominate the methods published in those journals versus multi-method (Ateljevic et al. 2008) or more recently referred to as mixed methods (Cresswell & Plano Clark 2007). With the development of both quantitative and qualitative research in social science, mixed methods, utilizing both qualitative and quantitative approaches in combination, has become more frequent (Bryman 2006). Mixed methods represent a step forward in the evolution of research methodology as it combines the strengths of both qualitative and quantitative research (Creswell 2009). Yet, a recent analysis of trends in tourism research by Ballantyne and his coworkers (2009) reported that only 6 % of a stratified random sample of 144 articles used a mixed methods approach.

Much of the early work in tourism was initiated through qualitative research (see Boorstin 1964, MacCannell 1976, Smith 1977, Cohen 1979, Graburn 1983 in Riley & Love 2000) and tended to be published in non-tourism journals, such as the early works in sociology (Forster 1964; Cohen 1972, 1973, 1979; MacCannell 1973). Perhaps tourism researchers were less familiar with qualitative methods today while these techniques were less known during that period (Riley & Love 2000). Meanwhile, the proliferation of quantitative methods has been and still remains predominant in the literature, although graduate study programs have included more training in the qualitative approaches within tourism studies (Love & Riley 2000, Jamal & Hollingshead 2001).

## Purpose

This article seeks to position mixed methods as a complement to traditional qualitative and quantitative research and to provide a framework for designing and conducting mixed methods in sustainable tourism research. Specifically, we focus on the beliefs and perceptions of local stakeholders on tourism development pertinent to the PAN (Protected Area Network) Parks trademark that is an international ecolabel aiming to promote a sustainable tourism network of European national parks. The socio-cultural sustainability of tourism perceived by local stakeholders nearby Oulanka National Park in northeastern Finland is examined via mixed methods (semi-structured interviews linked to survey data from the same respondent concurrently). The central question concerns the value of a mixed methods approach for understanding local residents' beliefs and perceptions of tourism development pertinent to an international ecolabel, namely PAN Parks.

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<sup>1</sup> Colorado State University, Human Dimensions of Natural Resources, 1480 Campus Delivery, Fort Collins, CO 80523, USA, [cottrell@warnercnr.colostate.edu](mailto:cottrell@warnercnr.colostate.edu)

<sup>2</sup> Metsähallitus, Natural Heritage Services, Ostrobothnia, P.O. Box 26, FI-93601 Kuusamo, Finland, [pirkko.siikamaki@metsa.fi](mailto:pirkko.siikamaki@metsa.fi)

<sup>3</sup> Thule Institute, University of Oulu, P.O. Box 7300, FI-90014 University of Oulu, Finland [riikka.puhakka@oulu.fi](mailto:riikka.puhakka@oulu.fi)

## **Results and conclusive highlights**

Four discourses were identified, based on 33 semi-structured interviews that have different views on socio-cultural development pertaining to tourism in the national park: 1) discourse integrating nature-based tourism and conservation, 2) discourse defending the rights of local people, 3) discourse stressing the economic utilization of nature, and 4) discourse accepting tourism development and the national park. Results of qualitative and quantitative analysis complemented each other; survey results strengthened the identification of four discourses and provided further information about the representatives of the discourses. Discourse groups differed for length of residence in the area, distance from the park, employment in tourism, familiarity with PAN Parks, PAN Parks partnership, belief in the benefits of PAN Parks, satisfaction with tourism and park development, and satisfaction with various dimensions of sustainability.

## **References**

- Ateljevic, I., Pritchard, A., & Morgan, N. (2008). The critical turn in tourism studies: Innovative research methodologies, (ed.) In: *Advances in tourism research Series*. Elsevier.
- Ballantyne, R., Packer, J., & Axelsen, M. (2009). Trends in tourism research. *Annals of Tourism Research* (36), p 149–152.
- Bryman, A. (2006). *Mixed methods: A four-volume set*. Sage: London, UK.
- Cohen, E. (1979). A phenomenology of tourist experiences. *Sociology* (13), p 179-201.
- Cohen, E. (1972). Towards a sociology of international tourism. *Social Research* (39), p 164-182.
- Cresswell, J. W. & Plano Clark, V.L. (2007). *Designing and conducting mixed methods research*. Sage Publications: Thousand Oaks, CA.
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches*. 3rd Edition. Sage Publications: Los Angeles, CA.
- Decrop, A. (1999). Triangulation in qualitative tourism research. *Tourism Management* (20), p 157-162.
- Forster, J. (1964). The sociological consequences of tourism. *The International Journal of Comparative Sociology* (5), p 217-227.
- Jamal, T. & Hollinshead, K. (2001). Tourism and the forbidden zone: the underserved power of qualitative inquiry, *Tourism Management* (22), p 63-82.
- Riley, R.W., & Love, L.L. (2000). The state of qualitative tourism research. *Annals of Tourism Research* 27(1), p 164-187.

# Research needs for supporting better protection of Europe's wilderness

Zoltán Kun<sup>1</sup>

Keywords: wilderness, think-tank, European policy, biodiversity

## Wilderness momentum in Europe

More than 100 organisations from the NGO, government and tourism sectors submitted a Resolution of Wilderness Areas in November 2008. The intensive lobby activity led to the adoption of a Special Report on Wilderness by the European Parliament (EP) on February 3rd 2009. The Parliamentary vote (548 “yes” versus 19 “no”) proved the existence of huge public support towards the better protection of Europe's remaining wilderness areas.

This special report had various requests towards linking the tourism and research sectors with wilderness conservations. The most relevant were the followings:

- The EP called a study on the value and benefits of wilderness protection, which particularly addresses the sustainable nature tourism, among other issues of ecosystem services.
- In view of the well-documented damage which tourism has inflicted on a great deal of Europe's natural heritage, calls on the Commission and the Member States to ensure that tourism, even if focused on introducing visitors to the habitats and wildlife of a wilderness area, is handled with extreme care, making full use of experience gained inside and outside Europe on how to minimise its impact (European Parliament 2009).

This popular mandate allowed the European Commission to support the organisation of the 1st European wide conference on 'Wilderness and Large Natural Habitat Areas' ([www.wildeurope.org](http://www.wildeurope.org)) in Prague on 28-29th May 2009. The conference resulted in an agenda for Europe's wilderness areas, which not only confirmed the increasing political interest in wilderness but also demonstrated an increasing interest in linking tourism related research with biodiversity consequences.

## Linking tourism and wilderness research

There is an urgent need to develop the linkage not only between the tourism and biodiversity related research, but also a link between conservation professionals and tourism research specialists. This link is needed to ensure the further investigation into the scientific rationale underpinning the linkage between wilderness conservation and the delivery of societal benefits in support of social programmes (Poseltvi 2009). Therefore, this paper suggests setting up a new network of research institutions and conservation organisation, (among them PAN Parks Foundation which focuses on protection of Europe's wilderness) which can apply for funding within the 7th framework programme of the European Commission.

## Introduction to PAN Parks

The concept of PAN Parks started in 1997. The idea was to increase management effectiveness of wilderness areas through using tourism as a tool to increase public support. The concept emerged into a new foundation which is currently managing a network of 11 protected areas across Europe. The PAN Parks Foundation always had a relatively wide range of connection with research institutions. Our innovative concept attracted the attention of researchers and students. The cooperation between Pan Parks Foundation (PPF) and the academic sector can be divided into three periods:

- 1997 – 2003: the researches were student-driven. There was no systematic approach in designing a research plan linked to PAN Parks.
- 2003 – 2006: setting up an informal network of academic institutions around PAN Park. We had a partnership with about 6 universities in the Netherlands, UK and Switzerland. There were still occasional researches based on the request of students

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<sup>1</sup> PAN Parks Foundation, Győr – 9024, Liezen-Mayer utca 89/a, Hungary, [zkun@panparks.org](mailto:zkun@panparks.org)

- 2007 – 2008: PAN Parks had an employee coordinating the researches and developing a systematic research agenda.

### **Wilderness Think Tank**

PAN Parks Foundation set up a new organisational structure in mid 2008. That led to a new way of approaching the coordination of the researches. Our connection to the network of academic institution significantly weakened and much less research has been carried out since then. Our team suggests now setting up a 'Wilderness Think Tank', which can effectively play the role of the previous research network. Here comes the definition of a think tank: "*A think tank (also called a policy institute) is an organization, institute, corporation, or group that conducts research and engages in advocacy in areas such as social policy, political strategy, economy, science or technology issues, industrial or business policies, or military advice.*" (The American Heritage Dictionary, 2000). PPF calls not only scientists but also practitioners, policy makers and so on, to participate in this think tank, which would not only provide opportunities for wilderness related researches, but also lobby for improved wilderness conservation in Europe.

### **References**

- Hegy, Gy. (2009), Special Report on Wilderness Areas, European Parliament, Brussels.  
 Proceedings of the Conference on Wilderness and Large Natural Habitat Areas (2009), Agenda for Europe's Wild Areas, Prague.  
 Houghton Mifflin Harcourt (2000), The definition of Think-Tank, in: 4th edition of The American Heritage Dictionary, Boston.

# Biodiversity hotspots and visitor flows in Oulanka National Park, Finland

Katie Lyon<sup>1</sup>, Ramona van Marwijk<sup>2</sup>, Pirkko Siikamaki<sup>3</sup>, Stuart Cottrell<sup>1</sup>

Keywords: biodiversity, nature based tourism, Finland, visitor flows, national park

## Introduction

The main goal of protected areas and parks, such as Oulanka National Park (ONP) in Finland, is to ensure nature conservation while offering visitors a high quality experience. Growth in outdoor recreation has fuelled concern about pressures on the environment (Marwijk 2009). Although impacts are an inevitable result of recreational use (Cole 2004), natural amenities are the foundation of tourism development, and sustainability depends greatly on the quality of those resources (Boers and Cottrell 2007).

At a time when conventional natural resource management is failing to meet goals of sustainability, it is being suggested that there is a need to consider the implicit relationship between humans and ecosystems (Alessa et al. 2008). The primary goal of this study is to identify areas of biological value (i.e. hotspots) within ONP and compare those to known visitor distributions.



Fig 1: Locational Map of Oulanka National Park, Finland

<sup>1</sup> Colorado State University, Human Dimensions of Natural Resources, 1480 Campus Delivery Fort Collins, CO 80523, USA, [katie.lyon@colostate.edu](mailto:katie.lyon@colostate.edu), [cottrell@warnercnr.colostate.edu](mailto:cottrell@warnercnr.colostate.edu)

<sup>2</sup> Wageningen University, Socio-spatial analysis Group, P.O.Box 47, 6700AA Wageningen, The Netherlands  
[ramonavanmarwijk@hotmail.com](mailto:ramonavanmarwijk@hotmail.com)

<sup>3</sup> Metsähallitus, Natural Heritage Services, Ostrobothnia, P.O. Box 26, FI-93601 Kuusamo, Finland,  
[pirkko.siikamaki@metsa.fi](mailto:pirkko.siikamaki@metsa.fi)



## Methods

Oulanka National Park, (28,000 ha) is located in northeastern Finland in the municipalities of Kuusamo and Salla and close to the Arctic Circle (Fig. 1). The eastern part of the park lies adjacent to the Russian border, where it joins to Paanajärvi National Park in Russia. ONP is one of the most popular national parks in Finland, with over 160,000 visitors per year (Metsähallitus 2009). Threatened and endangered species (lichen, moss, fungi, vascular plants) occurrence data are used to identify areas with high species density (i.e. biological hotspots). Coordinates for species occurrences were obtained from an existing database of samples collected by Metsähallitus (Finnish Forest and Park Service). A total of 912 red listed species occurrences were observed across the park during a 10-year period between 1997-2006. Campsite and trail usage during 2007 was determined by combining a number of different methods: trail counters, observation, on-site visitor surveys, and hut book registrations. Kernel density analysis (ArcGIS 9.3.1) was used to determine the density of species occurrences. The output, a raster image consisting of M grid nodes, shows the spatial pattern of species clustering. Campsite and trail usage were then added to the map to illustrate areas of potential human impact. Usage was symbolized using graduated symbols.

## Results

Results of the density analysis illustrate areas with a high density of threatened and endangered species (i.e. hotspots, Fig. 2). Spatial distribution of visits during 2007 shows that trail use is highly concentrated in two destinations in the park: Kiutaköngäs and the Juuma-Pieni Karhunkierros area. Many of the high-use recreational areas like Kiutaköngäs are located in important habitats for endangered species (i.e. hotspots). In addition, high density areas of threatened and endangered species are often located outside or on the edge of the core zone leaving them vulnerable to human impacts.

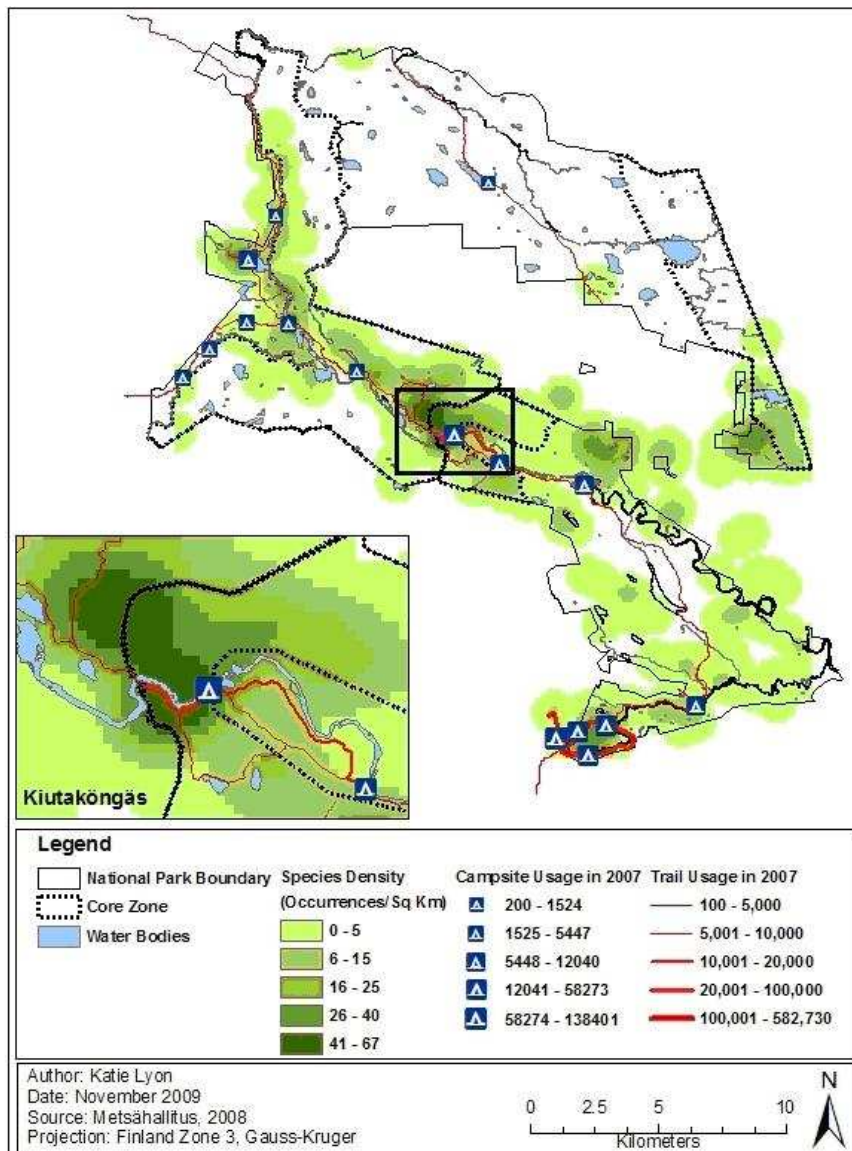


Fig. 2: Biological Hotspots and Trail Usage in Oulanka National Park

## Conclusion

From a management perspective, understanding the spatial distribution of biodiversity and recreation could provide the basis to improve nature conservation and visitor management. Results of this analysis indicate that management measures may need to be adjusted, as appropriate, where adverse impacts on biological hotspots are detected. According to Siikamäki and Kangas (2009) the most suitable vegetation types for recreational activities (e.g. camping) are the meadows and flooded meadows; vegetation types least suitable for recreational activities are fens and stands located on rocky terrain. However, many of the high-use recreational areas in ONP are located in areas with rocky terrain. In addition to being very sensitive to trampling, calcareous rocky terrains are one of the most important habitat types for endangered plant, moss and lichen species. These issues should be considered in managing for recreational use in those areas.

## Future Research

Future research will examine the relationship between biodiversity and social indicators such as attractiveness of the tourism destination and visitor satisfaction. Some questions to address include: (a) is there a link between biodiversity hotspots, attractiveness, and visitor satisfaction? and (b) do visitors recognize differences in biological diversity or are habitat characteristics such as openness and water more important to the visitor experience? Understanding this relationship is

crucial to managing use in an optimal way with regards to nature protection and visitor satisfaction.

## **Discussion**

Social scientists are increasingly using spatial representations to examine human-environment relationships (Evans and Moran 2002). However, there is danger in viewing GIS as a technological solution to complex issues such as tourism in which human values, emotions, and behaviors take precedence over quantitative data. While there is no doubt that GIS can be a powerful tool in facilitating decisions, it is often misused and interpreted as the end in itself rather than the means to an end (Giles 2003). Maps can often be misleading; therefore, much depends on how the GIS analyst presents the data.

## **References**

- Alessa, L., Kliskey, A., and Brown, G. (2008). Social-ecological hotspots mapping: A spatial approach for identifying coupled social-ecological space. *Landscape and Urban Planning*, 85(1), 27-39. doi: 10.1016/j.landurbplan.2007.09.007
- Boers, B. and Cottrell, S. P. (2007). Sustainable Tourism Infrastructure Planning: A GIS supported approach. *Tourism Geographies*, 9(1), 1-21.
- Cole, D.N. (2004). Impacts of hiking and camping on soils and vegetation: a review. In R. Buckley (Ed.), *Environmental Impacts of Ecotourism* (pp. 41-60). Wallingford, Oxfordshire, UK: CABI
- Evans, T.P., and Moran, E.F.. (2002). Spatial integration of social and biophysical factors related to landcover change. *Population and environment: methods of analysis. A supplement to Population and Development Review* 28:165-186.
- Giles, W. (2003). GIS applications in tourism planning. Retrieved from [www. cnc. bc. ca/gis/documents/340TourismTermPaper. Pdf](http://www.cnc.bc.ca/gis/documents/340TourismTermPaper.Pdf).
- Marwijk, R. van (2009). These routes are made for walking: Understanding the transactions between nature, recreational behaviour and environmental meanings in Dwingelderveld National Park, the Netherlands (Ph.D. Dissertation). Wageningen University, Wageningen.
- Metsähallitus (2009). Metsähallituksen luontopalvelujen vuosikertomus 2008. Retrieved from <http://julkaisut.metsa.fi/julkaisut/pdf/luo/vk2008fin.pdf>.
- Siikamäki, P. and Kangas, K. (2009). Limits of acceptable change as a tool for protected area management Oulanka National Park as an example. In P. Siikamäki (Ed.), *Research and monitoring of sustainability of nature-based tourism and recreational use of nature in Oulanka and Paanajrvi National Parks. Oulanka Reports 29*. Oulu, Finland: University of Oulu.

# Sustainable tourism development strategy: case of Soomaa National Park, Estonia

**Aivar Ruukel<sup>1</sup>**

Keywords: sustainable tourism, sustainable development, strategic planning of tourist destination

Sustainable Tourism in Estonia. The idea of sustainable use of resources in the travel and tourism industry is not new in Estonia. In order to address these issues, the Institute of Nature Preservation and Tourism under the Ministry of Social Affairs was set up in 1938. Since regaining independence in 1991, Estonia has been developing rapidly. An integral part of the transition of our country to a market economy has been the harmonisation of Estonia's legislation with the requirements of EU legislation. Estonia was one of the first countries to adopt a Sustainable Development Act in 1995. Legislations relating to sustainable tourism include the Act on Sustainable Development, the Planning and Building Act, the Republic of Estonia Land Reform Act, the Water Act, the Act on the Protection of Marine and Freshwater Coast, Shores, and Banks, the Act on Protected Natural Objects, and the Law of Property.

Soomaa National Park, with an area of 390 km<sup>2</sup>, it was founded in 1993. Soomaa ("the land of bogs") is one of five national parks in Estonia, and has as its main goal the protection of large raised bogs, floodplain grasslands, forests and meandering rivers. Much of the Park consists of large mires, criss-crossed by the rivers of the Pärnu River basin.

Sustainable Tourism Development Strategy for Soomaa National Park was initiated when Soomaa NP applied for membership in the PAN Parks network of best-managed wilderness protected areas in Europe. At present, the PAN Parks network covers 11 national parks all over Europe; the principles of PAN Parks combine conservation with sustainable tourism. Sustainable Tourism Development Strategy of Soomaa National Park is the first regional tourism strategy that was developed in cooperation with different tourism stakeholders related to Soomaa NP. However, the strategy had its predecessors; Soomaa NP management plan (1999) covers visitor management in the national park. The following documents regulate tourism in the region on a wider scale: Pärnu County recreation and tourism management development plan, Viljandi County strategy, the development plans of local municipalities, State Forest Management Service Sakala recreation area management plan, and Green Riverland tourism and recreation development plan and strategy. All the previously mentioned documents cover tourism and its development in and around Soomaa NP. However, none of the documents are comprehensive enough to cover the whole area of Soomaa NP region and most do not concentrate on Soomaa NP. The strategy was born in cooperation with the regional nature conservation office (State Nature Conservation Centre / Environmental Board), county governments (of Viljandi and Pärnu), local municipalities, several NGOs and tourism entrepreneurs. In the present document the tourism stakeholders have agreed on a shared vision and development goals and have planned joint steps to achieve the aforementioned goals.

The aim of the strategy is to support the development of sustainable tourism in the Soomaa NP area and to support the nature conservation goals of the national park. The strategy:

- sets the principles for sustainable tourism in the area and provides operational guidelines for the next 5 years;
- sets priorities with regard to funding decisions and implementation of the action plan;
- provides guidelines to tourism stakeholders on how to develop future tourism products;
- creates a base document to fund sustainable tourism development in the area.

To achieve this aim, the present strategy establishes zoning of the Soomaa area, lays down the principles for sustainable tourism, analyses the tourism potential of the area and prerequisites for

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<sup>1</sup> Estonian University of Life Sciences, Kreutzwaldi 1, Tartu 51014, [aivar.ruukel@emu.ee](mailto:aivar.ruukel@emu.ee)

the development of tourism. Also, the strategy suggests actions to develop sustainable tourism in the area. During the development of the tourism strategy (summer 2008 – spring 2009) the main focus was on the involvement of different stakeholders. Along with the compilation of the strategy, the tourism environment in the area witnessed several significant changes:

- Nature conservation reform (a new agency was established in February 2009);
- Maintenance and recreation management in protected areas has become a responsibility of the State Forest Management Service;
- Soomaa Tourism NGO has been established;
- The first tourism catalogue covering most tourism service providers in Soomaa NP area was published;
- The Soomaa Cooperation Panel decided to guarantee the PAN Parks process in Soomaa NP.

The Sustainable Tourism Development Strategy of the Soomaa National Park is a progressive tool aimed at achieving the goal of nature conservation while encouraging the engagement of local communities in small-scale responsible tourism activities. The Park was a winning destination in the European Union EDEN (European Destination of Excellence) award in 2009. Award winners are selected on the basis of a set of award criteria established at both European and national levels and Soomaa's strengths lie in the pursuit of sustainable tourism activities and the promotion and hosting of both domestic and international tourism.

### **References**

National Development Plan for Tourism 2007 - 2013. 2006.

[www.riigiteataja.ee/ert/act.jsp?id=12755212](http://www.riigiteataja.ee/ert/act.jsp?id=12755212)

Ruukel, A. 2009. Sustainable Tourism Development Strategy for Soomaa

Soomaa National Park, [www.soomaa.ee](http://www.soomaa.ee).

## Nature tourists' response to ecolabels in Oulanka PAN Park, Finland

Pirkko Siikamäki<sup>1</sup>, Riikka Puhakka<sup>2</sup>, Stuart Cottrell<sup>3</sup>, Katja Kangas<sup>4</sup>

Keywords: ecolabels, nature-based tourism, environmental awareness, sustainable tourism

As the awareness of environmental problems caused by tourism has grown, various international initiatives, ecolabels and certification programs have been introduced to promote sustainable tourism. Ecolabels are meant to indicate the degree to which tourism companies or destinations are operating sustainably. Ecolabels are both an environmental management and a marketing tool as they help to reduce negative impacts and gain a competitive advantage (e.g. Buckley 2001, Fairweather et al. 2005, Font 2002). The present study examines nature tourists' environmental values and perceptions of ecolabels: how familiar are tourists with tourism ecolabels and certifications and how do they respond to them, how these relationships are influenced by various background variables, and how tourists' environmental attitudes are related to their beliefs on ecolabels in tourism and travelling behavior? The research material, 271 surveys, was collected with an onsite-survey for visitors to Oulanka National Park located in northeastern Finland. Oulanka NP was one of the first parks certified in 2002 by PAN (Protected Area Network) Parks Foundation, which was established in 1997 by World Wildlife Fund (WWF) and the Dutch leisure company, Molecaten (Font & Clark 2007).

Tourism ecolabels were not very well-known among the respondents: only 11% of them were familiar with some ecolabels used in tourism. Nationality (domestic vs international) was the only variable predicting the probability that a respondent was familiar with ecolabels. Among domestic respondents 14% were familiar with some ecolabel whereas only 2% of international ones knew some ecolabel used in tourism ( $\chi^2=6.44$ ,  $p=0.011$ ). PAN Parks certification program was known by 28% of respondents, and according to logistic regression analysis it was predicted only by the educational level of respondents: ones with higher education were more likely to be aware of the PAN Parks certification. Only one respondent answered that PAN Parks certification of Oulanka NP influenced her/his choice of trip destination. Visitors found ecolabel's current visibility low and that it should be improved. Moreover, 70% of respondents indicated that they would like to know more about tourism ecolabels. Almost all respondents that were members of some environmental organisation, and overall, 78 % of respondents were ready to pay more for products and services with an ecolabel.

Our results are consistent with the previous ones which show that tourists are not very familiar with tourism ecolabels and certifications (Lübbert 2001, Fairweather et al. 2005). Probably, however, the awareness of ecolabels, such as PAN Parks, was somewhat higher in Oulanka PAN Park than in some other non-certified destinations. Despite the low awareness, the respondents of this study expressed a positive attitude towards ecolabels and certifications as they considered them necessary in Finland, wanted to have more information about them and to increase their visibility (see Lübbert 2001, Fairweather et al. 2005). Currently it seems that ecolabelling has a quite low effect on the consumption process and decision-making of tourists. Real market benefits may thus not be created in the short run (see Font & Epler Wood 2007), which may undermine industry support for certification programs and tourists' indirect role in developing sustainable tourism. Nevertheless, tourists' interest in ecolabels suggests that the increased visibility, promotion and marketing of ecolabels could increase their demand. Tourists' positive response to ecolabels and

<sup>1</sup> Metsähallitus, Natural Heritage Services, Ostrobothnia, P.O. Box 26, FI-93601 Kuusamo, Finland, [pirkko.siikamaki@metsa.fi](mailto:pirkko.siikamaki@metsa.fi)

<sup>2</sup> Oulanka Research Station and Thule Institute, University of Oulu, P.O. Box 7300, FI-90014 University of Oulu, Finland, [Riikka.puhakka@oulu.fi](mailto:Riikka.puhakka@oulu.fi)

<sup>3</sup> Colorado State University, Human Dimensions of Natural Resources, 1480 Campus Delivery, Fort Collins, CO 80523, USA, [cottrell@warnercnr.colostate.edu](mailto:cottrell@warnercnr.colostate.edu)

<sup>4</sup> Oulanka Research Station and Department of Biology, P.O.Box 3000, FI-90014 University of Oulu, Finland, [katja.kangas@oulu.fi](mailto:katja.kangas@oulu.fi)

favorable attitudes towards the environment in which they travel should encourage businesses to adopt environmentally friendly practices.

## **References**

- Buckley, R. (2001). Turnover and trends in ecolabels. In X. Font & R. Buckley (Eds.), *Tourism ecolabelling: Certification and promotion of sustainable management* (pp. 189–212). Wallingford, UK: CABI Publishing.
- Fairweather, J.R., Maslin, C., & Simmons, D.G. (2005). Environmental values and response to ecolabels among international visitors to New Zealand. *Journal of Sustainable Tourism*, 13, 82–99.
- Font, X. (2002). Environmental certification in tourism and hospitality: Progress, process and prospects. *Tourism Management*, 23, 197–205.
- Font, X. & Clark, S. (2007). Certification of protected areas: The case of PAN Parks in Europe. In R. Black & A. Crabtree (Eds.), *Quality assurance and certification in ecotourism* (pp. 299–315). Wallingford, UK: CABI.
- Font, X., & Epler Wood, M. (2007). Sustainable tourism certification marketing and its contribution to SME market access. In R. Black & A. Crabtree (Eds.), *Quality assurance and certification in ecotourism* (pp. 147–163). Wallingford, UK: CABI.
- Lübbert, C. (2001). Tourism ecolabels market research in Germany. In X. Font & R.C. Buckley (Eds.), *Tourism ecolabelling: Certification and promotion of sustainable management* (pp. 71–85). Wallingford, UK: CABI Publishing.

## Nature-based artificial recreation environments: typology, empirical correlates and implications

Mia Landauer<sup>1</sup>, Peter Fredman<sup>2</sup>

Keywords: artificial, outdoor recreation, nature tourism, commodification, authenticity

Participation trends in outdoor recreation are driven by social, environmental, economic and technical changes. To a large extent, the latter two have improved our possibilities to access, experience and enjoy the outdoors – while at the same time many outdoor activities are increasingly becoming mechanized (Fredman & Heberlein 2003), dependent on facilities (Cordell & Betz 2000) and information technology (Buhalis 2000), or even physically displaced to indoor environments (Attarian 1999, Lobin & Maindok 2007) and virtual reality (Kurtzman & Zauhar 1999). This implies that artificial (man-made) objects and/or environments are becoming more important for our leisure experiences and the strict demarcation between ‘authentic’ and ‘artificial’ has vanished. The aim of this presentation is to recognize a typology of nature-based artificial recreation environments; to provide empirical correlates with preferences for them; and to elaborate on some of the possible implications.

According to Britton (1991), leisure spaces can be hierarchized in terms of the nature of the escape they are designed to provide, the social groups which use them and their physical characteristics. He argues that there is a continuum from places offering what is often considered material, mundane and superficial experiences (e.g. amusement parks) to those providing the spiritual and genuine (e.g. wilderness areas). In a similar fashion, nature-based artificial recreation environments can be typologized along a continuum (c.f. Swarbrooke et al. 2003) ranging from the genuine natural to virtual nature (electronic):

- Genuine natural (environments without artificial components, e.g. wilderness)
- Devices (equipment, gadgets etc.)
- Artificial elements (boardwalks, bridges, snowmaking, man-made lakes etc.)
- Artificial outdoor environments (safari parks, adventure parks etc.)
- Artificial indoor environments (water parks, climbing walls, ski-tunnels and ski-halls etc.)
- Virtual nature (computer images, webcams, virtual worlds etc.)

For the purpose of this presentation, empirical enquiries on preferences for artificial recreation environments are made based on two data sources: (i) a sample of the Swedish population extracted from an Internet panel (N=2000) and (ii) a sample of Finnish cross-country skiers answering a web-based survey (N=744). The Swedish data (available in spring 2010) is designed to test both participation in, and preferences for, artificial recreation environments among the general population according to the typology presented above. For the analysis of the Finnish sample we used an index based on skiers’ preferences for artificial snow and ski tunnels (i.e. ‘artificial elements’ and ‘artificial indoor’ following the typology above). A binary Logit model was used to investigate the joint effects of several explanatory variables using respondents with ‘low artificial preferences’ (n=231) and ‘high artificial preferences’ (n=139) as the dependent variable (Table 1).

We found that preferences for artificial skiing environments are more likely among male skiers, individuals with fitness as a motivator for skiing, more frequent skiers, and skiers who are willing to travel to distant locations in order to pursue the skiing activity. Age, income, nature experience and social motivators for skiing were among the factors which were not associated with preferences for artificial skiing environments.

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<sup>1</sup> University of Natural Resources and Applied Life Sciences BOKU, Peter Jordan Strasse 82, A-1190 Vienna, Austria, [mia.landauer@boku.ac.at](mailto:mia.landauer@boku.ac.at)

<sup>2</sup> Mid-Sweden University / ETOUR, Kunskapens väg 1, SE-831 25 Östersund, Sweden, [peter.fredman@miun.se](mailto:peter.fredman@miun.se)



Table 1. Binary Logit model<sup>1</sup> of preferences for artificial skiing environments

	B	Sig.
Age	-0.11	0.41
Gender <sup>2</sup>	-0.70	<b>0.03</b>
Income	-0.01	0.85
Staying fit <sup>3</sup>	1.22	<b>0.00</b>
Nature experience <sup>3</sup>	0.19	0.58
Skiing with family/friends <sup>3</sup>	-0.25	0.41
Skiing frequency <sup>4</sup>	0.71	<b>0.00</b>
Distance to ski area <sup>5</sup>	0.17	<b>0.01</b>
Constant	-3.92	0.00

1) -2 Log likelihood 301.86, Cox & Snell R Square 0.36, Nagelkerke R Square 0.49

2) Male = 0, female =1

3) Motivators for skiing (1=yes, 0=no)

4) Number of skiing days per season

5) Maximum travel distance to go skiing

There are several possible implications of nature-based artificially constructed recreation environments (see Swarbrooke et al. 2003). Environmentally, they may have less impact on the environment (e.g. less travel if located close to populated areas) and less ecological impact if substituted for visits to sensitive natural areas, but they could also trigger more travel as attractions in the tourism system (cf. our results from Finland above). Commercially they can provide opportunities for economic development. Increased costs to participate (e.g. admission fees) could however also exclude certain groups from participation. Socially, artificial recreational environments may imply increased access to activities, greater social interaction, reduced safety risks and reduced crowding at popular sites. They can also allow physical activity in controlled environments, and serve as 'demand shifters' in case people are introduced to activities they later seek to do in natural environments. They could also provide sustained participation possibilities under altering environmental conditions caused for, by example, climate change.

The empirical correlates presented here provide an exploratory examination to better understand preferences for artificial recreation environments. Further inquiries into this matter will advance our knowledge on the human-nature relationship, substitutability in nature experiences and natural resource commodification processes.

## References

- Attarian, A. (1989). Artificial rock climbing walls – Innovative adventure environments. *Journal of Physical Education, Recreation and Dance*, 60(7), p 28-32.
- Buhalis, D. (2000). Trends in information technology and tourism. In: Gartner W.C. & Lime D.W. (Eds.) *Trends in Outdoor Recreation, Leisure and Tourism*. CABI Publishing, Wallingford, UK, p 458.
- Cordell, H.K. & Betz, C.J. 2000. Trends in outdoor recreation supply on public and private lands in the US. In: Gartner W.C. & Lime D.W. (Eds.) *Trends in Outdoor Recreation, Leisure and Tourism*. CABI Publishing, Wallingford, UK, p 458.
- Fredman, P. & Heberlein, T.A. (2003). Changes in skiing and snowmobiling in Swedish mountains. *Annals of Tourism Research*, 30(2) p 485-488.
- Kurtzman, J. & Zauhar, J. (1999). The virtual sports tourist. *Journal of Sport & Tourism*, 5(4), p 25-36.
- Lobin, D. & Maindok, H. (2007). Künstliche Erlebnisswelten. Die Bedeutung der Disneyization für Skihallen. In: *Qualitative Marktforschung. Konzepte – Methoden - Analysen*. Gabler Verlag, p 929-950.
- Swarbrooke, J., Beard, C., Leckie, S. & Pomfret, G. (2003). *Adventure Tourism. The New Frontier*. Butterworth-Heinemann, Elsevier, Oxford, UK, p 354.

## **Assessing resource conditions and visitor preferences of backcountry campsites in Western Prince William Sound**

**Paul Twardock<sup>1</sup>, Christopher Monz<sup>2</sup>, Maryann Smith<sup>3</sup>**

Keywords: recreation ecology, campsite impacts, visitor preferences, Prince William Sound, Alaska

Prince William Sound, Alaska (PWS) is an important region for tourism and outdoor recreation. The wild nature and wilderness character of PWS are a primary attraction for visitors seeking multi-day, undeveloped camping experiences. The USDA Chugach National Forest manages most of the uplands of PWS, including the 800,000 HA Nellie Juan Wilderness Study Area. In addition to the National Forest, there are State Marine Parks, Alaska Native village and regional corporation lands, municipal lands, private lands and state university lands adjacent to PWS.

Although current use data are lacking, past use trend analysis and anecdotal information suggest that PWS has remained in high demand for backcountry camping experiences over the last two decades. For example, Twardock & Monz (2000) reported a near doubling of total kayak visitor use days during an eleven-year period from 1987-1998. More recently, USDA Forest Service outfitter/guide user data has shown a consistent increase since 2004 (C. Headon, Girdwood, AK USA, 2009, personal communication). Moreover, construction of road access (c. 2000) to the port town of Whittier has increased tourism traffic, with available data indicating that between 2000 and 2007 vehicle use increased an average of 4% per year from 176,106 vehicles to 248,188 (AKDOT 2009).

Since 1995 the authors and their colleagues have conducted an interdisciplinary investigation of biophysical conditions and visitor preferences on visitor created, backcountry campsites in western PWS. The biophysical component of this research used campsite assessment protocols suggested by Cole (1989) and Marion (1991) with minor modifications to adapt the methodologies to coastal Alaskan environments. Assessments were performed during the summer growing season (June-August). Measurement of vegetation cover and soil exposure followed the ocular measurement approach suggested by Marion (1991) and for each campsite an undisturbed adjacent area was selected as a control for vegetation loss calculations. For measurement of the campsite areas we employed the variable radial transect method (Marion 1995). Condition class measurements were obtained by ocular estimation on a standard condition class scale (e.g., 1 through to 5 numerical ratings from minimal to severe impact) as suggested by Marion (1991).

Analysis of the biophysical data indicates that impacts such as multiple trailing, tree and shrub damage and large sites are prevalent in the study area. The intensity and extent of impact tends to vary by environment type, with campsites on soil substrates in upland forests exhibiting less vegetation cover loss, mineral soil exposure and total area of impact than campsites found on cobble substrates with beach grass vegetation. Comparative analyses of resource conditions over time suggest increases in areal extent of impact, including the development of new sites, but decreases in impact intensity. These findings suggest that over the long term in PWS, the at-large camping strategy may not be effective at containing site spread and proliferation; the impacts often considered the most important to limit. The study results, field observations over the

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<sup>1</sup> Outdoor Studies Department, Alaska Pacific University, 4101 University Drive , Anchorage AK 99508, USA, [pault@alaskapacific.edu](mailto:pault@alaskapacific.edu)

<sup>2</sup> Department of Environment and Society, Utah State University, Logan, UT 84322, [chris.monz@usu](mailto:chris.monz@usu)

<sup>3</sup> Environmental Science Department, Alaska Pacific University, 4101 University Drive , Anchorage AK 99508, [msmith200@alaskapacific.edu](mailto:msmith200@alaskapacific.edu)

duration of the study, and established recreation use-impact theory suggest that confining camping activities to already impacted cobble substrates devoid of vegetation will result in the least additional disturbance. These results have region-wide implications for the management of coastal recreation in Alaska and throughout the northwestern North America, given the similarity of environments and management strategies.

The second component of the study explored visitors' perceptions and preferences of campsite conditions. The USDA Forest Service has begun campsite hardening at highly impacted sites in order to mitigate campsite spread and proliferation. Visitors were interviewed on-site at both hardened and natural campsites. Symbolic and functional aspects of campsites were explored. Most visitors' appreciated the functionality of hardened campsites (82%), but some evidence of a perceived cost to the symbolic nature of wilderness character was apparent. About half of those camped at hardened campsites expressed an appreciation that hardened campsites were not present in more remote areas of PWS. Evidence of coping mechanisms emerged. Displacement, product shift or rationalization was evident in 55% of interviews. Public support for campsite hardening was driven by the enhanced functionality of the campsite and an understanding that campsite hardening is intended to mitigate negative impacts. These findings highlight the importance of using visitor perspectives as a component of the decision process in campsite hardening and management efforts.

## **References**

- Alaska Department of Transportation (AKDOT). 2009. Available online at <http://www.dot.state.ak.us/creg/whittiertunnel/trafficdata.shtml> (accessed 04 January 2010).
- Cole, D.N. (1989). Wilderness campsite monitoring methods: A sourcebook. USDA Forest Service General Technical Report INT-259. Intermountain Research Station, Ogden, UT.
- Marion, J.L. (1991). Developing A Natural Resource Inventory and Monitoring Program for Visitor Impacts on Recreation Sites: A Procedural Manual. USDI National Park Service Natural Resources Report NPS/NRVT/NRR-91/. Natural Resource Publication Office, Denver, CO.
- Marion, J.L. (1995). Capabilities and management utility of recreation impact monitoring programs. *Environmental Management* (19) 763–771.

## Societal & park recreation trends in Victoria, Australia

Dino Zanon<sup>1</sup>, Jim Curtis<sup>2</sup>

Keywords: society, recreation, trends, parks

Australian society has been and will continue to experience demographic and other changes that will ultimately affect how people visit parks in the future. In the state of Victoria, these trends include ageing population, increasing cultural diversity, changing work patterns and household types, population and urban growth, health awareness, climate change, and the desire for convenient and safe experiences (Parks Victoria 2002, Department of Sustainability and Environment 2006, Curtis et al. 2007, Whitelaw et al. 2007, Australian Bureau of Statistics 2009). Many of these trends are common to other states in Australia as well as other western countries (Gartner & Lime 2000, Manning 2000, California State Parks 2005, Eagles 2007). So how will these trends shape the public's use of parks into the future? This research was aimed at assessing changes in activities, the need for facilities and visit barriers, and relating those to dominant trends in society. This will help to ensure that parks remain socially relevant and that managers provide for the future park needs of society.

This quantitative research study used stated preferences and intentions of a thousand Victorians using an internet panel survey. The research project is a collaboration between Monash University's Tourism Research Unit and Parks Victoria. The project involves two overall areas of investigation. First, respondents were asked:

- What park activities do you think you will be undertaking more frequently in ten years time?
- What park facilities do you think will become more important to you in ten years time?
- What barriers to visiting parks do you think will become more likely for you in ten years time?

The results concerning future activities and facilities highlight expectations of parks as safe and accessible spaces that offer opportunities for socialising, relaxing and light activities such as sightseeing and short walks. In contrast, activities and facilities in areas such as jogging, bike riding, team sports, long walks, children's play and camping were not rated so highly. In the context of future barriers to park use, health constraints, personal safety concerns, a lack of accessible parks, crowding and unpredictable weather events were the most frequent responses. These results provide some insights into the "what" question.

The second area of investigation was interested in the "why" component. In other words, what socio-demographic characteristics and population and recreation trends were predictive of respondent's nominated activities, facilities and barriers with specific population and recreation trends taking place in Victoria? Analyses of these results have highlighted how key trends such as ageing, health awareness, changing work patterns, population growth, safety expectations and climate change will influence certain types of activities and facilities expected in parks, as well as barriers to future park use. For example, increases in vigorous activities were positively associated with health awareness, while the trend of increasing cultural diversity was positively associated with social activities such as picnics and playing with children. Lower energy activities such as sightseeing and relaxing were positively associated with the trend of getting older.

Similarly, facilities had associations with specific trends. For example, seating and car access facilities, public transport and wheel chair access were all positively associated with the trend of getting older. Trends in health awareness were positively related to facilities that enable physical

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<sup>1</sup> Team Leader Visitor Research, Parks Victoria Level 10, 535 Bourke St, Melbourne Victoria 3000, Australia, [dzanon@parks.vic.gov.au](mailto:dzanon@parks.vic.gov.au)

<sup>2</sup> Research Coordinator, Tourism Research Unit, Faculty of Business and Economics, Monash University PO BOX 1071 Narre Warren Melbourne, Victoria, 3805, Australia, [James.curtis@buseco.monash.edu.au](mailto:James.curtis@buseco.monash.edu.au)

activity such as grass areas, trails for walking and cycling, and areas for walking dogs. The need for signage and interpretation was positively related to increasing cultural diversity.

Finally, barriers and trends were analysed. The getting older trend was positively associated to barriers such as physical constraints, not being able to drive and not having company to visit the park. Increasing cultural diversity trend was positively related to crowding, recreational conflicts and lack of information about parks. Health awareness trends were positively related to barriers such as physical constraints and personal safety.

Personal benefits obtained from park visitation are a key element to societal acceptance and approval of parks (Eagles 2007, Buckley 2009). As Victoria's population changes, knowing how these changes will influence future park use and needs will be a core ingredient to ensuring that Victoria's system of parks and reserves remains socially relevant to its population. In the absence of this knowledge, there is a danger that managers will miss opportunities and fail to address challenges inherent to the future management of parks.

## References

- Australian Bureau of Statistics (2009). *Australian social trends: December 2009*. Canberra: Commonwealth of Australia.
- Buckley, R. (2009). Parks and tourism. *PLoS Biology*, 7(6), 1-2.
- California State Parks. (2005). *Park and recreation trends in California*. Sacramento: California State Parks.
- Cortis, N., Sawrikar, P., & Muir, K. (2007). *Participation in sport and recreation by culturally and linguistically diverse women*. Social Policy Research Centre: University of New South Wales.
- Department of Sustainability and Environment. (2006). *Melbourne atlas*. Department of Sustainability and Environment: Melbourne.
- Eagles, P. F. J. (2007). Global trends affecting tourism in protected areas. In R. Bushell & P. F. J. Eagles (Eds.), *Tourism and protected areas: Benefits beyond boundaries. The Vth IUCN World Parks Congress* (pp. 27-43). CABI International: Wallingford.
- Gartner, W. C., & Lime, D. W. (2000). So what? Implications of trends for management, public policy, marketing and planning. In W. C. Gartner & D. W. Lime (Eds.), *Trends in outdoor recreation, leisure and tourism* (pp. 403-414). CABI Publishing: Wallingford.
- Manning, R. E. (2000). Coming of age: History and trends in outdoor recreation research. In W. C. Gartner & D. W. Lime (Eds.), *Trends in outdoor recreation, leisure and tourism* (pp. 121-130). CABI Publishing: Wallingford..
- Parks Victoria. (2002). *Linking people and spaces*. Parks Victoria: Melbourne..
- Whitelaw, P. A., Cumming, B., & Narbondo, M. (2007). *An overview of the over 60s market*. Centre for Hospitality and Tourism Research, Victoria University.

## **The view from a canoe: the complexity of route choice behaviour captured in a stated choice survey.**

**Wolfgang Haider<sup>1</sup>, Ben Beardmore<sup>1</sup>, Len Hunt<sup>2</sup>**

Keywords: canoeing, stated choice survey, scenic beauty estimation, campsite choice.

Recent ecological studies have suggested that in a boreal forest setting, impacts from timber harvesting in riparian areas on the aquatic ecology may not be as severe as previously believed (Steedman 2000). One potential consequence of these studies is a reduction in the width of buffering reserves along shorelines in order to access valuable timber supplies in these areas (Hunt & Haider 2004). Across northern Ontario, forests are managed along the principles of multiple-use. As such, they provide an important backdrop for recreational experience of anglers and canoeists who are attracted to water based settings. Therefore a reduction in shoreline reserves may have unintended effects on the social value of these areas. While previous research has shown that logged settings may be conducive to consumptive and motorized recreation, promotion of physically demanding non-consumptive recreation types are best suited to areas segregated from logging (Hunt et al. 2000). The goal of this project was to investigate wilderness canoe trippers' preferences for northern Ontario's boreal forest landscapes using a novel methodology for outdoor recreation research by combining landscape perception research techniques with discrete choice experiments in an innovative study design.

Both the scenic beauty estimation (SBE) method (Daniel & Boster 1976) and stated preference methods (Louviere & Woodworth 1983) are well established in the fields of recreation research and resource management. Visual stimuli have been included as attribute descriptions in stated preference research; either in a single attribute context as in the scenic beauty estimation paradigm, or as digitally calibrated images presenting multiple attributes (e.g. Haider et al. 1998, Arnberger et al. 2007). However, to our knowledge these methods have not been utilized before in the complementary manner to be presented here.

Using an internet survey, respondents were shown several canoe routes, and completed three tasks. First, they learned about the route, which consisted of a series of photographic quality landscape of the shoreline, by rating a total of eight images for one route. Secondly, they choose a camp site from two options at the end of that particular route. Third, after two routes were presented, respondents were asked to select their preferred route. This novel approach allowed us to analyse each task by itself, as well as to build a combined model (Figure 1). The canoe route context improved the ability of the scenic beauty estimates to capture those features of importance to the canoeing experience, while the image rating task improved respondents knowledge of each canoe route, allowing more complex trade-offs to be modelled. As a result, a more complete picture of the perception of the landscape and its effect on preferences for recreation experience was gained. Canoeists appear to be highly affected by the scenic quality of the landscapes along waterways. Preferences for land use attributes presented in the campsite DCE have implications for visitor management along canoe routes managed by the province, while preferences derived from the overall route preference DCE have implications for land use planning and forest management. Of particular interest is the fact that the scene with the minimum Scenic Beauty Estimate (SBE\*) emerged as one of the most important drivers of route preference. Because landscape disturbances are most likely to be considered the least attractive scenery available on a route, the implications for timber harvesting practices are considerable.

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<sup>1</sup> Simon Fraser University, Burnaby, B.C., Canada, School of Resource and Environmental Management, 8888 University Drive, Burnaby, B.C. V5A 1S6, [wolfgang\\_haider@sfu.ca](mailto:wolfgang_haider@sfu.ca),

<sup>2</sup> Centre for Northern Forest Ecosystem Research, Ontario Ministry of Natural Resources, Thunder Bay, Ontario, Canada, [len.hunt@ontario.ca](mailto:len.hunt@ontario.ca)

With the availability of detailed forest ecosystem classification and other biophysical data available in a geographic information system (GIS), the scenic beauty models may be used to assess the waterways' potential for inclusion in Ontario's system of protected areas. Of particular potential for this type of land use are areas with upland species such as red pine, white pine and jack pine and areas with the exposed rock characteristic of the Canadian Shield. Areas whose forests remain undisturbed by either fire or timber harvesting are also considered more attractive.

By conveying complex visual and textual information in an engaging manner, we were able to assess the trade off behaviour of a more complex nature than is typical of a traditional paper survey., using a sequentially nested model, campsite attributes were nested into an overall route choice model, providing an indication of the importance of the camping aspect of canoe tripping. Beyond the specific application of the information developed in this study to land use planning in general and forest management in particular, this project also provides some insights into the trade-offs in scenery, camping, land-use sharing, and travel costs that canoeists are willing to make in order to achieve the best possible experience.

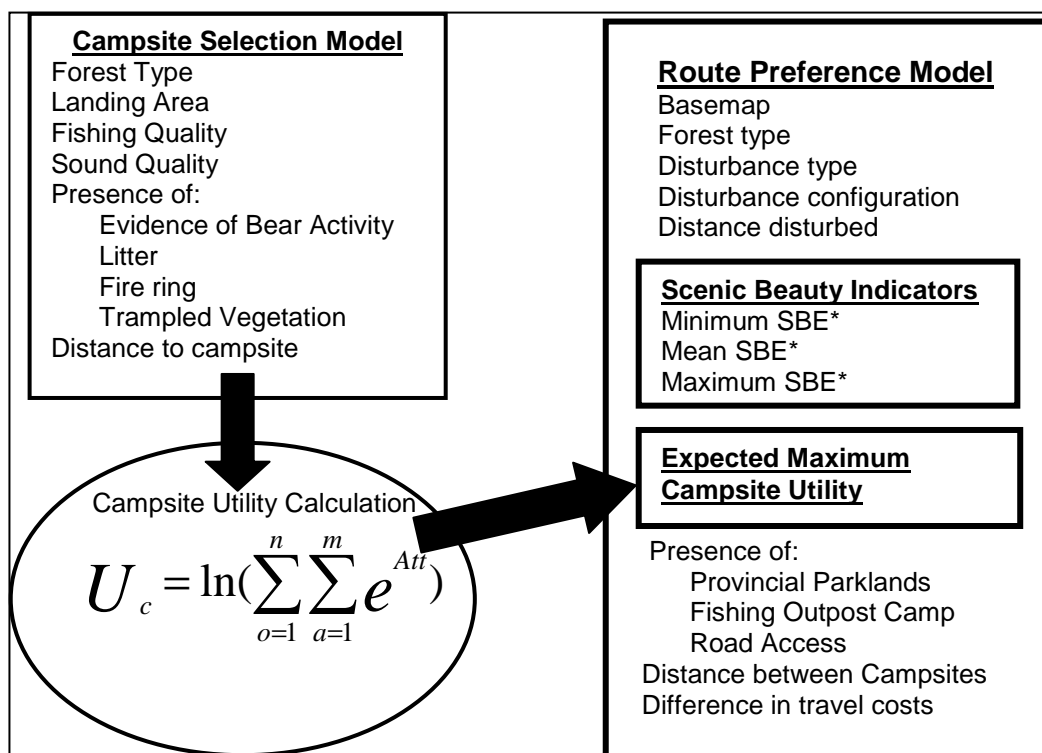


Figure 1: Overall structure of the canoe route stated choice study

## References

- Arnberger, A., and Haider, W. (2007) "Would you displace? It depends! A multivariate visual approach to intended displacement from an urban forest trail", *Journal of Leisure Research*, 39(2):345-365.
- Daniel, T.C. and R.S. Boster (1976). *Measuring landscape aesthetics: The scenic beauty estimation method*. USDA Forest Service Research Paper RM-167. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station. 66pp.
- Haider, W., Anderson, D.A., Daniel, T.C., Louviere, J.J., Orland, B. and Williams, M. (1998) "Combining calibrated digital imagery and discrete choice experiments: An application to remote tourism in Northern Ontario", in Johnston, M.E., Twynam, D. and Haider, W. (Eds.), *Shaping Tomorrow's North, Proceedings of an International Conference on Northern*

Tourism and Recreation, Centre for Northern Studies, Lakehead University, Thunder Bay, ON, pp 257-278.

- Hunt L. and W. Haider (2004). Aesthetic Impacts of Disturbances on Selected Boreal Forested Shorelines. *Forest Science* 50(5):729-738.
- Hunt, L., G.D. Twynam, W. Haider, and D. Robinson (2000). Examining the desirability for recreating in logged settings. *Society and Natural Resources* 13:717-734.
- Louviere, J.J. and G. Woodworth. (1983). Design and analysis of simulated consumer choice or allocation experiments: an approach based on aggregate data. *Journal of Marketing Research*, 20:350-367.
- Steedman, R.J. (2000). Effects of experimental clearcut logging on water quality in three small boreal forest lakes. *Canadian Journal of Fisheries and Aquatic Science*. 57(2):92-96.



# Decisions made along the tracks in forests

Hans Skov-Petersen<sup>1</sup>, Frank Søndergaard Jensen<sup>1</sup>, Jette Bredahl Jacobsen<sup>1</sup>

Keywords: wayfinding, conjoint stated preference, agent-based models

## Introduction

Destination choice and path selection are two core characteristics of human way finding (Golledge 1995). As opposed to most types of spatial movement (transport), recreational behaviour in nature is less goal-oriented. Often, the trips we make in nature are more motivated by the qualities of the track we traverse than the destination we are targeting. The path selection is also influenced by the social effects of encountering other visitors. Accordingly, assessment of the route selection in nature must be assessed in terms of preferences for different types of tracks (and the landscape they traverse), encountering agents, and the qualities and functions of the destinations visited.

## Method

During the present study relative preference for nature type, encountered agents, and direction towards destination was studied in a Conjoint Stated Preference (CSP) experiment. The experiment was conducted as part of a national Danish house-hold questionnaire survey in 2008; in total 1258 responses were obtained (66% response rate). During the survey respondents were asked to imagine being at a junction of a path network in the forest. They were asked to rank optional choices of path segments ("Which way would you choose?"). Each option was represented by a 'card' constituted by a combined text expressing forest type (along the optional segment), agent types encountered, and direction relative to the destination. Further, the forest types were displayed as a photograph and the agent types were shown as an icon. The photographs representing forest types have been used in earlier preferences studies (Koch & Jensen 1988, Jensen 1999) and can therefore serve as validation of the findings.

The experiment provides an addition to the classical single-attribute preference studies: It enables assessment of preferences - and accordingly potential choices - in more realistic situations, where 'trade offs' have to be made among options combined of multiple attributes. The experiment was constituted by three variables: the forest type (9 levels), encountering other 'agents' (8 levels), and the direction of the path relative to the destination (3 levels). The forest types include e.g.: 'Old open broad-leaved forest on sloping terrain' and 'a forest lake'; agent types include: 'two roe deer', and 'ten mountain bike-riders'; and finally 'opposite the direction you wish' as an example of a directional choice level. On the cards a combination of images, icons, and texts were included (see fig. 1).

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<sup>1</sup> Forest & Landscape, University of Copenhagen, Rolighedsvej 23, DK-1958, Frederiksberg, Denmark, [hsp@life.ku.dk](mailto:hsp@life.ku.dk), [fsj@life.ku.dk](mailto:fsj@life.ku.dk), [jbj@life.ku.dk](mailto:jbj@life.ku.dk)

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En sti/vej hvor De kan se to løbere.  
Stien går på tværs af den ønskede  
retning, gennem ældre, åben  
løvskov.



Figure 1: Example of a 'choice'. Translation of the Danish text: 'A path/road where you can see two runners. The path is across the direction you wish, through an old, open broad-leaved forest'.

## Results

The results were analyzed by a rank-ordered logistic regression and showed that all attributes and their levels affected the probability of choosing a path. As expected, going in the opposite direction than the preferred has a negative value (everything else set equal) and is the least favoured option. A path segment leading straight towards the destinations is regarded as more positive than one across the bearing towards the destination. The least preferred agent type to encounter was 'ten mountain bike-riders' and the most preferred was 'two roe deer'. Meeting no-one is regarded as the second most positive. By calculating the choice probabilities for each attribute we are able to get a measure for by how much more the roe deer option is preferred compared to meeting no-one. It appears that meeting two roe deer is one-third more preferred than meeting no-one. For the environmental attributes we see that 'dense middle aged coniferous forest' was least preferred and 'old open broad-leaved forest on sloping terrain' was the most preferred. The results for agent types and environments confirms what have been found by Koch & Jensen (1988) and Jensen (1999), but add to that how much more each attribute is valued as opposed to the others – in relative terms.

Further analysis will enable the evaluation of relative preferences; for instance to which extent visitors are willing to make de-tours to experience or avoid certain forest- or agent-types. Beyond immediate results, the results of the study can be applied as parameters for agent-based simulation models (Jochem et al. 2008, Gimblett & Skov-Petersen 2008, Skov-Petersen et al. 2008). The parameters obtained can be transformed into probabilities of choosing optional path segments, given their characteristics. This way, results from a CSP experiment can be directly linked to the spatial explicit choices made by visitors en route in a recreational path network. In spite of the obvious potential in combining choice experiments and agent-based simulation (Skov-Petersen 2005, Hunt 2008), the linkage has rarely been put in action in relation to studies of recreational behaviour (Hunt 2008). This can be due to choice models primarily have been developed and published through economic journals, which might be less frequented by recreation/simulation researchers (ibid.).

## References

- Gimblett, R. and Skov-Petersen, H. (2008). Monitoring, Simulation and Management of Visitor Landscapes. 2<sup>nd</sup> rev. Arizona University Press.  
[http://www.uapress.arizona.edu/onlinebks/Monitoring\\_Visitor\\_Landscapes.pdf](http://www.uapress.arizona.edu/onlinebks/Monitoring_Visitor_Landscapes.pdf)
- Golledge, R. (1995). Path selection and route preference in human navigation: A progress report. Lecture Notes in Computer Science. Vol. 988/1995. Springer Berlin / Heidelberg.
- Hunt, L.M. (2008). Choice models: Estimation, Evolution, Limitations and Potential Application for Simulation Modeling. In Gimblett, R. and Skov-Petersen, H. 2008. Monitoring, Simulation and Management of Visitor Landscapes. 2<sup>nd</sup> rev. Arizona University Press.

- Jensen, F.S. (1999). Forest recreation in Denmark from the 1970s to the 1990s. The Research Series No. 26-1999. The Danish Forest and Landscape Research Institute.
- Jochem, R., van Marwijk, R., Pouwels, R. and Pitt, D.G. (2008). MASOOR: Modeling the Transaction of People and Environment on Dense Trail Networks in Natural Resource Settings. In Gimblett, R. and Skov-Petersen, H. (2008). Monitoring, Simulation and Management of Visitor Landscapes. 2<sup>nd</sup> rev. Arizona University Press.
- Koch, N.E. and Jensen, F.S. (1988). Skovenes friluftsfunktion i Danmark. IV. del. Befolkningens ønsker til skovenes og det åbne lands udformning. (Forest Recreation in Denmark. Part IV: The Preferences of the Population.) III. Forstl. Forsøgsv. Damm., København, 41 (1988).
- Skov-Petersen, H., Kefaloukos, P. and Snizek, B. (2008). Kvintus.org - a choice based agent-based simulation model integrated with Google Maps. Proceedings for the Fourth International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas Management for Protection and Sustainable Development Montecatini Terme (Tuscany, Italy) - 14/19 October 2008.
- Skov-Petersen, H. (2005). Feeding the agents – collecting parameters for agent-based models. Computers in Urban Planning and Urban Management (CUPUM). <http://128.40.59.163/cupum/searchPapers/papers/paper60>.

# The relationship between stated choice for recreation experience preferences and revealed activity choice

Michael Yuan<sup>1</sup>

Keywords: experience preference, activity participation, revealed choice, rural tourism

## Introduction

There are two hypothesized relationships between recreation (or tourism) experience preferences and the subsequent choice of recreation activity for participation (Manfredo et al. 1983). The first posits that an activity choice requires a positive predisposition towards that activity and thus a strong correlation between experience preference and activity choice. The second interpretation states that experience preferences are clusters of motivations that represent more general expressions and are related to a range of activities with a common theme (e.g., water based, cultural and historical) rather than any specific activity (Snepenger et al. 2004). When tourists go on a trip, they engage in several activity clusters, each with a common theme throughout that cluster. This study examined the degree to which the tourism experiences people prefer are related to the activities engaged in. Organizations are always trying to better predict activity participation, often through the use of models utilizing stated choice. These models basically posit that what people say they prefer on a trip (a stated choice) is correlated to what actually occurs on the trip (revealed choice). Stated choice models are popular because of the difficulty of predicting participation before it actually occurs (Hunt et al. 2008).

## Methods

This study focused on non-resident visitation occurring along the north shore of Lake Superior near Thunder Bay, Ontario Canada. In 2004, data were collected from 464 non-resident visitors to the region using a trip diary questionnaire (Yuan et al. 2004). Visitors were asked the importance of specific experience preferences to their trip (stated choice), and subsequently the activities engaged in (revealed choice). Activity location data were digitized and mapped. The data were then grouped into the three primary target markets that are actively promoted to by the region: Northwestern Ontario (excluding the Thunder Bay region), rest of Canada, and the U.S. Experience preferences were defined by the five dimensions (New/Different Experiences, Risks and Challenges, Socialization with Family and Friends, Understanding First Nations Culture, and Experiencing Tranquility) developed by Payne et al. (2004) in a study of the broader region. Five categories of activities were constructed around similar participation patterns: (1) passive outdoors, (2) adventure outdoors, (3) historical culture, (4) social events, and (5) fishing boating. Principal component analysis was used to construct activity groups and a general linear model was used to identify which groups were significant among the experience dimensions.

## Results

The study results suggest that the relationship between experience preference and activity choice is fairly weak when examined at the population level. This finding implies that using stated choice models utilizing broad experience preferences as the primary determinant to activity choice and participation, may not be very appropriate. Instead of any one particular activity driving choice, it may be a cluster of activities that are being influenced by a range of experience preferences. On the other hand, when the population of tourists is divided into more defined market segments, some moderate relationships start appearing for particular segments; it is at this level that marketing campaigns should focus on. Because there were so few significant relationships between experience preference and activity choice, the ability to identify market segments where this relationship holds is important to allow tourism providers the ability to fine tune their identification of the most important target groups. The study has shown the need to understand

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<sup>1</sup> Lakehead University, School of Outdoor Recreation, Parks and Tourism, 955 Oliver Road, Thunder Bay, ON P7b5E1, [myuan@lakeheadu.ca](mailto:myuan@lakeheadu.ca)

the subtleties of specific market segments to better predict participation. As such, associated promotion and advertising in the region should focus its message and images based on these significant relationships as applied to focused market segments.

## **References**

- Hunt, L. M., Haider, W., Boxall, P.C, & Englin, J. (2008). A method for estimating the economic contribution of resource-based tourism. In: *Forestry Chronicle Journal*, 84(2), p 172-180.
- Manfredo, M. J., Driver, B. L., & Brown, P. (1983). A test of concepts inherent in experience based setting management for outdoor recreation areas. In: *Journal of Leisure Research*, 15(3), p 263-282.
- Payne, R.J., McIntyre, N., Yuan, M., Moore, J., Bradford, L., & Elliott, S. (2004). Recreation experience preferences and activity profiles in a Crown forest landscape in Ontario, Canada. In T. Sievanen, J. Errkonen, J. Saarinen, S. Tuulentie & E. Virtanen (Eds.), *Proceedings of the Second International Conference on Monitoring and Management of Visitor Flows*, Rovaniemi, Finland.
- Snepenger, D., Murphy, L., Snepenger, M., & Anderson, W. (2004). Normative meanings of experiences for a spectrum of tourism places. In: *Journal of Travel Research*, 43(6), p 108-117.
- Yuan, M., N. McIntyre, R. Payne & J. Moore. (2004). Development of a spatial values-based recreation planning framework for Canadian Crown lands. In: *Volume I Final Report Submitted to the Living Legacy Trust*. Centre for Parks, Recreation & Tourism Research, Lakehead University, Thunder Bay, ON, 150 pp.

## Linking housing and access: visitor numbers on internationally important heathland sites in southern England

Ralph Clarke<sup>1</sup>, Durwyn Liley<sup>2</sup>, Joanna Sharp<sup>2</sup>

Keywords: Dorset, heath, visitors, nightjar, housing, urban

A real and current issue for nature conservation in the UK is how to accommodate increasing pressure for new homes and other development without compromising the integrity of protected sites. These issues are particularly acute in Dorset and the Thames Basin in southern England, where fragmented heathland sites of international importance for nature conservation lie within and adjacent to large urban conurbations. Lowland heath has been reduced to less than 10% of its former European extent due to changing patterns of land use, including agricultural intensification, afforestation and urban and industrial development (Rose et al. 2000). The importance of conserving the remaining areas of lowland heath together with their characteristic species of birds, reptiles, amphibians, invertebrates and plants is recognised through their legislative classification as Special Areas of Conservation under the EU Habitats Directive (92/43/EEC) and Special Protection Areas under the EU Birds Directive (79/409/EEC). Such sites carry the highest level of protection, transposed into UK law through the Habitats Regulations. A Habitat Action Plan has been developed for lowland heathland, and a number of species associated with this habitat are the focus of UK Biodiversity Action Plans.

Meanwhile, the UK population is projected to rise from the current levels of 61 million to around 71 million by 2031. This causes continued and increasing pressure on, and competition for land, especially in southern England. The Government's Regional Spatial Strategy for South West England includes proposals for over 40,000 houses to be built by 2026 with the region of South East Dorset encompassing the urban heath sites. The UK government's Countryside Rights of Way Act of 2000 provides the right of public access on foot to heaths, downland, moors and mountain areas. Liley & Clarke (2003) had previously shown a negative association between the nest density of the rare and protected nightjar on a heath and the proportion of the surrounding 500m which was built-up (mostly residential) land; this and other work has led to a ban on new housing within 400m of any protected heath site and a programme of measures to minimise impacts from development within 0.4-5km.

In partnership with Natural England, the Royal Society for the Protection of Birds and local planning authorities, we have tried to build up an understanding of visitor rates and their potential wildlife impacts on heath sites in Dorset and on the Thames Basin heaths in the high density commuter belt south west of London.

We used a combination of on-site visitor questionnaire surveys at heath access points and postal household questionnaire surveys to estimate visitor numbers and patterns of usage. When combined with the spatially referenced distribution of heathland sites and their recognised access points and national databases of housing density by Postcode, we were able to derive models of visitor rates by distance from heath site. In such urban heaths, it was crucial to analyse separately visitors coming from home on foot from those arriving by car, the latter visitor numbers were controlled, perhaps unsurprisingly, by the number of car parking spaces at or very near the access points. In Dorset, 75% of visitors arriving on foot lived within 500m of the access points, whereas more than 25% of visitors arriving by car lived over 5km away. Eighty percent of all Dorset heath visitors said their main purpose for visiting was to walk their dog(s). Overall 90% of the dogs on heaths were allowed off their leads and owners' replies suggest that although 80% of dog-walkers

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<sup>1</sup> Centre for Conservation Ecology and Environmental Change, Bournemouth University, Talbot Campus, Poole, Dorset BH12 5BB, UK, [rclarke@bournemouth.ac.uk](mailto:rclarke@bournemouth.ac.uk)

<sup>2</sup>Footprint Ecology, Forest Office, Cold Harbour, Wareham, Dorset, BH20 7PA, UK, [durwyn.liley@footprint-ecology.co.uk](mailto:durwyn.liley@footprint-ecology.co.uk), [joanna.sharp@footprint-ecology.co.uk](mailto:joanna.sharp@footprint-ecology.co.uk)

stay on the heath paths and tracks nearly half (47%) of all dogs wander off the paths and tracks with the potential to disturb wildlife (Langston et al. 2007).

Visitor interview information on the routes and distances travelled within heath sites was used to build simple models of the expected visitor spatial distribution from access points within heath sites. Spatially-explicit GIS models were developed to predict the numbers of visitors to any heath access point and thus site, based on both current housing density and distribution and once augmented by proposed additional housing. Such approaches can be used to help inform planning and management policies to minimise the impact of projected increased recreational visitor numbers on protected heaths. Such models also provide the opportunity to explore the spatial distribution of key species in relation to visitor pressure.

### **References**

- Rose, R.J., Webb, N.R., Clarke, R.T. & Traynor, C.H. (2000) Changes on the Dorset heathlands, England between 1987 and 1996. *Biological Conservation*, 93, 117-125.
- Liley, D. & Clarke, R.T. (2003) The impact of urban development and human disturbance on the numbers of nightjar *Caprimulgus europaeus* on heathlands in Dorset. *Biological Conservation*, 114, 219-230.
- Langston, R. H. W., Liley, D., Murison, G., Woodfield, E. & Clarke, R. T. (2007) What effects do walkers and dogs have on the distribution and productivity of breeding European Nightjar *Caprimulgus europaeus*? *Ibis*, 149, 27-36.

# Development of userfriendly decision support tool to support visitor impact management in protected areas

René Henkens<sup>1</sup>, Rene Jochem<sup>1</sup>, Rogier Pouwels<sup>1</sup>, Ramona van Marwijk<sup>2</sup>

Keywords: Decision Support Tool, Natura2000, recreation model MASOOR, user interface, disturbance, visitor management

Wageningen UR developed a Decision Support Tool (DST) which supports protected area managers in the management of visitor flows. The main purpose of the DST is to harmonise the objectives for visitor management and nature management, like those laid down under Natura2000. The DST is an integration of two GIS-based models: an ecological model (mainly the LARCH model) and the recreation model MASOOR. The ecological model simulates the sustainability of breeding bird populations based on, among others, the quality, surface area and configuration of breeding habitat concerned. The recreation model MASOOR simulates the visitor pressure within the protected area, based on visitor characteristics and the area's visitor infrastructure. The DST has proven successful for the Natura2000 managers involved in the EU Interreg IIIB project named PROGRESS. The development of a user interface, aiming to make the DST more user-friendly, will enable its applicability by other protected area managers.

## Methods

The GIS-based models MASOOR and LARCH developed at Alterra form the basic components of the DST. MASOOR stands for Multi Agent Simulation of Outdoor Recreation; 'agents' meaning user-groups such as walkers, cyclists, horse riders etc. MASOOR simulates the recreational use of a network of roads and paths in an area. Car-parks are the main entrances to this network, and their parking capacities and level of usage are determining factors in the eventual distribution pattern of the visitor pressure. Other important factors are specific (marked) trails, attractions and path quality which steer visitors in a certain direction. Behaviour characteristics of user-groups have been derived through interviews and GPS-research (see van Marwijk 2009). GPS's handed out to visitors can be used to analyse the actual use of an area and to validate the model output. The model output is a GIS map indicating the visitor pressure within the network specified per track of path or road. This visitor pressure gives an indication about the visitor disturbance level on, for instance, breeding birds.

The model LARCH stands for Landscape Assessment using Rules for Configuration of Habitat. LARCH requires a GIS vegetation map as the basis for analysing potential breeding bird habitats. LARCH determines ecological networks for specific species in a patchy landscape and assesses the potential sustainability of these networks (Opdam et al. 2003, Verboom & Pouwels 2004). The overlay of the GIS-maps on visitor pressure (MASOOR) and potential breeding habitat (LARCH) indicates whether visitor pressure creates bottlenecks for breeding birds. The nature management objectives determine if this bottleneck requires visitor management actions like zoning or not.

## Results

The DST has been applied in several protected areas, like the New Forest Natura2000 case study site within the EU Interreg IIIB project named PROGRESS. The figures 1 and 2 have been received from park management who presented them at stakeholder meetings as part of their communication strategy. Figure 1 shows the marginal, suboptimal and optimal breeding habitat of wader species at a certain location (output LARCH model), with an overlay of the visitor pressure or disturbance zones along the network of car-parks and paths (output MASOOR model). Conservation of wader species is an important nature management objective and management aims to improve their breeding conditions. A possible management option is the closure of car

<sup>1</sup> Alterra, Wageningen UR, P.O.Box. 47, 6700 AA, Wageningen, [Rene.Henkens@wur.nl](mailto:Rene.Henkens@wur.nl), [Rene.Jochem@wur.nl](mailto:Rene.Jochem@wur.nl), [Rogier.Pouwels@wur.nl](mailto:Rogier.Pouwels@wur.nl)

<sup>2</sup> Socio-spatial Analysis Group, Wageningen UR, P.O.Box. 47, 6700 AA, Wageningen, [ramonavanmarwijk@hotmail.com](mailto:ramonavanmarwijk@hotmail.com)



parcs in the east of the area (figure 1, right). Although this will lead to a higher car park usage and related visitor pressure at locations further away, the simulation of this action indicates that it will result in the desired vast area of tranquil breeding habitat. This zoning proposal received sufficient support from user-groups to be put into practice.

The positive feedback from end-users of this DST has led to the development of a user interface to make the tool more accessible to other protected area managers.

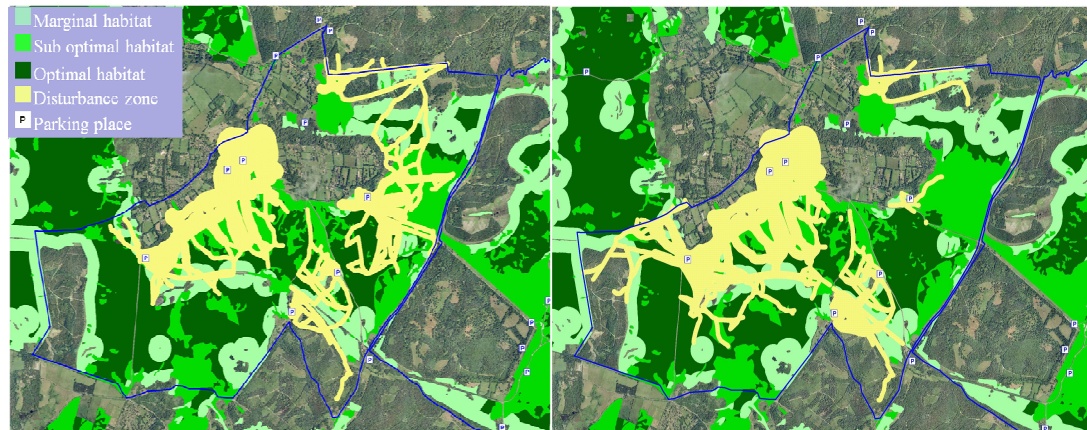


Figure 1. Simulation of wader species breeding habitat and disturbance pressure in pre-action phase and post-action phase.

### Main conclusions

The DST supports protected area managers in the identification of possible bottlenecks between visitor objectives and nature objectives. It is an independent DST which indicates the development opportunities for both nature and visitor infrastructure.

The DST is an important communication tool for protected area managers as the visualisations through GIS build trust among stakeholders. This increases the acceptance of proposed management actions.

### References

- Opdam, P.F.M., Verboom, J. & Pouwels, R. (2003). Landscape cohesion: an index for the conservation potential of landscapes for biodiversity. *Landscape Ecology* 18: 113-126.
- Verboom, J. & Pouwels, R. (2004). Ecological functioning of ecological networks: a species perspective. In: *Ecological Networks and Greenways: Concepts, Design, Implementation*. R.H.G. Jongman and G. Pungetti (Eds.). Cambridge University Press, Cambridge. Pp 56-70. & Pouwels 2004
- Marwijk, R.B.M. van, 2009. *These routes are made for walking: Understanding the transactions between nature, recreational behaviour and environmental meanings in Dwingelderveld National Park, the Netherlands*. PhD thesis Wageningen University, Wageningen, Netherlands.

# Framework Mafreina: management toolkit recreation and wildlife in the Swiss Alps

Reto Rupf<sup>1</sup>, Daniel Koechli<sup>1</sup>, Wolfgang Haider<sup>2</sup>, Hans Skov-Petersen<sup>3</sup>, Ulrike Pröbstl<sup>4</sup>

Keywords: agent-based model, discrete choice experiment, environmental planning, GPS-logging, recreation

## Introduction

In the last years the pressure on nature in alpine regions has increased and this trend is continuing. One cause is the various winter and summer outdoor sports activities: snowshoeing, backcountry skiing and freeriding, hiking and mountain biking (Lamprecht et al. 2008). More users lead to diverse conflicts. Mountain biking, backcountry skiing and snowshoeing are seen as most important activities regarding sports-nature conflicts. With regards to social conflicts, mountain bikers are considered as a major conflict causing group (Freuler 2008). Other land use concerns are the establishment of new wildlife sanctuaries and the construction of new mountaineering cabins (BAFU 2009). All these issues exist in the pilot region Val Müstair in eastern Switzerland, which is part of a proposal to establish a UNESCO biosphere reserve. Increasing income for local people with visitor enjoyment and conservation is the main management concern. Therefore it is important to approach new development initiatives in a pro-active manner with suitable planning tools to avoid possible conflicts.

## Goals

The research project mafreina (2008 – 2011) pursues the following goals:

- Documentation of the existing spatial and temporal outdoor uses in Val Müstair.
- Documentation of the outdoor recreationists requirements.
- Research visitor preferences for planned projects.
- Development of a predictive environmental planning tool to simulate results of management decisions on the recreation-wildlife-system.

## Methods

According to the comprehensive rational planning approach, the estimation of the impacts of a planned object and scenarios on the human-nature-system is a critical step in the planning process (Briassoulis 1989). Until now, no relevant decision tools exist for recreation and wildlife management. Agent-based models (ABM) are said to fill this gap (Pröbstl et al. 2008, Lawson 2006). Besides the still existing technical challenges with ABMs new procedures allow more flexible description of behavior of the agents (Zellner 2008). Figure 1 shows the development system of the mafreina toolkit.

Different authors suggest several methods to obtain rules for the agents. GPS-monitoring is a method with new perspectives to record real spatial and temporal movements as revealed preference data (Taczanowska et al. 2008, Skov-Petersen 2005). A disadvantage of such revealed preference data is that they only deliver information of already existing situations and not about planned alternatives or anticipated scenarios. Another method, discrete choice experiments (DCE), could help to detect agent rules for future, currently non-existent scenarios (Hunt et al. 2007, Haider 2002). Therefore a generic DCE is developed from the base of environmental data

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<sup>1</sup> Institute of Natural Resource Sciences, ZHAW - Zurich University of Applied Sciences, Gruental, CH-8820 Wädenswil, Switzerland. [reto.rupf@zhaw.ch](mailto:reto.rupf@zhaw.ch), [daniel.koechli@zhaw.ch](mailto:daniel.koechli@zhaw.ch)

<sup>2</sup> School of Resource and Environmental Management, Simon Fraser University, 8888 University Drive, Burnaby, Canada. [wolfgang\\_haider@sfu.ca](mailto:wolfgang_haider@sfu.ca)

<sup>3</sup> Forest and Landscape, University of Copenhagen, Rolighedsvej 23, DK-1958 Frederiksberg, Denmark. [hsp@life.ku.dk](mailto:hsp@life.ku.dk)

<sup>4</sup> Institute for Landscape Development, Recreation and Conservation Planning, BOKU - University of Natural Resources and Applied Life Sciences, Peter Jordan-Str. 82, A-1190 Vienna, Austria. [ulrike.proebstl@boku.ac.at](mailto:ulrike.proebstl@boku.ac.at)

of the project region; first GPS-monitoring data combined with new scenarios such as new infrastructure and scenarios.

In the mafreina toolkit the geographical information system (GIS) has central position with three different tasks. First it serves as a database of all environmental and GPS-logging data. Second the GIS is an integrated tool for the ABM and the base of the virtual area in which the different scenarios will be computed and third, results are visualized with GIS.

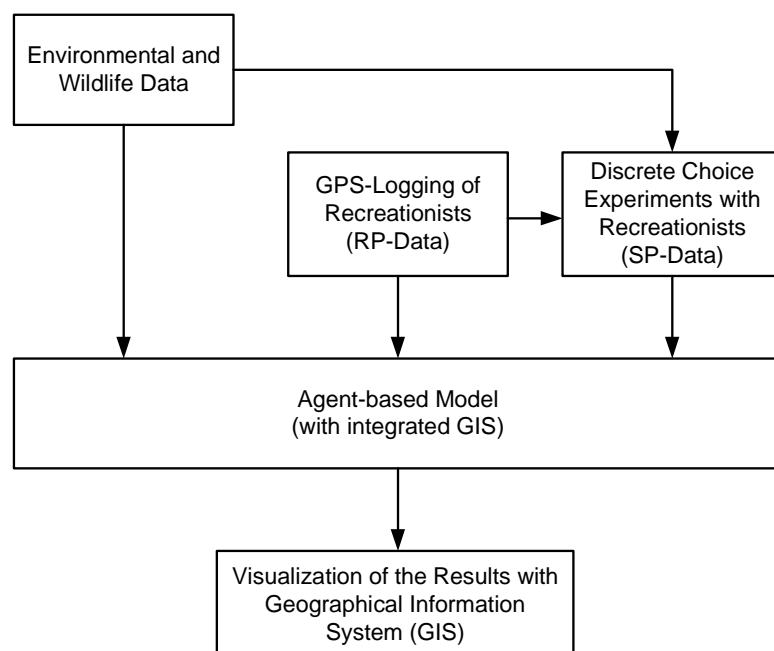


Figure 1: Mafreina – methodological system

## First Results

We developed new GPS loggers with a capacity to record over 50 hours of activity over a period of 14 consecutive days and an adjustable minimal recording interval of 0.5 seconds. During the test of GPS logging from February to April 2009, the movement of 111 people was recorded. These persons made over 300 daytrips (5% hiking, 15% downhill skiing, 25% snowshoeing and 55% backcountry skiing). The collected GPS data allows for diverse analyses to detect rules for the agent-based model, e.g. the frequency and location of starting points or the trip duration: the average backcountry skiing trip starts around 08:30 in the morning and lasts about 4 hours 10 minutes. The duration is distributed unimodal contrary to snowshoers. The data also show that certain persons crossed a wildlife sanctuary. Based of these findings the managers established a new guidance in those areas. Regarding the current state of the ABM, the software kvintus is able to handle interactions between recreationists on trails and wildlife in their surroundings.

## Conclusions

Mafreina will continue to develop several tools to assess and estimate recreationists' behaviour in the landscape. The toolkit will allow the estimation of the impact of management interventions, as well as to plan an optimal infrastructure with a coexistent protection of wildlife and nature. Still an open question and challenge is the acceptance of the toolkit mafreina among managers of protected areas.

## Acknowledgements

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## References

- BAFU (2009). Medienmitteilung - Sport in freier Natur: Pilotprojekt für mehr Rücksichtnahme auf Wildtiere  
[www.bafu.admin.ch/dokumentation/medieninformation/00962/index.html?lang=de&msg-id=25179](http://www.bafu.admin.ch/dokumentation/medieninformation/00962/index.html?lang=de&msg-id=25179) (28.3.2009)
- Briassoulis, H. (1989). Theoretical Orientations in Environmental Planning: An Inquiry into Alternative Approaches. *Environmental Management* Vol. 13-4, 381-392.
- Freuler, B. (2008). Management von Freizeitaktivitäten: Interventionen zur Beeinflussung von sozialen und ökologischen Nutzungskonflikten im Outdoorbereich, Dissertation Universität Zürich
- Haider, W. (2002). Stated Preference & Choice Models –A Versatile Alternative to Traditional Recreation Research. In: Arnberger, A., Brandenburg, C. & Muhar, A. (2002), Monitoring and Management of Visitor Flows in Recreational and Protected Areas, Conference Proceedings. 115-121.
- Hunt, L. M., Kushneriuk, R. & Lester, N. L. (2007). Linking agent-based and choice models to study outdoor recreation behavior. Special Issue of *Forest Snow and Landscape Research*.
- Lamprecht, M., Fischer, A. and H.P. Stamm, H.P. (2008). Sport Schweiz 2008: Das Sportverhalten der Schweizer Bevölkerung. Magglingen: Bundesamt für Sport BASPO
- Lawson, S. R. (2006). Computer Simulation as a Tool for Planning and Management of Visitor Use in Protected Natural Areas. *Journal of Sustainable Tourism*. Vol. 14-6, 600-617.
- Skov-Petersen, H. (2005). Feeding the Agents: Collecting parameters for agent-based models. *Computers in Urban Planning and Urban Management*
- Taczanowska, K., Muhar, A. & Arnberger, A. (2008). Exploring Spatial Behavior of Individual Visitors as Background for Agent-Based Simulation. In: Gimblett, R. & Skov-Petersen, H. (eds.) (2008). *Monitoring, Simulation and Management of Visitor Landscapes*. The University of Arizona Press, Tucson, 159-174.
- Zellner, M. L. (2008). Embracing Complexity and Uncertainty: The Potential of Agent-Based Modeling for Environmental Planning and Policy. *Planning Theory & Practice*, Vol. 9-4, 437-457.

# GIS as a tool supporting understanding of visitor flows in recreational areas

Karolina Taczanowska<sup>1</sup>, Christiane Brandenburg<sup>1</sup>, Arne Arnberger<sup>1</sup>, Hemma Tomek<sup>1</sup>, Andreas Muhar<sup>1</sup>

Keywords: GIS, visitor flows, spatial analysis, spatial behaviour, nature-based tourism, recreation

## Introduction

In the last two decades the Geographic Information Systems (GIS) framework has become a well-established tool supporting management of natural resources and protected areas (Longley et al. 2001, Gimblett 2002). However, the collection of methods used to store, analyse, model and visualise the visitor flows in natural sites has not yet been exhaustively documented within this application domain. This paper reviews main GIS analytical approaches and discusses their utility for studying visitor flows in recreational areas. The presented overview of methods is illustrated using examples based on empirical data obtained from recent visitor monitoring projects carried out in the Lobau (Viennese part of the Danube Floodplains National Park) by the Institute of Landscape Development, Recreation and Conservation Planning - BOKU University, Vienna.

## Overview of GIS-Methods

The choice of adequate GIS analytical tools largely depends on the available input data and the way they are organized (Longley et al. 2001). Visitor flow can be seen as an integral part of an existing spatial object, such as a trail network (Figure 1a). It might also be defined as a separate social phenomenon taking place in a geographic location (Figure 1b), for instance GPS records of tourist movements (Gimblett & Skov-Petersen 2008). There are also approaches using relational databases to interrelate visitor information and different types of spatial data (Henning 2005, Taczanowska 2009).

For the purposes of this paper, the presented analysis methods have been grouped into the following categories: selection and aggregation approaches, distance-based analyses, density analyses and spatio-temporal analyses. Table 1 summarizes GIS methods and presents possibilities of their application for analysing visitor flows in recreational areas.

Methods falling into the category “selection and aggregation” are very diverse, in particular the use of SQL queries in a relational database allows all sorts of data summaries ranging from calculating volumes of visits at specified locations (Figure 1a), calculating parameters of individual routes, differentiating the intensity of use, and its spatial distribution between various visitor groups. Spatial selection and overlay techniques can support habitat disturbance analysis by identifying areas where public use and sensitive habitats overlap.

Distance-based analyses are typically used for analysing accessibility of recreational areas or accessibility of certain places within the borders of a leisure site. Density analysis can be applied to calculate density of GPS-trackpoints or points where people stop (Taczanowska et al., 2008). In this way the spatial distribution of visitors (Figure 1c) and their resting places (Figure 1d) can be investigated. Spatio-temporal analysis (tracking analysis) enables the representation of the temporal changes of environmental or social data. Within this application, domain tracking analysis can be applied to illustrate movement of visitors in a leisure site.

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<sup>1</sup> BOKU – University of Natural Resources and Applied Life Sciences, Vienna, Institute of Landscape Development, Recreation and Conservation Planning, Peter-Jordan-Strasse 82, 1190 Vienna, Austria, karolina.taczanowska@boku.ac.at, christiane.brandenburg@boku.ac.at, arne.arnberger@boku.ac.at, andreas.muhar@boku.ac.at

Table 1. Overview of GIS-based methods used for analysis of visitor flows

<b>Analysis Method</b>		<b>Example of an Application Domain</b>
Selection	Thematic selection	Representing the spatial distribution of specified groups of visitors (eg. hikers vs. bikers / weekend vs. weekday users / tourists vs. locals / morning, midday vs. afternoon visitor flow / etc.)
	Spatial selection	Representing conflict areas, where public use and sensitive habitats intersect
Aggregation	Summarising	Calculating volumes of visits (e.g. per path segment or at specific locations) Calculating lengths of individual routes
	Overlay techniques	Representing conflict areas, where public use and sensitive habitats intersect
Distance-based analysis	Network analysis	Definition of catchment area of a leisure site; definition of accessibility zones within recreational areas
		Distances / travel time between origins and destinations (e.g. home address – entrance gate of a recreational area)
		Supply of recreational sites for specified areas (e.g. residential area)
	Calculating the shortest, fastest, most attractive route between origin and destination	
Distance analysis	Distance from a specific object, eg. trail segment, entrance gate, tourist attraction	
Buffer area	Buffer area around specific objects (e.g. along a trail)	
Density analysis	Density analysis (Kernel / simple algorithm)	Calculating density of GPS waypoints (tracks or stops), overnight stays, etc.
Spatio-temporal analysis	Tracking	Representation of visitors' movement / spatio-temporal changes of infrastructure

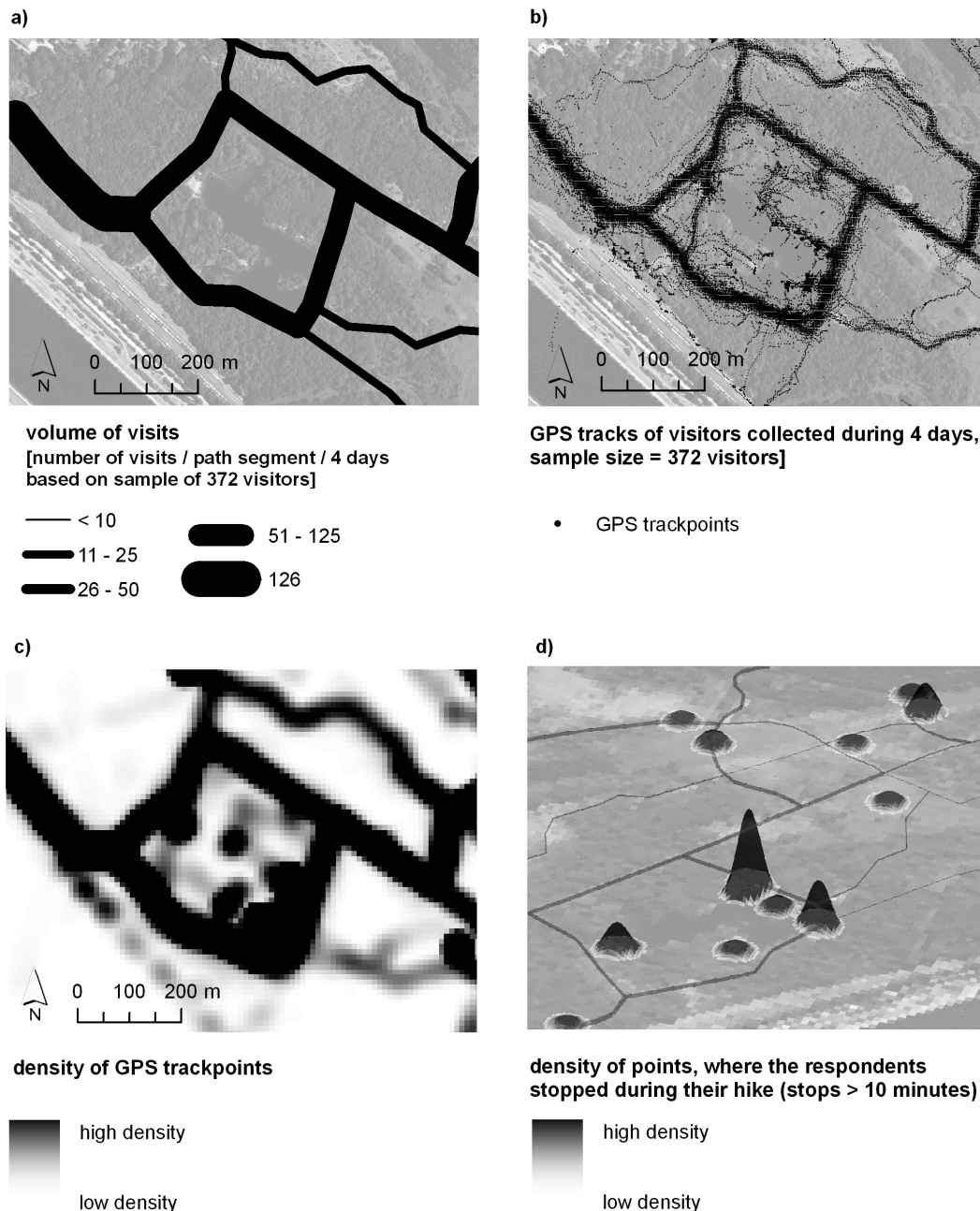


Figure 1. Selected examples of data structures and analysis used to investigate the spatial distribution of hikers around a lake (Dechantlacke) in the Danube Floodplains National Park in Austria: a) visitor flow data represented as an attribute of the trail network [volume of visits per path segment]; b) visitor flow data as a collection of GPS trackpoints; c) example of a density analysis of GPS-trackpoints; d) density of points, where visitors stopped during their hike around the lake. The three-dimensional representation of density values allows to identify even the minor differences between analysed locations.

## Discussion & Conclusions

Next to commercial and open source GIS software solutions, there are several specialist applications enabling advanced modelling of visitor flows in recreational areas (Gimblett & Skov-Petersen 2008), such as RBSim, AlpSim, MASOOR and Kvintus. GIS-based analysis can be considered a valuable tool in the explorative phase of visitor flow investigation, having a supportive role for visitor flow models.

We believe that defining relevant analysis objectives and the selection of adequate GIS tools may give a new insight into understanding the spatial context of recreational use and can support management decisions in natural leisure sites.

## **Acknowledgements**

Spatial data used as input for GIS-based analysis were obtained from two recent research projects: BALANCE within the framework of the Austrian Space Programme and LOBAU 2020 funded by the Austrian National Committee of the UNESCO Man and Biosphere programme. The authors wish to thank the colleagues involved in the projects, especially to Renate Eder for the coordination of the LOBAU 2020 survey campaign.

## **References**

- Gimblett, R. (Ed.) (2002). Integrating Geographic Information Systems and Agent-Based Modeling Techniques for Simulating Social and Ecological Processes. Oxford University Press, New York.
- Gimblett, R. and Skov-Petersen, H. (Ed.) (2008). Monitoring, Simulation, and Management of Visitor Landscapes. University of Arizona Press, Tucson, USA
- Hennig, S. (2005). Monitoring-System „Recreational Use“. Das Beispiel Nationalpark Berchtesgaden. In: Schrenk, M. (ed) Proceedings CORP 2005 & Geomultimedia05, Vienna, Austria, 22-25.02.2005, MULTIMEDIAPLAN.AT & IEMAR, TU Wien. 497-506. [www.corp.at]
- Longley, P. A., Goodchild, M. F., Maguire, D. J. and Rhind, D. W. (2001). Geographic Information Systems and Science. John Wiley & Sons, Ltd, Chichester, New York, Weinheim, Brisbane, Singapore, Toronto.
- Taczanowska, K., Muhar, A. and Brandenburg, C. (2008). Potential and limitations of GPS tracking for monitoring spatial and temporal aspects of visitor behaviour in recreational areas. In: Raschi, A. and Trampetti, S. (Ed.): The Fourth International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas, Montecatini Terme, Italy, 14.- 19. Oct. 2008. 451-456.
- Taczanowska, K. (2009). Modelling the Spatial Distribution of Visitors in Recreational Areas. BOKU – University of Natural Resources and Applied Life Sciences in Vienna. PhD thesis. Published online: [[https://zidapps.boku.ac.at/abstracts/oe\\_list.php?palD=3&paSID=7284&paSF=-1&paCF=0&paLIST=0&language\\_id=DE](https://zidapps.boku.ac.at/abstracts/oe_list.php?palD=3&paSID=7284&paSF=-1&paCF=0&paLIST=0&language_id=DE)]



## Using visitor generated Internet content as a recreation monitoring tool

Daniel Williams<sup>1</sup>, Joseph Champ<sup>2</sup>, Catherine Lundy<sup>2</sup>, David Cole<sup>3</sup>

Keywords: discourse, visitor preferences, substitution, place attachment, meaning

Zoning for visitor management effectively treats all places within a zone as the same. Because every place is to some degree unique, identifying place specific values and meanings is an attempt to recognise uniqueness within a zoning framework. This is important in popular recreation regions such as Colorado wilderness areas, where land managers worry that tactics designed to manage any one zone (such as restricting use) may prove counterproductive by transferring the problem to some other nearby wilderness area. To address this problem, managers need methods for zoning that allow them to monitor users' responses to management changes that take into account larger regional patterns of wilderness use and changing wilderness conditions. The research reported here represents a preliminary case study of the potential for using data from user-generated web content as a tool for identifying and monitoring site-specific meanings and attachments that would enable managers to better anticipate visitor responses to management interventions.

According to discursive communication theory, meaning is established by the way a certain topic is presented or talked about; therefore, by its very nature, discourse also sets limits on how a topic cannot or should not be talked about (Hall 1996). Within the topic of wilderness, competing discourses are at work and such negotiations over meaning are likely to be evident in user generated media content. Among these, online media sources have emerged as the most commonplace and easiest to access from virtually anywhere. Although a relatively new way to specifically study wilderness discourses, online studies of websites have been documented in the literature on a variety of topics.

For example, researchers at the University of Southern California have been quantitatively analysing blogs to better understand the trends and patterns of personal discourse in cyberspace. Before the advent of the Web, personal stories were simply shared between people and therefore could not be systematically analysed. However, Gordon & Swanson (2009: p. 1) write: "*Weblog stories are data points in a composite model of how the world is, how people perceive the world, and how people narrate these perceptions to others*" and therefore can be subject to analysis. The Web can provide abundant information on any topic discussed on the internet, including wilderness. Countless posts summarise wilderness areas, describe their locations, and various web platforms enable users to share their wilderness experiences and ideas. Individuals and organisations are paying increased attention to the idea of user generated content, which includes online reviews of products, services, and experiences. Deciphering reviews of products and services is becoming a science in itself (Zahn et al. 2009) providing potential insight into customers (Alvarez 2008, cited in Tomaiuolo 2009). Although product reviews are not always analogous to online communication about wilderness areas, strategies for studying web-based communication in this way can provide valuable information to recreation management agencies. The accounts most suitable for this study involved those created and posted by wilderness users themselves.

Google was used to search for a variety of key terms related to this study, with the ultimate goal of finding first person accounts of wilderness experiences. Initial searches began generically, using

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<sup>1</sup> Research Social Scientist, Aldo Leopold Wilderness Research Institute, USDA Forest Service, Rocky Mountain Research Station, 790 East Beckwith, Missoula, Montana USA 59801, dcole@fs.fed.us

<sup>2</sup> Department of Journalism and Technical Communication, Colorado State University, Campus Delivery 1785, C-215 Clark Building, Fort Collins, Colorado USA, [joseph.champ@colostate.edu](mailto:joseph.champ@colostate.edu), [catherinemlundy@hotmail.com](mailto:catherinemlundy@hotmail.com),

<sup>3</sup> Research Social Scientist, USDA Forest Service, Rocky Mountain Research Station, 2150A Centre Avenue, Fort Collins, Colorado USA 80525, drwilliams@fs.fed.us

terms such as: 'Colorado Wilderness Area Reviews;' 'Rating Colorado Wilderness Use;' 'Colorado Wilderness Recreation;' and 'Best Colorado Wilderness.' Later searches used more specific search strings, focusing on five randomly selected Colorado wilderness areas, with these results better indicating what type of first person user accounts were available for the different wilderness areas. These sites often contained links to other sites with valuable independent accounts and feedback directly from wilderness users. From the large number of results each search returned, a list of nearly 200 useful websites was compiled based on features such as first person accounts, specificity of wilderness area, timeliness of posting, inclusion of feelings/thoughts on specific wilderness experiences, the mention of any connection to the particular wilderness(es) being written about, previous experiences/familiarity with the wilderness area, and various usage metrics associated with the site.

This presentation reports on the initial findings for one popular wilderness area. For this area, we identified two distinct types of web content. One group constitutes high intensity, frequent, often local users who emphasise accomplishment, deeper meaning, and adventurous stories. This group is unlikely to substitute between areas. The other group represents low intensity, often nonlocal users who are generally seeking advice on finding the 'Colorado experience' including landscape beauty, amenities (waterfalls), and seeing high peaks and blue sky in a relatively convenient manner. Use by this group can be influenced to utilise alternate sites. These results suggest ways managers can make greater use of the internet to target users to redistribute use at a regional scale and monitor results of those efforts.

## **References**

- Gordon, A. & Swanson, R. (2009). Identifying personal stories in millions of Weblog entries. In: Third International Conference on Weblogs and Social Media, Data Challenge Workshop, San Jose, CA, May 20, 2009. <http://people.ict.usc.edu/~gordon/publications/ICWSM09-DCW.PDF>, retrieved March 19, 2010.
- Hall, S. (1996). The West and the rest: Discourse and power. In: S. Hall, D. Held, K. Thompson, & D. Hebert (eds.), *Modernity: An introduction to modern societies*, p 185-227, Blackwell.
- Tomaiuolo, N. (2009). U-Content. In: *Searcher*, (17/5), p 34-54. <http://search.ebscohost.com>
- Zahn, J., Loh, H.T., & Liu, Y. (2009). Gathering customer concerns from online product reviews—A text summarization approach. In: *Expert Systems with Applications* (36), p 2017-2115.

# **Delineating potential trajectories in constrained environments using rough space-time prisms**

**Matthias Delafontaine<sup>1</sup>, Tijs Neutens<sup>1</sup>, Nico Van de Weghe<sup>1</sup>**

Keywords: time geography, space-time prism, spatiotemporal uncertainty

Recently, technological advances have enabled the development of a range of widely and readily available location-aware technologies (LAT) and geosensor systems. Trajectory data resulting from these technologies is however affected by at least two important sources of spatiotemporal uncertainty. First, trajectories are typically approximated as a sequence of spatiotemporal sample points that are to be interpolated. The sampling frequency may be inherent to the tracking device at hand or may result from the incomplete coverage of a geosensor network (i.e. positions outside the radio range of the sensors). In addition, sampling frequency may be affected by system failures (e.g. when a signal is blocked by obstructions). A second source of uncertainty arises from measurement inaccuracy. While individuals may be traced with an acceptable accuracy using GPS, the accuracy of wireless radio-communication systems is often much lower.

Both finite sampling and measurement inaccuracy hamper a straightforward reconstruction of individual trajectories on the basis of LAT data. Hence, the question rises on how to deal with tracking data from which individual trajectories cannot be acceptably obtained by simple interpolation? To this end, we propose a time geography approach, using a representation by space-time prisms. Traditional time geography (Hägerstrand 1970) has two major shortcomings: (i) measurement uncertainties are ignored, and (ii) a homogeneous travel environment is assumed.

To tackle the first problem, we rely on the work of Neutens et al. (2007) where a conceptual model is elaborated for space-time prisms under uncertain constraints, applying the basic principles of rough set theory (Pawlak 1982). A rough space-time prism is obtained, which consists of a lower and upper approximation prism. We will employ this model to deduce a formal definition of lower and upper approximation prisms in the case of tracking data with a certain spatial and temporal accuracy.

Regarding the second issue, a number of researchers have already addressed the assumption of a homogeneous travel environment, most of which have focused on the case of transportation networks instead (e.g. Kwan & Hong 1998, Wu & Miller 2000, Weber & Kwan 2002, Kim & Kwan 2003, Neutens et al. 2007, Kuijpers & Othman 2009). Despite these efforts, only few studies have been concerned with modelling non-motorised, non-network yet spatially constrained movements through space-time prisms. A recent example is Miller and Bridwell (2009), who set up an analytical theory to derive field-based space-time prisms using velocity fields. This approach requires a reliable assessment of such a velocity field at an acceptable field density, which is often unavailable or difficult to estimate accurately in real-world situations. Therefore, we take an alternative approach by assuming a homogeneous travel environment populated with discrete, impassable obstacles. We formally define and set up a methodology to determine space-time prisms within such an obstacle-constrained space.

Finally, we combine both solutions in order to handle space-time prisms with uncertain constraints in an environment constrained by obstacles. We argue that many real-world travel environments, both indoors and outdoors, might be abstracted as such (e.g., urban and built environments). With our approach, the concept of a rough space-time prism has now an acceptable degree of realism in order to become a useful tool to analyse common tracking data in such environments. Therefore, we are planning to validate this methodology by means of extensive data sets. Particular emphasis will be placed on how to employ the obtained concepts to infer additional

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<sup>1</sup> CartoGIS cluster, Department of Geography, Ghent University, Krijgslaan 281 (S8), B-9000 Ghent, Belgium, Matthias.Delafontaine, Tijs.Neutens, Nico.VandeWeghe@UGent.be

knowledge about trajectories and to measure the accessibility in space and time. An implemented prototype tool is already at a far developed stage.

## References

- Hägerstrand, T. (1970), What about people in regional science? Papers of the Regional Science Association, 24, pp. 7-21.
- Kim, H.M. and Kwan, M.P. (2003), Space-time accessibility measures: A geocomputational algorithm with a focus on the feasible opportunity set and possible activity duration. Journal of Geographical Systems, 5, pp. 71-91.
- Kwan, M.P. and Hong, X.D. (1998), Network-based constraint-oriented choice set formation using GIS. Journal of Geographical Systems, 5, pp. 139-162.
- Kuijpers, B. and Othman, W. (2009), Modeling uncertainty of moving objects on road networks via space-time prisms International Journal of Geographical Information Science, 23, pp. 1095-1117.
- Miller, H.J. and Bridwell, S.A. (2009), A field-based theory for time geography. Annals of the Association of American Geographers, 99, pp. 49-75.
- Neutens, T., Witlox, F., VAN DE WEGHE, N. and DE MAEYER, P. (2007), Human interaction spaces under uncertainty. Transportation Research Record, 2021, pp. 28-35.
- Pawlak, Z., 1982, Rough sets. International Journal of Information and Computer Science, 11, pp. 341-356.
- Weber, J. and Kwan, M.P. (2002), Bringing time back in: A study on the influence of travel time variations and facility opening hours on individual accessibility. Professional Geographer, 54, pp. 226-240.

## Designing visitor monitoring system in Estonian nature reserves combining passive mobile positioning with other counting methods

Antti Roose<sup>1</sup>

Keywords: visitor monitoring, nature reserves, mobile positioning

Visitation at wildlife areas in the nature protection areas (NPAs) is a controversial and sensitive issue in terms of nature protection. Obviously, the primary objective of NPAs is stated as preserving biodiversity, on the other hand and simultaneously, nature reserves provide public services for recreation, nature tourism and education. Setting visitation policy requires comprehensive impact assessment and planning to avoid crossing threshold levels of physical and ecological carrying capacity (Eagles & McCool 2002). Initiated by the Estonian environmental agency, the Visitor Monitoring System for the Estonian nature reserves has been designed to provide advice to the management of nature reserves. This is on the basis of an operational monitoring system and to allow sound, knowledge-based decision making while developing infrastructure for visitation and education. The system should assist in understanding visitor patterns, demands and behaviours. The approach includes biophysical impacts of visitation, use and the impact of settings and experiences on visitors. Monitoring has to allow early detection of potential problems and thus assists in the preservation of natural areas and allows management to identify whether their objectives are being met. The current trends in nature tourism in Estonia are summarised as follows: human visitation affects vegetation, fauna, soils, and hydrology; heritage sites and sites with comprehensive infrastructure are particularly crowded; local communities oppose tourism development, in general.

A pilot survey automatic monitoring based on cellular phone or mobile positioning was tested and deployed. In Estonia, cell phone based passive mobile positioning method, using automatically stored in the depersonalized log files of mobile operators, is applied already efficiently in visitor counting in crowded places at cities, events, commuting and transport surveys (Ahas et al. 2008). Passive mobile positioning data is normally collected with the precision of cellular network cells. The survey testing the feasibility, precision and qualities of the method for sparsely visited areas was carried out in Emajõe-Suursoo, Endla and Alam-Pedja nature protection areas in 2008. The analysis employed 5x5km grid. Using anchor point method, local residents and employees as passing by transit travellers are filtered and excluded from the dataset. This method allows the determination of the place of residence for the Estonian visitors and origin of international visitors as well their previous and next site of visitation. In general, passive mobile positioning expresses visitors' flows, though the counting precision is low in high season and very low in low season of visitation (Table 1).

The fitness of mobile positioning to the results of manual counting was the best in Emajõe-Suursoo, though visitor numbers were overestimated almost twice. Low precision is caused by sparse mobile network, where the handover of calls is frequent as the majority of calls 'jump' over open wetland landscapes, over-counting visitation numbers by this way. Data noise made by transit traffic at roads and occasional local visitors is not fully filtered from nature tourists and hikers. The strength of mobile positioning method is robust in the understanding of visitor flows and constant time-series of data, also retrospectively, in sparsely visited nature reserves. Groups of less than 150 persons are not detected and hidden in data noise of short-term transit. The small sample size poses other sampling concerns such as the question of privacy and data protection of tracked visitors.

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<sup>1</sup> Department of Geography, University of Tartu, Vanemuise str 46, Tartu 51014, Estonia, [Antti.Roose@ut.ee](mailto:Antti.Roose@ut.ee)

Table 1. Direct and cell-phone based visitor counting in the Emajõe-Suursoo nature reserve

Month	Direct counting	Cell-phone based counting	Difference
Jan.08	97	1050	+982%
Feb.08	173	916	+429%
March 08	322	1154	+258%
Apr.08	465	1429	+207%
May 08	874	1462	+67%
June 08	895	1643	+84%
July 08	544	1430	+163%
Aug.08	778	977	+26%
Sept.08	543	1004	+85%
Total	4691	11065	136%

The development of the method should stress on testing new data filters adapted for sparsely populated areas in particular. In this way, data noise created by incidental mobility or transit could be eliminated. The comparative tests during the most silent winter days and the most crowded summer days could assist in seasonal fine-tuning of data filters. Also, behaviour survey of cellular usage of nature reserve visitors is clearly needed to improve the precision of method. Also, new test areas which have optimal or better setting of cellular towers could serve well for method elaboration. Cell phone based method combined with other counting methods in visitor entrances allows to cover all area of nature reserve. The innovative methods challenge developing the Visitor Monitoring System in the Estonian nature reserves.

### References

- Ahas, R. Aasa, A., Roose, A., Mark, Ü. & Silm, S. (2008). Mobile positioning as a new data source and method for tourism surveys: an Estonian Case Study. In: *Tourism Management* 29 (3), p 469–486.
- Eagles, P.F.J. & McCool S.F. (2002). *Tourism in National Parks and Protected Areas. Planning and Management*. CAP Publishing, 320 p.

# MovementMapper: the movement simulation of visitors in nature areas

Monica Wachowicz<sup>1</sup>, Ana Maldonado<sup>2</sup>, Antonio Vazquez Hoehne<sup>3</sup>

Keywords: movement analysis, trajectory simulation, movement surface, recreational activity

## Introduction

The movement of visitors in nature areas is influenced by a variety of factors that consist of collective characteristics such as the average number of visitors to a park, different types of visitors, and their typical destinations, as well as individual characteristics of an individual visitor's expectations, motivations, activities, duration of stay, and trip itineraries inside a park. Therefore, it is important to simulate an overall picture of a visitor movement (macroscopic level) in accordance to the individual physical mobility and cognitive capabilities (microscopic level). In the first case, movement is represented similar to that of gases or fluids at a macroscopic scale, where partial differential equations describing density and velocity change over time are used to characterise streams of pedestrians as analogous to river beds (Henderson 1974). However, these equations are usually complex and computationally intensive. On the other hand, research has also been focused on modelling pedestrian movement as a set of individuals. In this case, the models are considered microscopic since the movement emerges from the complex interactions between many individuals with their surrounding environment. Some examples include models using social forces (Helbing & Molnár 1995), gravity measures (Ubøe 2001), utility calculus based on personal preferences (Taczanowska et al. 2008), floor fields (Burstedde et al. 2001), prisms (Miller 2004) and agents (Batty 2003). Most of recreational simulation models have been developed to deal with one specific level in particular (Skov-Petersen 2005).

This paper describes the MovementMapper tool that encompasses a synergetic approach in the prediction of visitor movement in nature areas. At the macroscopic level, a visitor movement is represented by a movement surface which follows the analogy of the flow of water in gravity models. In contrast, our tool also belongs to the microscopic model category, where visitors interact with their surrounding environment by making a sequence of decisions according to utility measures, which in turn, generates individual trajectories. This synergetic approach has been founded on three modelling phases as previously proposed by Peuquet (1994) and Kavouras (2001). These phases are exploration, reasoning and prediction.

During the exploration phase we have focused on the abstraction of acting classes in visitor movement. They represent the visitors and their preferences, the physical environment where their movement takes place, and the time period when their movement occurs. In the reasoning phase we have inferred the behaviour of these classes through a prediction reasoning task that considers whether certain conditions hold at a certain time after the occurrence of a particular event. An interaction function tries to systematically capture the continuity of movement in the neighbourhood space where interactions between a visitor and the environment are taking place over time.

Finally, in the prediction phase, our model forecasts the movement surface? at the macroscopic level as well as individual trajectories at the microscopic level. The movement surface defines the most probable regions (i.e. cells) to form part of a visitor movement considering a pre-defined origin, destination and time budget. In contrast, an individual trajectory is the result of the simulation of the decision making process carried out by a visitor as he moves around a nature area. The actual displacement of visitors recorded in the Dwingelderveld National Park in the Netherlands were used to validate the simulated trajectories generated by the proposed tool.

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<sup>1</sup> Wageningen University and Research Centre, P.O Box 47 , 6700 AA Wageningen, The Netherlands, [monica.wachowicz@wur.nl](mailto:monica.wachowicz@wur.nl)

<sup>2</sup> Ana Maldonado, Instituto Geográfico Nacional, C/ General Ibañez de Ibero, 3, Madrid, Spain, [amaldonado@fomento.es](mailto:amaldonado@fomento.es)

<sup>3</sup> Technical University of Madrid, Autovía de Valencia km 7,5 , 28031 Madrid, Spain, [antonio.vazquez.hoehne@upm.es](mailto:antonio.vazquez.hoehne@upm.es)

## References

- Batty M. (2003). Agent-based pedestrian modelling. Centre for Advanced Spatial Analysis. Working Paper Series, University College London.
- Burstedde C., Klauk K., Schadschneide A., & Zittartz J. (2001). Simulation of pedestrian dynamics using a two-dimensional cellular automaton. In: *Physica A* (295), p 507–525.
- Helbing D. & Molnár P. (1995). Social force model of pedestrian dynamics. In: *Physical Review E* (51), p 4282 – 4286.
- Henderson L. F. (1971). The statistics of crowd fluids. In: *Nature* (229), p. 381-383.
- Kavouras M. (2001). Understanding and modelling spatial change. In: Frank A.Raper J.and Cheylan J.P. (eds.) *Life and Motion of Socio-Economic Units*, Taylor & Francis, GISDATA Series 8.
- Miller H. J. (2004). Activities in space and time. In P. Stopher, K. Button, K. Haynes and D. Hensher (eds.) *Handbook of Transportation Research 5: Transport Geography and Spatial Systems*, p. 647-660, Pergamon/Elsevier Science.
- Peuquet D. (1994). It's about time: A conceptual framework for the representation of temporal dynamics in Geographic Information Systems. In: *Annals of the Association of American Geographers* (84/3), p. 441-461.
- Skov-Petersen H. (2005). Feeding the agents- collecting parameters for agent-based models. In: *Computers in Urban Planning and Urban Management (CUPUM)*, <http://128.40.59.163/cupum/searchPapers/papers/paper60.pdf>
- Taczanowska K., Muhar A., & Arberger A. (2008). Exploring spatial behaviour of individual visitors as background for agent simulation. In: R. Gimblett, H. Skov-Petersen (eds.) *Monitoring, simulation and management of visitor landscapes*, p. 159-174, The University of Arizona Press.
- Ubøe J. (2001). Aggregation of gravity models for journeys-to-work. NHH Working paper 4/2001.



## Public preferences for forests as sites for recreational use: a Pan-European perspective

David Edwards<sup>1</sup>, Marion Jay<sup>2</sup>, Frank S. Jensen<sup>3</sup>, Beatriz Lucas<sup>4</sup>, Mariella Marzano<sup>1</sup>, Bill Mason<sup>1</sup>, Clare Montagné<sup>5</sup>, Andrew Peace<sup>1</sup>, Gerhard Weiss<sup>6</sup>

Keywords: forest recreation, public preferences, silvicultural attributes, Delphi survey, Europe

This paper presents the findings of a Delphi survey carried out to estimate the recreational value of a range of silvicultural attributes and forest types found across Europe. 'Recreational value' was defined in terms of the preferences of people who regularly use forests as sites for recreation. While preferences can be influenced by several factors, the survey was concerned only with silvicultural attributes. For most visitors, these are important because they affect the visual attractiveness of the forest (Edwards et al. 2010a).

The Delphi survey built upon established methods developed by Linstone & Turoff (1975) and Novakowski & Wellar (2008). A questionnaire was completed anonymously by 46 participants with experience of landscape preference research. One panel each was assembled for four European regions: Great Britain, the Nordic Region, Central Europe and Iberia. After the first round of responses had been returned, the results were redistributed to participants who were then invited to revise their original responses in the light of their panels' anonymised results (Edwards et al. in press).

The questionnaire comprised of two parts. The first part focused on silvicultural attributes, and asked experts to quantify the relative contribution of each of 12 attributes to the overall recreational value of forest in their respective region by assigning a weighting on a scale from 1 (lowest) to 10 (highest). For each attribute, they were also asked to indicate whether its relationship to the recreational value of the forests in their region was best described as 'positive', 'negative', 'bell-shaped', 'U-shaped', or 'even'.

The results suggest that, across Europe, the highest importance was attached to the attribute 'size of trees within stand', which had a positive relationship to recreational value. The remaining attributes were, in descending order of importance: 'size of clear-cuts' (negative); 'residue from thinning and harvesting' (negative); 'visual penetration' (bell-shaped); 'variation between stands' (positive); 'extent of tree cover' (bell-shaped); 'naturalness of forest edges' (positive); 'variation in tree spacing' (positive); 'variation in tree size' (positive); 'number of tree species' (positive); 'amount of natural deadwood' (bell-shaped) and 'density of ground vegetation' (bell-shaped).

The second part of the questionnaire focused on forest types. Participants were asked to provide a score on a ten-point scale for each cell in a matrix of twenty forest types, with each type representing one of five possible forest management alternatives (FMAs) and one of four phases of development (establishment, young, medium and adult). The five FMAs have common definitions across Europe and lie on a continuum from non-intervention to intensive production as follows: 1) forest nature reserves, 2) close-to-nature forests, 3) combined-objective forestry, 4) intensive even-

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<sup>1</sup>Forest Research, Northern Research Station Roslin, Midlothian, EH25 9SY, UK, david.edwards@forestry.gsi.gov.uk mariella.marzano@forestry.gsi.gov.uk; bill.mason@forestry.gsi.gov.uk; andrew.peace@forestry.gsi.gov.uk

<sup>2</sup>Albert-Ludwigs-Universität, Institut für Forst- und Umweltpolitik, Tennenbacherstrasse 4, D-79106 Freiburg, Germany. Marion.Jay@ifp.uni-freiburg.de

<sup>3</sup>Forest & Landscape, University of Copenhagen, Rolighedsvej 23, DK-1958 Frederiksberg C, Copenhagen, Denmark. FSJ@life.ku.dk

<sup>4</sup> Centre Tecnologic Forestal de Catalunya (CTFC), Passeig Lluís Companys 23, ES-08010 Barcelona, Spain. beatriz.lucas@ctfc.es

<sup>5</sup> Institut National de la Recherche Agronomique (INRA), 14, rue Girardet, CS 14216, 54042 Nancy, France. montagne@nancy-engref.inra.fr

<sup>6</sup> Institute of Forest, Environmental and Natural Resource Policy, University of Natural Resources and Applied Life Sciences (BOKU), Feistmantelstraße 4, A-1180 Vienna, Austria. gerhard.weiss@boku.ac.at

aged forestry, 5) wood biomass production. The scores indicated how respondents believed the average visitor would value a forest stand of that type as a location for recreation in their region. Three matrices were completed by each participant according to three different tree species compositions: conifer, broadleaved and mixed. Participants were asked to focus on the commonest conifer species and broadleaved species in their respective region, as follows: Sitka spruce (*Picea sitchensis*) and birch (*Betula* spp.) in Great Britain; Scots pine (*Pinus sylvestris*) and birch in Scandinavia; Norway spruce (*Picea abies*) and beech (*Fagus sylvatica*) in Central Europe; and pine (*Pinus* spp.) and oak (*Quercus* spp.) in Iberia (Edwards et al. 2010b).

The scores were then examined using conjoint analysis (Alriksson & Öberg 2008). The findings suggest that, across Europe, tree species composition was of relatively minor importance in explaining the overall variation in scores (cf. Schraml & Volz 2009, Gundersen & Frivold 2008). In the UK and Central Europe, comparably high importance was attached to FMA and phase of development, while in the Nordic Region and Iberia, phase of development was considered more important than FMA. The relative importance attached to each FMA suggests that most visitors prefer 'close-to-nature' or 'combined objective' forests to unmanaged forest nature reserves (cf. Rametsteiner & Kraxner 2003).

The low importance attached to tree species suggest that criticism directed towards non-native conifers, and perceived preferences for broadleaves across Europe, may not be due to the choice of tree species per se, but the use of conifers in intensive management regimes characterized by dense even-aged monocultures and short rotation lengths (Price 2003). It is acknowledged that such a finding may hide substantial variation in preferences between individuals and social groups, between people pursuing different recreational activities, and between geographical regions with their contrasting cultural landscapes.

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### **References**

- Wagar, J.A. (1964). The carrying capacity of wild lands for recreation. Washington, DC.
- Alriksson, S. and Öberg, T. (2008). Conjoint analysis for environmental evaluation: a review of methods and applications. *Env Sci Pollut Res* (15/3), p 244-257.
- Edwards, D., Jay, M., Jensen, F., Lucas, B., Marzano, M., Montagne, C., Peace, A. & Weiss, G. (2010a). *Public preferences for silvicultural attributes of European forests*. EFORWOOD Deliverable D2.3.3. Forest Research, UK.
- Edwards, D., Jay, M., Jensen, F., Lucas, B., Marzano, M., Montagne, C., Peace, A. & Weiss, G. (2010b). *Assessment of the recreational value of European forest management alternatives*. EFORWOOD Deliverable D2.3.6. Forest Research, UK.
- Edwards, D., Jensen, F.S., Marzano, M., Mason, B., Pizzirani, S. & Schelhaas, M.-J. (in press). A theoretical framework to assess the impacts of forest management on the recreational value of European forests. *Ecological Indicators*.
- Gundersen, V.S. & Frivold, L.H. (2008). Public preferences for forest structures: a review of quantitative surveys from Finland, Norway and Sweden. *Urban Forestry and Urban Greening* (7) p 241-258.
- Linstone, H.A. & Turoff, M. (1975) (eds.). *The Delphi method: techniques and applications*. Addison Wesley, Boston, MA, USA.
- Novakowski, N. & Wellar, B. (2008). Using the Delphi technique in normative planning research: methodological design considerations. *Environment and Planning A* (40), p 1485-1500.
- Price, C. (2003). Quantifying the aesthetic benefits of urban forestry. *Urban Forestry and Urban Greening* (1), p 123-133.

- Rametsteiner, E. & Kraxner, F. (2003). *Europeans and their forests: What do Europeans think about forests and sustainable forest management?* MCPFE Liaison Unit, Vienna.
- Schraml, U. & Volz, K.-R. (2009). Do species matter? Valuable broadleaves as an object of public perception and policy. In: Spiecker, H. (ed.) *Valuable broadleaved forests in Europe*, p 213-236. S. Brill, Leiden, Boston, Köln.

## **Locals' and tourists' perceptions of forest landscape values: need for integrated landscape approach**

**Johan Törnblom<sup>1</sup>, Per Angelstam<sup>1</sup>, Kjell Andersson<sup>1</sup>, Robert Axelsson<sup>1</sup>**

Keywords: integrated landscape approach, governance, rural development

The European Landscape Convention aims to encourage public authorities to adopt policies and measures at local, regional, national and international level for protecting, managing and planning landscapes throughout Europe. Forests provide important natural resources in Sweden, and there is a continuous discussion about the use of goods, services and values derived from forests (Angelstam et al. 2005). Non-consumptive uses by rural tourism businesses are currently becoming increasingly important locally. New modes of governance and management of landscapes and regions will therefore be important for a variety of reasons. These include, intensified wood production and biodiversity conservation, as well as for ecosystem services (Costanza et al. 1997), the ability to attract tourists searching for recreation and leisure (Bostedt & Mattsson 1995), and as a means to encourage amenity migration.

Bergslagen is an informal region in south-central Sweden (latitude 60 degrees, longitude 15 degrees) with an ancient history of natural resource use as a means of developing human welfare and quality of life. For a long time, use of minerals, wood and streams in Bergslagen were the base for economic wealth based on iron production for the entire country of Sweden. Another side of the coin of the long history of industrial production became low levels of entrepreneurship and education of people. This trend is however now partly changing. Natural resources continue to form the basis for value-added production based on wood, metals and water. However, in addition non-consumptive use values are becoming important for development. The transition from raw material production and industries to services has been and continues to be a major challenge.

Based on interviews with 46 stakeholders at a large resort in a region with a strong focus on wood production, we studied local inhabitants' and visitors' perceptions of natural and cultural landscape use and non-use values. Irrespective of interviewees' attitudes and main interests, whether they are visiting the resort during the winter or the summer, or if they have a specific interest like fishing, natural and cultural landscape, values were important reasons for visiting the resort. The interviews indicated that the surrounding biophysical environment is of decisive importance for the choice of the destination. A majority of the respondents preferred old forests and disliked clear-cuts in association to recreational facilities as ski slopes, long distance footpaths or put-and-take fishing facilities. It was also clear that hills with views, final felling stands with large wood volumes as well as lakes, streams and cultural heritage were appreciated both by locals and visitors.

While the economic importance of the forest industry remains highly important at the national level, mechanisation of operational forestry for sustained yield wood production has led to radically reduced employment both regionally and locally. To support rural development based on non-wood use values and non-use values involves the challenge to integrate planning processes in different sectors at multiple levels (Angelstam & Elbakidze 2006). Additionally, the management of use and non-use values in forests can no longer be managed only at the scale of individual forest stands. In addition, local, regional, national and international levels need to be considered. By sampling different actor's attitudes and opinions it is possible to measure landscape values and to include such knowledge into planning processes.

However, to realise the vision of sustainable forest landscapes in a geographical area, there is a need for an integrated landscape approach which includes (1) transparent knowledge about the state and trends of different sustainability dimensions, and (2) collaboration among stakeholders

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<sup>1</sup> School for Forest Engineers, Faculty of Forest Sciences, Swedish University of Agricultural Sciences, SE-739 21 Skinnkatteberg, Sweden, Corresponding author: [johan.tornblom@smsk.slu.se](mailto:johan.tornblom@smsk.slu.se)

such as entrepreneurs, public administration and universities at multiple temporal and spatial scales. Integration of research disciplines and of academic and non-academic actors can facilitate local capacity building and collaboration between actors and sectors associated to different development efforts by providing knowledge and experiences for sustainable rural development (Angelstam & Törnblom 2004). This provides opportunities for the development of present and new entrepreneurs based on a synthesis of experiences and knowledge concerning the creation of economically, environmentally and socio-culturally sustainable landscapes. A key challenge recognised by many actors and stakeholders is to develop a governance model for intensified use of an increased range of goods, services and values of entire landscapes in Bergslagen as a social-ecological system.

Finally, we discuss and exemplify how information about natural and cultural values could benefit local tourism businesses, as well as constitute a functional tool for local entrepreneurs, visitors, tourists and for forestry planners and land managers concerning landscape planning of landscape values within a sustainability context.

## References

- Angelstam, P. & Törnblom, J. 2004. Maintaining forest biodiversity in actual landscapes – European gradients in history and governance systems as a “landscape lab”. In: M. Marchetti (ed.). *Monitoring and indicators of forest biodiversity in Europe – from ideas to operability*. EFI symposium No. 51, p 299-313.
- Angelstam, P., Kopylova, E., Korn, H., Lazdinis, M., Sayer, J.A., Teplyakov, V., Törnblom, J. 2005. Changing forest values in Europe. In: J.A. Sayer, S. Maginnis (eds.) *Forests in landscapes. Ecosystem approaches to sustainability*. Earthscan, p 59-74.
- Angelstam, P. & Elbakidze, M. 2006. Sustainable forest management in Europe's East and West: trajectories of development and the role of traditional knowledge. In: J. Parrotta, M. Agnoletti, E. Johan (eds.) *Cultural heritage and sustainable forest management: the role of traditional knowledge*. MCPFE Proceedings (part 2), p 353-361.
- Bostedt, G. & Matsson, L. 1995. The value of forests for tourism in Sweden. *Annals of Tourism Research* (22/3), p 671-80.
- Costanza, R., d'Arge, R., de Groot, R., Farber, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S., O'Neill, R.V., Paruelo, J., Raskin, R.G., Sutton, P. & Van den Belt, M. 1997. The value of the world's ecosystem services and natural capital, *Nature* (387), p 253-60.

## Ways of seeing the forest: landscape image sketches in Japan and Russia

Hirofumi Ueda<sup>1</sup>, Toshihiro Nakajima<sup>2</sup>, Norimasa Takayama<sup>3</sup>, Elena Petrova<sup>4</sup>, Hajime Matsushima<sup>5</sup>, Katsunori Furuya<sup>2</sup>, Yoji Aoki

Keywords: landscape image, forest, Japan, Russia, sketch drawing

This study investigated the ways of seeing the forest in Japan and Russia by using Landscape Image Sketching Technique (LIST). Identification of recreation needs is one of the most important tasks in natural area management. With the globalisation of tourism, the recreation needs are diversifying on the one hand whilst local culture and customs can become a new tourist resource on the other. Understanding culturally different meanings of forests will give a new insight into tourism promotion as well as natural area management.

For cross-national research, Japan and Russia were selected. Japan and Russia are neighbouring countries, however, the mutual communication has been not enough. This report is an interim report of the JAPAN-RUSSIA Joint Research Project since 2008 'Comparison of Natural Landscape Evaluation between Japan and Russia', which is financed by the Japan Society for the Promotion of Science and Russian Foundation for Basic Research.

Landscape Image Sketching Technique (LIST) is an empirical methodology to exteriorise an individual landscape image as a scene sketch by respondents. The 'landscape image' is defined as a medium between one's individual values and social construction as well as physical landscape and landscape representation. In related study areas, the human phenomenon of value has been explicated with gestalt principles (see Schroeder 2007, Fuller 1990). The visual data from one's perspective mirror the respondents' identification and symbolisation of the landscape and then reconstruction of the meaning in its composition as a figure-ground relationship. In other words, the sketching procedure can coordinate the inconsistent verbal accounts in a symbolic picture, which is the advantage of the scene sketch. LIST reveals 'what' people are looking at as well as 'how' they are viewing their environment, thus giving us new insights into the understanding of the public image through landscape perception (Ueda 2006, 2009).

The empirical data were obtained with questionnaires in Japanese and Russian language. The respondents were students of Moscow University, Irkutsk University, Chiba University and Hokkaido University. The site selection intended to diversify the forest images considering geographic position as well as vegetation of each research site.

About 50 respondents in each research site were asked to make a landscape image sketch of their spontaneous imagination of a 'forest' with some keywords and text. The visual data were analysed through three phases. Landscape elements were identified visually and linguistically and labeled first. View angle and distance were classified according to the visual appearance and combination of each landscape elements and viewpoint. Then, self-orientation in the represented landscape was classified in terms of the combination and structure of the elements and viewpoint. Finally, the meaning or motive of the landscape image sketches was interpreted comprehensively with relation to the labeled elements and verbal description.

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<sup>1</sup>School of Design, Sapporo City University, Geijutsu-no-mori 1, Minami-ku Sapporo, 005-0864 Hokkaido, Japan, [h.ueda@scu.ac.jp](mailto:h.ueda@scu.ac.jp)

<sup>2</sup> Graduate School of Horticulture, Chiba University

<sup>3</sup> Forestry and Forestry Products Research Institute

<sup>4</sup> Faculty of Geography, Lomonosov Moscow State University

<sup>5</sup> Research Faculty of Agriculture, Hokkaido University

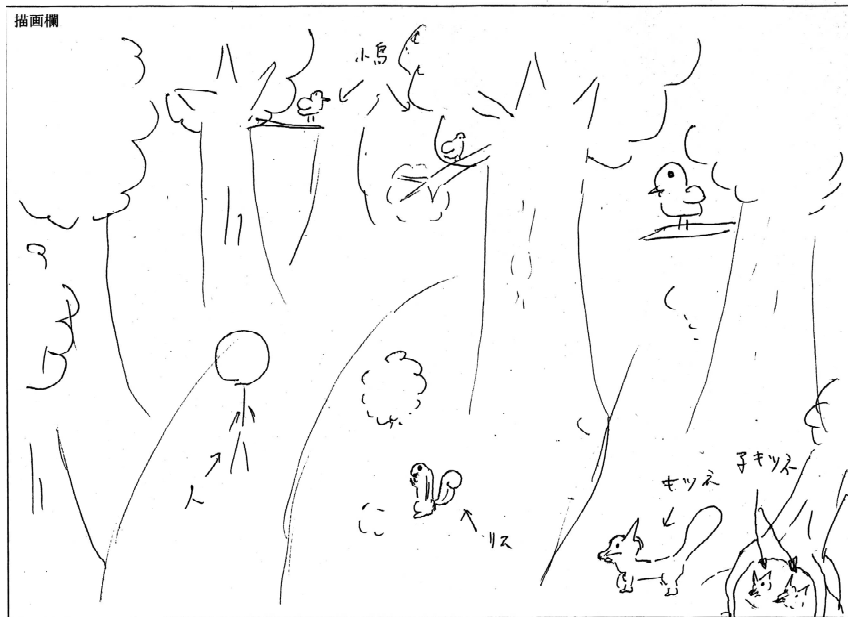


Figure 1 and 2: Example of forest image sketch in Japan (left) and Russia (right)

As results, landscape image sketches showed diverse variety in each research site, but different characteristics between Japan and Russia suggested the fundamental difference in the ways of seeing the landscape through cultural framework. The preference for broadleaf wood forest in Japan and mixed forest in Russia was main difference concerning 'what' they are looking at as a forest. While the description of 'forest ground' including underbrush, flowers, mushrooms and fallen leaves, 'water' and 'creatures' were commonly drawn frequently; 'trails' and 'people' in Japan and 'sun and sunlight' in Russia were remarkably more specific?. According to the view angle and distance, the view of the landscape image was categorised into four groups: 'close up view', 'sideways view (with distance)', 'bird's-eye view' and 'distant view'. The result also showed a contrast between the wide ranges of categories in Japan and the certain distance in Russia, which represents 'how' they are viewing the forest. Then, the objectification of the forest landscape and existence of viewpoint were further classified into four groups, respectively implying the objectification and accessibility of forests: 'objects', 'objectified scene', 'surrounding place', and 'scenic place'. The results implied locality-specific forest uses and accessibility of forests in each research site. In the Japanese sample, the viewpoints were seen in the sketches representing

scenes of their recreational uses in forest. In Russia, their romantic scenes were usually objectified describing the forests in detail. The results can suggest the different aesthetic norm in each cultural framework. In short, the research findings indicate different ways of seeing the landscape: a mere backdrop to one's experience in Japan and romantic and aesthetic harmony of forest landscape in Russia.

In this study, LIST revealed the different meanings of 'forest' in Japan and Russia. The research findings suggest the needs of different approach to the management of recreational activities and public relations, which will promote Japan-Russia tourism exchange.

### **References**

- Fuller, A. R. (1990). *Insight into value: An exploration of the premises of a phenomenological psychology*. Albany, NY.
- Schroeder, H. W. (2007). Place experience, gestalt, and the human-nature relationship. In: *Journal of Environmental Psychology* (27), p 293-309.
- Ueda, H. (2006). A Comparative Study on Forest Image in Japan and German. In: *Journal of the Japanese Institute of Landscape Architecture* 67(5), p 691-694.
- Ueda, H. (2009). *A Study on Resident Landscape Perceptin through Landscape Image –Four Case Studies in Germany and Japanese Rural Communities*. Dissertation, University of Kassel, Kassel.



# Landscape as a motivating factor for tourists

**Réka Bodnár<sup>1</sup>**

Keywords: landscape protection, tourist motivation, temperament, Hungary

Actuality of the topic is given by the fact that the term of landscape seems to receive a new meaning. Increasingly the value of landscapes is experienced as the significance of healthy landscapes and the importance of their conservation are recognised in more-and-more aspects of life (Csorba & Bodnár 2007; Bodnár 2008). Moreover, due to the sharp market competition experienced in tourism it is essential to better understand the motivations of tourists in tourism researches (Fodor 2007).

Landscape in the geographical perspective and its beauty and natural values give the basis of natural tourism, and landscape also presents the framework for other type of tourist activity. This is why the present work examines the motivations of tourists visiting protected areas regarding the relationship between landscape and tourism. In other words, tourist utilization of lands valuable regarding landscape is investigated via studying the personality of visiting tourists, thus contributing to the developing scientific field of human tourism.

Due to the geography qualification of the author, the investigation studies the problem from the geographic, landscape point of view. However, in analysing the results the author aims to investigate the complex problem from psychological, anthropological, sociological, public and economic aspects as well (Király 1990; Craik 1991; Csíkzentmihályi 1997; Pléh 2003; Pearce 2005; Forgács 2007). Classifying tourists according to their personality could be best performed by studying their temperament as applied already by Hippocrates (Table 1). Main characteristics of one of the four major temperaments are dominate in every person, (Allport 1998) giving the basis for studying the landscape and landscape element preferences of visitors in relation to their personality.

Table 1: The four temperament classes in a science historical perspective (Allport 1998).

Empedokles (ca. 450 BC)		Hippocrates (ca. 400 BC) Galenus (ca. 150 AD)	
<i>Cosmic elements</i>	<i>Characteristics</i>	<i>Related sap</i>	<i>Related temperament</i>
Air	Warm, wet	Blood	Sanguine
Earth	Cold, dry	Black gall	Melancholic
Fire	Warm, dry	Yellow gall	Choleric
Water	Cold, wet	Mucilage	Phlegmatic

When the study areas were picked it was an important aspect that they would be not only well known from the tourism point of view, but also valuable regarding landscape ecology, i.e., protected areas. Thus from the 229 small landscape units of Hungary the Hortobágy, the Aggtelek Mountains and the Tapolca Basin and their buttes were chosen.

The framework of the present work is given by the questionnaire study involving 1000 people, and was carried out in the summer of 2007 and 2008 in equal rate in the three study areas among the visitors. The self-constructed database consisting of 92 000 data cells was analysed using the software SPSS 13.0. Based on the results, the order of preference among those filling the questionnaires can be determined. According to these, the most favoured area is the Tapolca Basin and its buttes, second is the Aggtelek Mountains and third is the Hortobágy. The research behind the present work reveals the reasons of the above result.

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<sup>1</sup> University of Debrecen H-4032 Debrecen, P.O. Box: 9. Hungary, E-mail: fyp444@gmail.com

Therefore one of the most important questions of the research is the landscape factor of choosing the destination, i.e., where do visitors travel and why there? It is reasonable to start from the most attractive factors of the landscape according to those questioned. The majority of landscape research literature emphasizes the importance of water in the landscape and that the more mosaic a landscape is, the more attractive it will be considered as that gives the dynamism of the landscape.

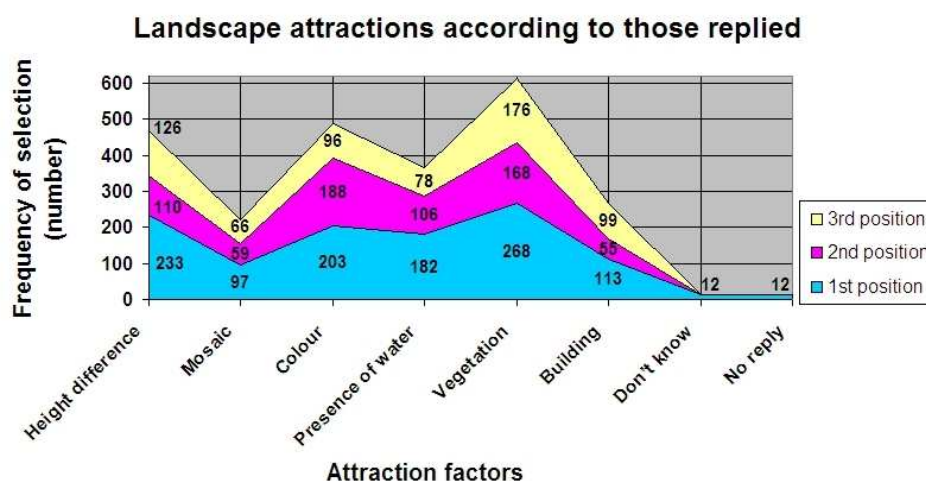


Figure 1: Landscape attractions in relation to selection frequency and position, (own construction).

Figure 1 shows the number of selections of the given attraction factors as frequency in relation to the position of the selection. The results do not prove the theory of landscape researchers. On the contrary, for the layman visitor landscape details regarded to be the most valuable ones by researchers are not important; He respects the landscape as a whole, the complexity of its variable colours and the harmony of the relief. This fact should not be neglected in the marketing communication aimed at them!

Revealing and understanding visitor motivation is important not only because developments in tourism can be investigated from other aspects –as well as contributing to the establishment of developments viable in long term – but also to make marketing towards tourists more effective by knowing what shall be advertised to certain groups. If the complex process of choosing and behaving in the area of the destination of the different tourist types from the beginning till the end – i.e. from choosing the destination till travelling back home – was known, marketing activity targeting at them could be communicated, organised and driven much more effectively. Furthermore, in today's sharp competition, it is important for tourism services to know the demand and the personality of their guests in order to realize better their wishes. And the best and cheapest advertisement for the business is the satisfied guest...!

## References

- Allport, G.W. (1998). *Pattern and growth in personality*. Kairosz Press, Budapest, p. 599.
- Bodnár, R.K. (2008). Thoughts on the effects of landscape influencing destination choosing. In: Csorba P. & Fazekas I. (eds.) *Landscape research – Landscape ecology*. Rexpo Press Industrial Ltd. Debrecen, ISBN 978-963-06-6003-7, p. 503-509.
- Craik, J. (1991). Social Impacts and Cultural Commodification. In: *Resorting to Tourism*. Allen & Unwin, North Sydney, Australia
- Csikszentmihályi, M. (1997). *And they lived until they died*. Kulturtrade Press, Bp. p. 178.
- Csorba, P. & Bodnár, R.K. (2007). The European Landscape Convention and Tourism. In: *AGD Landscape & Environment 1*. (1) ISSN 1789-4921, Debrecen, p. 75-84.
- Fodor, L. (2007). *Chapters from motivation research*. Gondolat Press, Budapest, p. 301.
- Forgács, J. (2007). *Psychology of social contacts*. 18<sup>th</sup> edition, Kairosz Press, Bp. p. 381.

- Király, J. (1990). *Applying psychology in tourism*. KIT Press, Budapest, p. 43.
- Pearce, P.L. (2005). *Tourist behaviour – Themes and Conceptual Schemes*. Channel View Publications, UK, ISBN 1-84541-022-x, p. 241.
- Pléh, Cs. (2003). *Nature and soul*. Osiris Press, Budapest, p. 404.

# Local residents' sense of place, recreational use and perceptions of rural landscape

Eija Pouta<sup>1</sup>, Katriina Soini<sup>2</sup>, Hanne Vaarala<sup>3</sup>, Marja Uusitalo<sup>4</sup>, Tapani Kivinen<sup>5</sup>

Keywords: recreational use of agricultural landscape, sense of place, landscape perceptions

Rural landscape is in the midst of change derived from the transition in the livelihood systems, such as agriculture, forestry and fisheries, urban settlement, energy production and delivery, as well as land abandonment. The rural landscape change challenges the landscape perceptions of rural dwellers, part-time-residents and the potential newcomers, who might have different expectations about what the rural landscape should be like and what it should be used for. This is the case especially in rural areas around urban sprawl, where the differences in perceptions provide a breeding ground for landscape conflicts (Walker & Ryan 2008, Buciega et al. 2009).

To understand and to solve the possible conflicts in landscape management, it is useful to acknowledge the differences in the strength and quality of sense of place various people address to same place. Many researchers have pointed out how sense of place varies between various socio-economic and socio-cultural groups, such as country-dwellers, farmers, experts and visitors (e.g. Stedman 2006). The everyday activities, close-to-home recreation and personal experiences are important in the formation of sense of place and landscape perceptions (Davenport & Anderson 2005). Several researchers have suggested that sense of place leads to the care of place and harmony with people and nature and enhances the aesthetic quality of the landscape (Kaltenborn 1998, Birkeland 2008). Yet, there is less empirical research on identifying exactly what the links are between the sense of place and landscape perceptions. Therefore this study, using a survey data, examines the variation of senses of place and landscape perceptions across the various social groups in the case study area of Lepsämä, a rural landscape located close to Helsinki Metropolitan area.

The first objective of the paper is to examine the local residents' sense of place with regard to the region in which they are living. Measures of sense of place were used to identify if clusters exist with respect to them. The second objective is to analyse the association of the sense of place clusters with the landscape perceptions, including both the existing landscape elements and the landscape changes.

The results of the study showed that there existed four clusters of residents based on their sense of place. The first cluster, 'socially connected', had moved into the region from an urban environment. They were highly educated men who missed their childhood landscape elements and/or wished to have different kinds of elements in the landscape. Yet, they appreciated the traditional agricultural landscape elements. They used the area frequently for recreation and wished to have more recreation paths in the region, even though many of them owned land. They appreciated the region as a safe rural environment, but felt that the region was changing. The second group, 'contradictory ties', had also moved in the region from urban environment. They were mostly highly educated women and valued the landscape highly, although they did not see the landscape as perfect. They felt that there were many other landscapes just as important and did not feel like they lived in a unique place. They used the region quite actively for recreation.

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<sup>1</sup> MTT Agrifood Research Finland, Economic Research, Economics and Social Sciences, Luutnantintie 13 00410 Helsinki, Finland, [eija.pouta@mtt.fi](mailto:eija.pouta@mtt.fi)

<sup>2</sup> Katriina Soini, MTT Agrifood Research Finland, Economic Research, Economics and Social Sciences, 31600 Jokioinen, Finland, [katriina.soini@mtt.fi](mailto:katriina.soini@mtt.fi)

<sup>3</sup> Metla, Finnish Forest Research Institute, PL 16, 96301 Rovaniemi, Finland [hanne.vaarala@metla.fi](mailto:hanne.vaarala@metla.fi)

<sup>4</sup> MTT Agrifood Research Finland, Plant Production Research, Regions, Eteläranta 55, 96300 Rovaniemi, Finland, [marja.uusitalo@mtt.fi](mailto:marja.uusitalo@mtt.fi)

<sup>5</sup> MTT Agrifood Research Finland, Animal Production Research, Jokioinen Vakolantie 55, 03400 Vihti, Finland, [tapani.kivinen@mtt.fi](mailto:tapani.kivinen@mtt.fi)

They thought highly of the regions traditional agricultural landscape elements, but did not want the changes brought to the landscape by intensive agriculture or businesses. The third cluster, 'roots and resources', consisted mainly of active farmers. Most of them had spent their childhood in the region and many in active farms. They valued the landscape highly and used the region either only slightly or actively for recreation. They appreciated the elements of the open agricultural landscape, and were negative toward landscape changes. The fourth group, 'committed to the landscape', had no roots in the region, neither they were socially connected to it, but they appreciated the landscape. They were mostly women who had moved into the area from urban surroundings and appreciated the open landscape elements. They particularly wished for recreational paths in fields, although they did not use the landscape that often for recreational purposes. They felt connected to the region and experienced it to be special and private. Most of the respondents' of this group did not own land, which probably affected their feelings of privacy.

Although, the landscape perceptions differed significantly between the four resident clusters, there were no significant differences in their willingness to contribute to the landscape management. However, the willingness to contribute to the management differed significantly between residents with either positive or negative general evaluative of the landscape. Thus, the sense of place affected the landscape perceptions, but only the landscape perceptions were of importance in explaining the willingness to contribute to the landscape.

## References

- Birkeland, I. (2008). Cultural Sustainability: Industrialism, Placelessness and the re-animation of Place. *Ethics, Place & Environment*, (11), p. 283-297.
- Buciega, A., Pitarch, A.D. & Esparcia, J. (2009). The context of rural-urban relationships in Finland, France, Hungary, The Netherlands and Spain. *Journal of Environmental Policy & Planning*, (11), p. 9-27.
- Davenport, M.A. & Anderson, D.H. (2005). Getting from sense of place to place-based management: An interpretive investigation for place meanings and perceptions of landscape change. *Society and Natural Resources*, (18) p. 625-641.
- Kaltenborn, B. P. (1998). Effects of sense of place on responses to environmental impacts: A study among residents in Svalbard in the Norwegian high Arctic. *Applied Geography*, (18) p. 169 – 189.
- Stedman, R. C. (2006). Understanding place attachment among second home owners. *Am. Behav. Sci.* (50) p. 187–205.
- Walker, A.J. & Ryan, L.R. 2008. Place attachment and landscape preservation in rural New England: A Maine case study. *Landscape and Urban Planning*, (86) p. 141-152.

# **“Everybody’s happy” – place attachment and visitors to the Ningaloo Reef, north-western Australia**

**Joanna Tonge<sup>1</sup>, Susan A. Moore<sup>1</sup>, Lynnath Beckley<sup>1</sup> and Maria Ryan<sup>2</sup>**

Keywords: place attachment, Ningaloo Marine Park, photo-elicitation, emotional motivation

## **Introduction**

As pressure on marine protected areas from recreational and tourism use continues to increase, so too does the importance of planning for and managing these experiences. Such experiences are a product of both the social and environmental values of the protected areas and the interaction of these values with visitor activities. Most experiential research has focused on terrestrial and riparian environments with little work undertaken in marine settings (Shafer & Inglis 2000). This study explored the place attachment expressed by visitors camping adjacent to and recreating in the marine setting, Ningaloo Marine Park.

The Ningaloo Marine Park, abutting the north-western coastline of Australia, centres on a 300 km long fringing coral reef. A recent study by Beckley et al. (2008) examined human usage patterns of the Ningaloo Marine Park and identified that 55% of surveyed visitors had visited on a previous occasion, and of this group 44% always stayed at the same location. These results suggest that place attachment may have a strong influence on how visitors behave, what their expectations are and how they might respond to policy and management changes. Place attachment is the overarching concept used to describe an emotional or affective bond between a person and a place (Williams et al. 1992).

## **Methodology**

Photo-elicitation was used to identify elements contributing to place attachment at Ningaloo Marine Park. This qualitative method used photographs taken by the study participants to form the basis of a subsequent semi-structured interview (Jacobsen 2007). Interviews were carried out at three sites adjacent to the Marine Park to target visitors using high, medium and low levels of facilities and services. Participants were restricted to those who had visited at least twice previously, based on the presumption that attachment can develop after one or more visits. A total of 30 visitors participated in the interview process.

## **Results**

Preliminary results suggest that place attachment at Ningaloo Reef has four components: the physical environment, activities, social ties, and emotional connection with this categorisation, based on Smaldone et al. (2005). As many of the responses explaining the attachment fell within the emotional category, this category provides the focus for this paper. “Everybody’s happy” and an “ability to escape” were the predominant themes of this category.

“Everybody’s happy” related to how holidays at Ningaloo Reef were an enjoyable experience for all members of the respondent’s group. Each individual was able to create and enjoy their own experience at Ningaloo whilst being assured that others in their group were also enjoying their own holiday, even if necessarily undertaking the same activities or having the same experiences. Participants commented that their location provided activities or experiences for everybody to enjoy. The physical environment was a key component of this, for example at one location there was a surf break as well as a safe lagoon for snorkelling, and both were within walking distance of the campsite. The convenience of having activities within walking distance of the campsite meant

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<sup>1</sup> School of Environmental Science, Murdoch University, South Street, Murdoch, Western Australia 6150, Australia, Email: [J.Tonge@murdoch.edu.au](mailto:J.Tonge@murdoch.edu.au)

<sup>2</sup> School of Marketing Tourism and Leisure, Faculty of Business and Law, Joondalup Drive, Joondalup Western Australia 6027, Australia

that visitors could enjoy their chosen activities at any time without imposing on others in their group. This also added to the “everybody’s happy” feeling.

The “ability to escape” centred on being away from everyday commitments such as telephone calls, emails and worries associated with work, and from domestic activities such as cooking and cleaning. Escaping was clearly important for respondents with families. Parents commented on how they were able to spend time and reconnect as a family when they were time-poor at home. Not having the distractions of work or everyday chores meant that they could spend time with their children in a relaxed state. They could also teach their children values in terms of respecting the environment and skills relating to camping and fishing; something that they may be unable to do elsewhere.

This research has provided useful insights into why these locations are important to visitors and in particular the strongly affective elements of place attachment. Place dependence, the importance of the setting in achieving desired goals (Williams et. al. 1992), is evident from these results as is the link between an emotional connection in place and place dependence. For those managing these coastal camping sites adjacent to Ningaloo, this suggests awareness and understanding of the emotional connections of visitors, to these sites and to each other, is essential.

## References

- Beckley, L.E., Moore, S.A., Kobryn, H., & Smallwood, C. (2008) Ningaloo Collaborative Cluster – Project 2: High Resolution Mapping of Human Use in Ningaloo Marine Park. Invited Paper presented at the 2nd Annual Ningaloo Research Symposium. Murdoch University, Murdoch, WA. 28-29 May 2008.
- Jacobsen, J. K. S. (2007). Use of Landscape Perception Methods in Tourism Studies: A Review of Photo-Based Research Approaches. *Tourism Geographies*, 9(3), 234-253.
- Shafer, S., & Inglis, G. (2000). Influence of Social, Biophysical, and Managerial Conditions on Tourism Experiences Within the Great Barrier Reef World Heritage Area. *Environmental Management*, 26(1), 73-87.
- Smaldone, D., Harris, C., Sanyal, N., & Lind, D. (2005). Place Attachment and Management of Critical Park Issues in Grand Teton National Park. *Journal of Park and Recreation Administration*, 23(1), 90-114.
- Williams, D. R., Patterson, M. E., Roggenbuck, J. W., & Watson, A. E. (1992). Beyond the Community Metaphor: Examining Emotional and Symbolic Attachment to Place. *Leisure Sciences*, 14, 29-46.

## **Integrating transportation and outdoor recreation through indicators and standards of quality**

**Robert Manning<sup>1</sup>, Laura Anderson<sup>1</sup>, Peter Pettengill<sup>1</sup>, Nathan Reigner<sup>1</sup>, William Valliere<sup>1</sup>**

Keywords: transportation, parks, outdoor recreation, indicators of quality

Transportation and outdoor recreation are intimately connected. Visitors to parks and outdoor recreational areas must travel to, within, and home from these areas. Moreover, transportation can be an important form of recreation and the primary way in which many visitors see and experience parks and related areas. For example, 'driving for pleasure' is historically one of the most popular recreation activities in the United States, and many parks have developed scenic roads to accommodate this activity. The term 'parkway' is an important manifestation of this idea. However, transportation is conventionally planned and managed primarily on considerations of efficiency and safety. For example, most highway and related pedestrian planning and management in the U.S. is guided by the Highway Capacity Manual (HCM) developed by the Transportation Research Board (Transportation Research Board 2000). This document is built on a large foundation of research, but most of this body of knowledge addresses vehicle speed, time required to drive from origin to destination, and associated matters of safety. In the context of recreation, these considerations need to be supplemented with concern for the experiential components of travel and transportation.

The HCM uses a conceptual framework of Levels of Service (LOS) to guide transportation planning and management. Research suggests that transportation facilities (e.g., roads, walkways) can operate under a range of conditions from good to poor levels of service. Generally, these conditions are categorized into six levels labeled "A" through to "F". In a related way, contemporary planning and management approaches in parks and outdoor recreation employ the conceptual framework of indicators and standards of quality (Manning 1999; Manning 2001; Manning 2004; Manning 2007; Manning 2009). Indicators are measureable, manageable variables that help define the quality of a recreation experience and standards of quality define the minimum acceptable condition of indicators.

This study is designed to integrate transportation and recreation by 1) extending the conventional LOS approach to transportation through consideration of experiential indicators and standards of quality, and 2) applying this approach to a range of transportation and recreation contexts, including roads, greenways, and public transit systems. Visitor surveys were conducted in the summer of 2009 to identify potential indicators and standards of quality for transportation in each of the above contexts. Indicators of quality were measured through a series of open- and close-ended questions. Open-ended questions asked respondents to report what they most and least enjoyed about their transportation experience on the day of the survey, and closed-ended questions asked respondents to rate the desirability of potential indicators of quality. Standards of quality for selected indicators were measured by asking respondents to judge the acceptability of a range of conditions of indicator variables. Where appropriate, respondents were presented with a series of visual simulations depicting a range of conditions for indicator variables. Respondents were also asked to report the degree to which they considered their travel on the day of the survey to be transportation oriented (e.g. to get from one place to another) or recreation oriented (e.g. to enjoy the journey). A nine-point response scale was used anchored at "purely transportation" and "purely recreation." Surveys were conducted at three types of roads (an interstate highway, a scenic byway, and a national park road), three types of greenways (an urban area, a rural area, and a national park multiuse trail), and three types of national park transit systems (a simple shuttle bus, an extended bus system, and a ferry). A minimum of 200

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<sup>1</sup> Park Studies Laboratory, University of Vermont 356 Aiken Center Burlington, VT 05405 USA, [Robert.Manning@uvm.edu](mailto:Robert.Manning@uvm.edu), [Laura.Anderson@uvm.edu](mailto:Laura.Anderson@uvm.edu), [Peter.Pettengill@uvm.edu](mailto:Peter.Pettengill@uvm.edu), [Nathan.Reigner@uvm.edu](mailto:Nathan.Reigner@uvm.edu), [William.Valliere@uvm.edu](mailto:William.Valliere@uvm.edu)



completed questionnaires were collected at each of the nine study sites and response rates ranged from 44 to 95 per cent.

Study findings suggest indicators and standards of quality for transportation in the context of parks and outdoor recreation. These indicators and standards can be integrated into the conventional LOS framework used in transportation planning and management, thereby extending this approach to include substantive experiential considerations appropriate for park and outdoor recreation settings. Moreover, data is analyzed for differences in indicators and standards of quality based on the degree to which respondents considered their travel to be either transportation or recreation oriented.

## **References**

- Transportation Research Board. (2000). *Highway capacity manual*. Washington, DC: National Research Council.
- Manning, R. (1999). *Studies in outdoor recreation: Search and research for satisfaction*. (Second Edition). Corvallis: Oregon State University Press.
- Manning, R. (2001). Visitor experience and resource protection: A framework for managing the carrying capacity of national parks. *Journal of Park and Recreation Administration*. 19(1), 93-108.
- Manning, R. (2004). Recreation planning frameworks. *Society and natural resources: A summary of knowledge*. Jefferson, Missouri: Modern Litho.
- Manning, R. (2007). *Parks and carrying capacity: Commons without tragedy*. Washington, D.C.: Island Press.
- Manning, R. (2009). *Parks and people: Managing outdoor recreation at Acadia National Park*. Hanover, New Hampshire: University Press of New England.

# Innovative cable-cars and ski-lifts in Western Austria - their diffusion and impact on mature alpine tourism markets

Marius Mayer<sup>1</sup>

Keywords: innovation, tourism, cable-cars, ski-lifts, entrepreneurship, Austria

## Introduction

Cable-cars and ski-lifts are among the most important high-tech developments in large areas of the European Alps, especially in high alpine environments without further intense human influence. Their construction and the use of ski slopes by millions of tourists every winter have a clear negative impact on the sensitive high alpine environment (Veit 2002). However, ski tourism is the dominant economic factor in many alpine valleys (Berwert et al. 2002). Every season ski resort operators invest heavily in their core infrastructure - in Austria they spent more than EUR 250 million for new cable-cars and ski-lifts in 2007/08 (Mayer 2009). Although innovation is often characterised as a critical factor for success in tourism (Hall & Williams 2008), the effectiveness and importance of innovation in tourism is difficult to quantify and has seldom been analyzed. The following research questions are raised:

- In what manner did the quantitative and qualitative diffusion process of innovative cable-cars take place in Austria?
- What importance do innovative cable-cars have for the development of successful winter sports destinations?

## Research design

All existent Austrian cable-cars have been compiled in a database. For each of the identified innovative types of cable-car, a ranking list is provided. With every year following the first adoption of a particular type of cable-car, a higher rank is assigned to the respective destination. Only the first adoption of a type in a municipality is considered. In order to relate the socio-economic characteristics of destinations to their innovativeness, a second database is needed. This database contains the ranking lists, data on ski tourism infrastructure and tourism statistics (until 2007/2008). In order to explain the long-term success of a destination the ranks are added up for all analysed innovations and are divided by the number of innovations implemented in each region. This accumulated innovativeness ranking gives the average rank of a destination over the complete time period. For the identification of groups of similar adoption behaviour, Rodgers' (1983) conception of adopter categories is applied. For details see Mayer (2009).

## Results

(Add 1): The structure of the Austrian cable-car system has undergone profound changes over the past decades. The cable-car capacity increased by more than 3.5 times between the seasons 1974/75 and 2007/2008 (+263%). At the same time, the mean capacity of newly built cable-cars rose from 1,120 to 2,200 persons per hour. Underlying a linear trend, the share of express cable-cars increased from 10.5% to 91.7%. The following tendencies can be confirmed empirically (Mayer 2009):

- Quantity: (a) Total number of cable-cars and ski lifts is declining, but the number of chairlifts and gondolas is increasing. (b) Mean capacity per cable-car and overall capacity are rising strongly.
- Quality: The Trend towards more comfort, less waiting time (increased capacities), and more time for skiing (shorter lift-time).

(Add 2): The second Schumpeter hypothesis posits that big companies are more innovative than small ones (Orfila-Sintes et al. 2005, Sundbo et al. 2007). Due to a strong negative correlation at a

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<sup>1</sup> Julius-Maximilians-Universität Würzburg, Institute of Geography, Am Hubland, 97074 Würzburg Germany, [marius.mayer@uni-wuerzburg.de](mailto:marius.mayer@uni-wuerzburg.de)

very high significance level (Spearman-Rho -0.727,  $p < 0.001$ ) between innovativeness and size of the ski resort (measured in cable-car capacity), the hypothesis cannot be dismissed. A comparison of means combined with an analysis of variances (ANOVA) between the adopter categories, reveals at a high significance level that the resorts of innovative destinations are bigger, better equipped and more modern; . The early adopters are more successful in the long run with higher occupancy rates and better accommodation facilities. Between success in tourism and the innovativeness of the cable-car system, there is a highly significant negative correlation of medium strength (Spearman Rho -0.509;  $p < 0.001$ ). The direction of causality between the correlated factors remains unclear (Rogers 2004). To evaluate the influence of innovativeness on tourism success, several regression models were tested. Results suggest that the relative success of tourist destinations cannot be explained sufficiently by the technical innovativeness considered in this study.

## Conclusion

To succeed in winter tourism, it is not sufficient to invest in the cable-car infrastructure. The overall consumer package has to meet the increased level of expectation of experienced customers. Cable-cars kept up-to-date by innovativeness are only one part of the service-chain. Modern cable-car systems are a constitutive basic factor of ski tourism that is taken for granted by the guests, just as the guaranteed technical snow reliability via the use of snowmaking at a certain size of ski resort. Nowadays, cable-cars do not represent a point of attraction per se, because incremental innovations become established too quickly as almost ubiquitous industry standards. However, particularly innovative and unique cable-cars generate added value for guests and operators, which permits the marketing of the transport itself as a special experience.

## References

- Berwert, A., Rütter, H. & Müller, H. (2002). Volkswirtschaftliche Bedeutung des Tourismus im Kanton Wallis. In: *DISP* 149, p 4-12.
- Hall, C.M. & Williams, A.M. (2008). *Tourism and innovation*. London.
- Mayer, M. (2009). Innovation as a success factor in tourism: empirical evidence from western Austrian cable-car companies. In: *Erdkunde* 63 (2), p 123-139.  
doi:10.3112/erdkunde.2009.02.02.
- Orfila-Sintes, F., Crespi-Cladera, R. & Martinez-Ros, E. (2005). Innovation activity in the hotel industry: Evidence from Balearic Islands. In: *Tourism Management* 26 (6), p 851-865.  
doi:10.1016/j.tourman.2004.05.005.
- Rodgers, E.M. (1983). *Diffusion of Innovations*. Third Edition. New York.
- Rogers, M. (2004). Networks, firm size and innovation. In: *Small Business Economics* 22, p 141-153.
- Sundbo, J., Orfila-Sintes, F. & Sørensen, F. (2007). The innovative behaviour of tourism firms - comparative studies of Denmark and Spain. In: *Research Policy* 36, p 88-106.  
doi:10.1016/j.respol.2006.08.004.
- Veit, H. (2002). *Die Alpen – Geoökologie und Landschaftsentwicklung*. Stuttgart.

## Ideas for tourism-oriented public transport in national parks and biosphere reserve regions based on touristic nodes

Karen Ziener<sup>1</sup>

Keywords: public transport, touristic nodes, national park, biosphere reserve

Although an increasing number of projects dealing with environmentally friendly travel in tourism destinations like shuttle bus services in ski resorts, car-free tourism resorts, special hikers' or bikers' buses and regional mobility centres, the problems of visitor mobility and the individual motorised traffic in recreational and protected areas are a long way from being solved. Day trips to tourist attraction are especially spatially and temporally concentrated and implicate conflicts in the involved areas. On the regional level, public transport does not offer a real alternative to the car. Bus services and timetables are mostly focused on providing transport for pupils and maybe on commuters, but they don't meet the requirements of tourists and one-day visitors. On the other hand, the low utilisation of buses encourages neither shorter intervals and longer service hours nor an enlargement of the route network; consequently a vicious circle arises and the situation will deteriorate further. A tourism-oriented public transport can be developed only in interaction of supply and demand and is firstly limited to selected lines.

One approach, therefore, is the concept of touristic nodes (Ziener 2003). Touristic nodes are all places with tourist facilities, regular performances and events, which were used by tourists and local recreationists (at least seasonally). Thereby only big, middle and small touristic nodes are distinguished. The graduation of touristic nodes is the result of a complex valuation (see Table 1). The first step is a preliminary graduation of settlements based on the tourist facilities and regular offers. Additionally, the big and middle nodes are estimated through tourist demand such as overnight stays and visitor numbers as well as the intraregional tourist function. By means of combining qualitative and quantitative valuations, ordinal scales and prescribed intervals, shortcomings of touristic data can be handled. So the big and middle touristic nodes include also one-day visitors as well as local recreationists and are relative robust in short-term changes; regular updating is necessary for border cases. The touristic nodes are the source and/or destination areas of tourist activities, but the tourist flows between the nodes can only be estimated by means of traffic counting in combination with tourist surveys as well as expert interviews.

The development of a tourism-oriented public transport is based on an analysis of the touristic structure of the national park biosphere reserve and its surrounding, represented by big and middle touristic nodes. The two main questions are: Which relations between nodes are relevant for one-day tourists and holidaymakers? And, how should the public transport system in this region be organised? The analysis of different regions has shown that the spatio-structural and organisational preconditions for a tourism-oriented public transport vary from region to region. The situation on Rügen Island is very suitable because all big nodes and half of the middle nodes concentrate along the eastern coast from Thiessow in the South-East to Kap Arkona in the North of the island. Along this line the big Baltic Sea Spas, large beach areas, Sassnitz Ferry Port, South-East Rügen Biosphere Reserve and last but not least the National Park Jasmund are located. There exists a potential to create a continuous bus line between this tourist centres and destinations for outings with a higher frequency. For a few years the Rügen public transport company has increased the frequency of buses between Bergen, Sassnitz and Göhren only (IVV Berlin, IVV Aachen & BDC Dorsch Consult 2008). In the Nockberge region the situation is quite different. Big and middle touristic nodes are concentrated in the surrounding of the National Park Nockberge and on the northern shore of the Lake Millstatt. The regional buses operate from Villach and Feldkirchen along the valleys. As an additional offer in the summer holiday season, some hikers' buses run from the tourist centres in the surrounding valleys to the hiking areas in the mountains

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<sup>1</sup> self-employed, Sponheimer Str.2, 9020 Klagenfurt, Austria, [kziener@web.de](mailto:kziener@web.de)

and along the Nockalm Road through the National Park, but only one or two times a day and in some circumstances, one day per week.

Table 1 The criteria for the Graduation of Touristic Nodes (Ziener 2003, p. 170 annex, modified)

	Big nodes	Middle nodes	Small nodes
Characteristics	Big tourist centres and/or destinations for outings in the region	Average and expected supply in the region	Only a few touristic offers
Accommodation	Big to very big capacity (>1.000 beds) and varied options	Middle to big capacity (250-1.000 beds) and different options	Low or no capacity (<250 beds), mostly only private rooms, apartments or single hotels/guesthouses
Recreation and leisure facilities	Varied facilities and regular offers (specialisation is possible) and/or typical regional or supraregional attractions of cultural landscape, specific tourist or recreational offers	Regional broadness and/or deepness of facilities and regular offers and/or typical regional attractions of cultural landscape, specific tourist or recreational offers	Few facilities or regular offers and/or attractive landscape Minimum requirement: one gastronomic or other facility or regular offers in the season
Function within destination	Main tourist centre and/or destination for outings in the region	Basic framework of tourism in the region	Small tourism places or single facilities, destination for outings, supplemental offering in the region
Tourist demand	Mostly high to very high absolute and relative visitor numbers probed by counting and/or surveys	Partly overnight stays and visitor numbers, proved by counting or questioning or at least observable	Rather not proved by overnight stays, only individual visitor numbers, partly observable

Different surveys have shown that holidaymakers would especially leave the car behind and use public transport. Essential preconditions for this is a better and cheaper public transport, for instance shorter intervals, better connections between buses and trains, better weekend services and later buses (e.g. Ziener 2001). A consequent tourism-oriented public transport concept based on the touristic nodes and the outing interests of tourists will bring the specific requirements of holidaymakers and one-day visitors to the public transport. The implementation in and around protected areas needs a corresponding demand and a multi-level marketing in a close cooperation between public transportation companies, tourism, municipalities and the management of protected areas.

## References

- IVV GmbH, Berlin, and IVV GmbH & Co. KG, Aachen, BDC Dorsch Consult Ingenieurgesellschaft mbH (2008): Integriertes Verkehrsentwicklungskonzept für die Insel Rügen, Aachen/Berlin/Stralsund.
- Ziener, K. (2003): Das Konfliktfeld Erholungsnutzung – Naturschutz in Nationalparks und Biosphärenreservaten, Aachen, 460 p.
- Ziener, K. (2001): Das Bild des Touristen in Nationalparks und Biosphärenreservaten im Spiegel von Befragungen, Potsdam, 169 p.

# Visitor perception of crowding at Doi Inthanon summit, Doi Inthanon National Park

Mayuree Nasa<sup>1</sup>, Dachanee Emphandhu<sup>2</sup>

Keywords: visitor perception, crowding, Doi Inthanon National Park

In order to manage the quality of visitor experience, psychological carrying capacity has been studied at Doi Inthanon summit, one of the high density tourism destinations in Doi Inthanon national park of Thailand. Visitor's perceived crowding is employed as an indicator to measure the negative experience caused by the increasing number of visitors. Crowding can be defined as a negative evaluation of a certain density level in a given area (Vaske, Shelby, Graefe & Heberlein 1986). Perceived crowding then combines descriptive information of the reported number of encounters with the evaluative information of the value judgment of that number of encounters if they had exceeded their definition of an acceptable standard (Hsin-You Chuo 2006). Several studies have focused on crowding perception in various recreational areas in many countries around the world such as the United States, Australia and New Zealand. Depending on the location, different levels of perceived crowding have been reported (Manning 1999). In Southeast Asia, especially Thailand, there have been only a few studies in this field (Emphandhu et al 2006).

The objectives of this research were to find out the average perceived crowding at Doi Inthanon summit, to study the relationship between the number of encounters and the perceived crowding, and to estimate the maximum number of encounters that visitors at Doi Inthanon summit perceived as extremely crowded. Accordingly, the following three research questions were developed:

- What is the average respondents' perception of crowding at Doi Inthanon summit?
- Is there a significant linear correlation between number of encounters and perceived crowding?
- What is the estimated number of encounters from the linear predicting equation that visitors at Doi Inthanon summit perceived as extremely crowded?

The target population for this study was visitors to Doi Inthanon summit which is the most popular tourist destination in the park. A quota sampling technique was employed to select research samples from the sampling population based on the official report (DNP 2009) on visitor numbers during high season to Doi Inthanon National Park. The field survey for data collection was conducted between December 2007 and January 2008 totaling 12 days of weekends and long holidays. All respondents were selected based on their willingness to volunteer their personal information and by accidental sampling on site. The questionnaire survey of total 819 respondents was employed with 3 main groups of questions being asked: respondent's background information, recreation pattern and motivation, opinions on perceived crowding, number of visitors encountered and respondent's expectation on number of maximum acceptable number of other visitors. The simple regression analysis with a significance level of  $p < 0.05$  was used to see the correlation between perceived crowding and number of encounters.

The Likert scale developed by Heberlein & Vaske (1977) was adopted in this study to measure crowding perception. In this scale ranging from 0 to 9, the 0 labeled situation as uncrowded, 1-3 points labeled as slightly crowded, 4-6 is moderately crowded and the remaining 7-9 points as extremely crowded. Visitors then were asked if they felt disturbed by the number of other visitors and were instructed to rank their perception of crowding on a 0 to 9 point-scale and recorded the number of encounters.

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<sup>1</sup> Faculty of Tourism and Hotel Management, Mahasarakham University, Talad sub-district, Muang district, Mahasarakham province, Thailand 44000, [pixx65@hotmail.com](mailto:pixx65@hotmail.com)

<sup>2</sup> Ph.D., Department of Conservation, Faculty of Forestry, Kasetsart University, Jatujak Bangkok, Thailand 10900, Email: [dach\\_1960@yahoo.com](mailto:dach_1960@yahoo.com)

The results showed that the distribution patterns of the respondents' background were consistent with the normal national park visitors' characteristics in Thailand. Most were 21-40 years old with bachelor degree or higher education. Half of the respondents stayed overnight in the park. About 47% traveled with friends and 27% with mix groups of friends and families. Most spent about 30 minutes at Doi Inthanon summit.

The average numbers of encounters at each perceived crowding level were shown in Table 1. The average respondents' perception of crowding at Doi Inthanon summit was 4.98 points which was labelled as moderately crowded. There was a statistically significant at 0.011 with  $R^2 = 0.581$  by simple linear correlation between number of encounters and perceived crowding (Fig. 1). From the linear correlation, the estimated number of encounters which visitors at Doi Inthanon summit perceived as extremely crowded (at 7 point level) is 897 people at time.

Table 1: Perceived crowding and average encounter numbers at Doi Inthanon summit

Perceived Crowding Level	Number of respondents	Ave. Mean of number encounters	Standard Deviation (S.D.)
0	55	555	470
1	37	439	420
2	32	662	451
3	52	720	471
4	104	846	498
5	220	420	982
6	104	964	351
7	89	967	351
8	79	1012	346
9	47	955	342
Total	819		

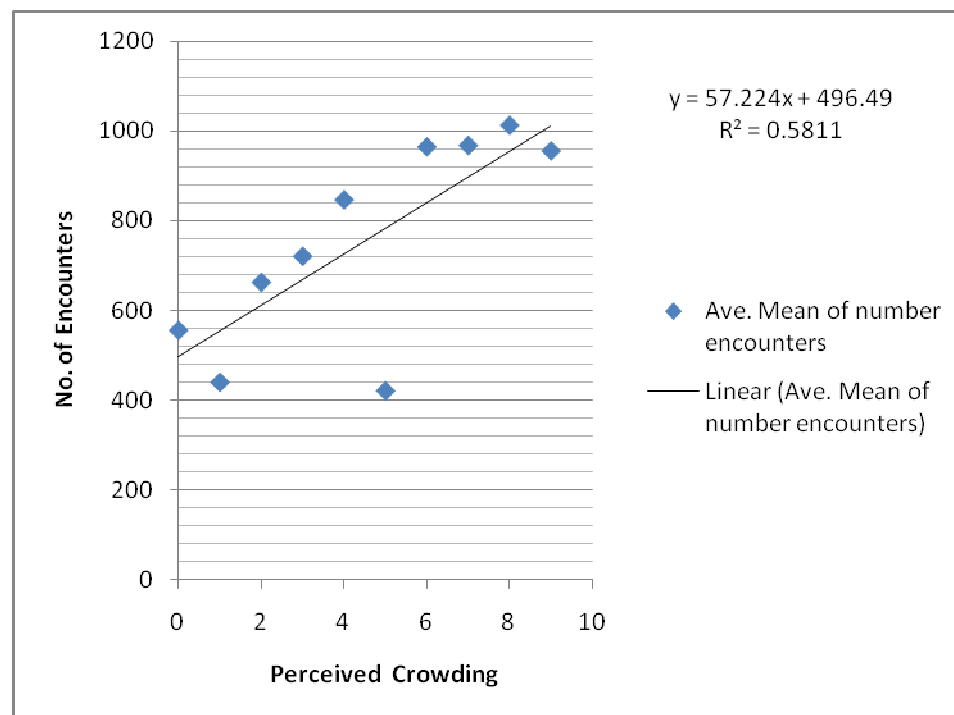


Figure 1: Linear correlation of perceived crowding and number of encounters at Doi Inthanon summit

## References

Emphandhu Dachanee, Thamasak Yemin, Sura Pattanakiat, ChatchaiTantasirin, Ranuka Ruschano, Surachet Chettamart & Mayuree Nasa (2006). Recreation Carrying Capacity Analysis at Khao Leam Ya –Mu Ko Samed National Park, Thailand. In: Siegrist, D., Clivaz, C., Hunziker, M. & Iten, S. (eds.) Exploring the Nature of Management. Proceedings of the Third

- International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas. University of Applied Sciences Rapperswil, Switzerland, 13-17 September 2006, p 183-190.
- Heberlein, T.A. & Vaske, J.J. (1977). Crowding and visitor conflict on the Bois Brule River (report WISWCRC 77-04). University of Wisconsin Water Resources Center.
- Hsin-You Chuo (2006). The Adoption of Social Carrying Capacity for the Management of Theme Park Settings. In: Siegrist, D., Clivaz, C., Hunziker, M. & Iten, S. (eds.) Exploring the Nature of Management. Proceedings of the Third International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas. University of Applied Sciences Rapperswil, Switzerland, 13-17 September 2006, P 179-182.
- Manning, R.E. (1999). Studies in outdoor recreation: Search and research for satisfaction. Oregon State University Press.
- National Parks, Wildlife and Plant Conservation Department (2009). Visitor statistics at Doi Inthanon National Park. Ministry of Natural Resources and Environment, Bangkok.
- Vaske, J.J.; Shelby, B.; Graefe, A. R. & Heberlein, T.A. (1986). Backcountry Encounter Norms: Theory, Method and Empirical Evidence. In: J. Leis. Res. (18), p 137-153.



## **Conflict between motorized and non-motorized: recreation in Soomaa National Park, Estonia**

**Egert Paat<sup>1</sup>, Mart Reimann<sup>1</sup>**

Keywords: motorized and non-motorized recreation, conflict, displacement, national park

Recreation conflict between non-motorized and motorized groups has been the focus of many conflict studies and results have indicated that conflict tends to be asymmetrical. In previous studies cross-country skiers were more likely to experience conflict with snowmobilers (Jackson & Wong 1982, Jackson et al. 2002, Vaske et al. 2007); backcountry canoeists were more likely to experience conflict with motor-boaters (Ivy et al. 1992).

All-terrain vehicle (ATV) activities are one of the fastest growing recreational activities in Europe and North America. In Estonia the number of ATV's is growing rapidly, this has caused many responses and complaints by land owners and protected area visitors. The biggest problems appear close to the largest cities like Tallinn and Tartu, but even the remote wilderness areas in Estonia experience conflicts with ATV's. There have been many stories and complaints about ATV's, but there have been no studies in Estonia of ATV's' and hikers' conflicts.

This research took place in Soomaa (area 396 km<sup>2</sup>) – one of the five Estonian national parks. Soomaa lies quite far from bigger settlements in a very sparsely populated part of Estonia. Even here have been complaints to police and to park officials about ATV traffic. The purpose of this study was to investigate if the conflict between hikers and ATV drivers really exists and how it influences visitors' decisions. ATV's are allowed to drive on the forest roads of national parks. In Estonian national parks cultural heritage is protected and in Soomaa you can find old abandoned villages and old village roads, which grow into forest. ATV's have been seen in Estonia as potential vehicles for management of old forest roads, because those are not appropriate for regular cars.

The research was carried out in April and May 2009 as this is the period when ATV drivers are most active (forest roads and trails are muddy and more challenging) and the national park has mainly experienced visitors. 27 visitors were interviewed on 4 nature trails in different parts of national park. 32 ATV drivers were interviewed on the roads and trails (14) and at home (18). Hikers were asked about visual and sound contacts with ATV's and if they consider it as negative, neutral, or positive; and how it influences hikers' future decisions. The same was asked from ATV drivers about hikers. Each interview took 10-15 minutes.

24 hikers have had contacts with ATV's (14 visual and 19 sound contacts) and they all considered contacts as negative and disturbing. All hikers have visited national parks several times and they were asked to point out places where they have experienced conflicts with ATV's. Respondents pointed out that contact with ATV's has caused later avoidance of these trails.

ATV drivers were from surrounding villages of the national park (24) and from other parts of Estonia (8). 17 ATV drivers considered meeting hikers in nature as negative experience, mainly because of denouncement and preaching of trekkers and also because of risk management. Also ATV drivers mentioned that they try to avoid forest roads and trails where they can meet hikers. ATV drivers' main problem was that there was only one designated ATV trail nearby national park and Estonian laws and regulations about ATV traffic were not sufficient.

Previous studies have shown that none of the motorized visitors considered contacts with non-motorized visitors as negative (Jackson & Wong 1982, Jackson et al. 2002) or few of motorized visitors considered non-motorized visitors as a problem (Ivy et al. 1992, Vaske et al. 2007). The

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<sup>1</sup> Tallinn University, Institute of Health Sciences and Sports, Department of Leisure Sciences, Tondi 55, Tallinn 11316, Estonia [mart.reimann@tu.ee](mailto:mart.reimann@tu.ee), [kalamees6@hotmail.com](mailto:kalamees6@hotmail.com)

investigation in Soomaa showed that more than half (53%) of ATV drivers considered contact with hiker as a negative. It does not really show symmetrical conflict, because 89% hikers considered contact with ATV as negative, but it showed that conflict really exists from both sides. ATV disturbance has caused displacement of hikers and ATV drivers avoidance of popular hiking regions. This kind of investigations are important for future management in the national park. It is obvious that guidelines of management by the national park are necessary. But this investigation shows that even without regulations there is potential for naturally emerging popular ATV areas and hiking regions.

### **References**

- Ivy, M. I., Stewart, W. P., & Lue, C. (1992). Exploring the role of tolerance in recreation conflict. *Journal of Leisure Research*, 24, 348-360.
- Jackson, E. L., & Wong, R. A. G. (1982). Perceived conflict between urban cross-county skiers and snowmobilers in Alberta. *Journal of Leisure Research*, 14, 47-62.
- Jackson, S., Haider, W., & Elliot, T. (2002). Resolving inter-group conflict in winter recreation: Chilkoot Trail National Historic Site, British Columbia. In Arnberger, A., Brandenburg, C., & Muhar, A. (Eds.), *Proceedings of the Monitoring and Management of Visitor Flows in Recreational and Protected Areas* (pp. 109-114). Bodenkultur University, Vienna, Austria.
- Vaske, J. J., Needham, M. D., & Cline, R. C. (2007). Clarifying interpersonal and social values conflict among recreationist. *Journal of Leisure Research*, 39, 182-195.

# **Integrating experience-based zoning into current management system in Yu Shan National Park**

**Yi-Chung Hsu<sup>1</sup>, Cheng-Ping Wang<sup>2</sup>, Yu-Fai Leung<sup>3</sup>**

Keywords: zoning, indicator-based framework, Yu Shan National Park, Taiwan

Protected areas such as national parks are increasingly valued as an effective approach to protecting landscapes and biodiversity while providing outstanding recreational and educational opportunities (Hocking et al. 2006, Lockwood et al. 2007). However, growing demands of nature-based recreation and tourism can compromise the effectiveness of protected areas in accomplishing their conservation goals. Indicator-based management frameworks, such as Limits of Acceptable Change (LAC) and Visitor Experience and Resource Protection (VERP), are tools that were developed to address the visitor management challenge. These management frameworks emphasise the establishment of management objectives, indicators, standards, monitoring and appropriate management actions. Another commonality among them is that zones must be clearly defined for a protected area, and management objectives for each zone articulated in order to develop zone-specific indicators and standards (McCool et al. 2007).

Spatial zoning is a common strategy for protected area management (Walther 1986) and has been established for various administrative and managerial reasons. Zoning concepts have also been applied widely in visitor use management (McEwen et al. 1976, Leung & Marion 1999). Recreation Opportunity Spectrum is a well-known approach to zoning that focuses on the diversity of recreation experiences, the compatibility with other resource uses, matching of recreation demand with resource capabilities, and defining acceptable environmental, social and managerial conditions (Clark & Stankey 1979). In fact, previous implementations of LAC and VERP frameworks have relied primarily on ROS-based zoning (McCool et al. 2007). In US national parks and forests where most implementations took place, ROS-type zoning was developed as part of individual areas' management planning process (NPS 1997). As the frameworks are being applied to non-U.S. park systems, the zoning step in a framework application can become a major challenge as the existing zoning systems in other park systems do not necessarily follow the ROS system. An important question is whether and how the ROS-type zoning scheme can be integrated with existing park zoning system(s). We attempted to address this question in a current project which supports the first application of VERP in Taiwan's national parks. This paper discusses the process, challenges and preliminary results of applying ROS-type zoning in Yu Shan National Park where the project took place.

Yu Shan National Park is situated in central-south Taiwan. It contains high biodiversity with the tallest peak in East Asia, and it is also a popular tourist destination for domestic and foreign tourists. In 2007, the park started the process of adapting key elements of VERP framework to address many resource and social impact concerns in the park (Hsu et al. 2009a). An early but crucial step of the VERP process was to define zones with zone-specific management objectives relating to visitor experience and/or resource protection. However, Yu Shan had already enforced a land-use zoning system that had no direct link to visitor experience and resource impact issues. The five land-use zones under this system include ecological protection zone, historic preservation zone, special landscape zone, general control zone and recreation zone.

In order to define a zoning system that can inform subsequent steps in the VERP process and to resolve the problem with overlapping zoning systems, we conducted a number of workshops with

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<sup>1</sup> Graduate Institute of Tourism & Recreation Management, National Dong Hwa University, Hualien, Taiwan ROC, ychsu@mail.ndhu.edu.tw

<sup>2</sup> Department of Tourism, Shih-Hsin University, Taipei, Taiwan ROC, cpwang@cc.shu.edu.tw

<sup>3</sup> Parks, Recreation and Tourism Management, North Carolina State University, Raleigh, NC 27695-7106, USA, Leung@ncsu.edu

experienced park managers and volunteers to introduce concepts of ROS and VERP. The workshop participants also brainstormed about management zoning in relation to resource conditions and visitor experiences. This effort resulted in a two-tier management zoning system (Hsu et al. 2009b). It was decided to keep the existing land-use zoning terminology as the first tier to maintain continuity and maximise support from the park staff. At the second tier, one or more ROS-based zones were assigned to each first-tier land-use zone. All of the second-tier zones were categorized using ROS terminology such as rural, semi-primitive non-motorized, semi-primitive motorized and primitive recreation opportunities (Clark & Stankey 1979). Zone boundaries, trails, management objectives, and desired environmental, social and managerial conditions were specified for each second-tier zone. This set of zoning procedures was pilot tested in three administrative districts of Yu Shan and is being expanded to other districts. The two-tier zoning system combining the existing management zoning and ROS-based zoning is expected to be adopted by the next Yu Shan Comprehensive Management Plan, which will pave the way for the remaining steps in the park's implementation of the VERP framework. Lessons learnt from this experience should inform those park systems which are contemplating application of an indicator-based management framework.

## References

- Clark, R. N., & Stankey, G. H. (1979). *The Recreation Opportunity Spectrum: A Framework for Planning, Management, and Research* (Research Paper PNW-98). Portland, OR: USDA Forest Service, Pacific Northwest Forest Experiment Station.
- Hockings, M., Stolton, S., Leverington, F., Dudley, N., & Courrau, J. (2006). *Evaluating Effectiveness: A Framework for Assessing the Management of Protected Areas* (2nd Ed.) (Best Practice Protected Areas Guidelines Series No. 14). Gland, Switzerland: IUCN World Commission on Protected Areas, Management Effectiveness Task Force.
- Hsu, Y.-C., Leung, Y.-F., & Wang, C.-P. (2009a). VERP project in Yu-Shan National Park: Research and application (in Chinese). In *Proceedings of the Leave No Trace and Recreational Impacts Conference* (pp. 20-37). Taipei, Taiwan: Forestry Bureau.
- Hsu, Y.-C., Wang, C.-P., & Li, Y.-H. (2009b). *Applying the VERP framework to Yu-Shan National Park: 2009 final report*. Unpublished report submitted to Yu Shan National Park, Taiwan.
- Lockwood, M., Worboys, G., & Kothari, A. (2006). *Managing Protected Areas: A Global Guide*. London: Earthscan.
- Leung, Y.-F., & Marion, J. L. (1999). Spatial strategies for managing visitor impacts in national parks. *Journal of Park and Recreation Administration*, 17(4), 20-38.
- McEwen, D., & Ross, T. S. (1976). Zone management: key to controlling recreational impact in developed campsites. *Journal of Forestry*, 74(2), 90-93.
- McCool, S. F., Clark, R. N., & Stankey, G. H. (2007). *An Assessment of Frameworks Useful for Public Land Recreation Planning* (Gen. Tech Rep. PNW-GTR-705). Portland, OR: USDA Forest Service, Pacific Northwest Research Station.
- National Park Service (1997). *The Visitor Experience and Resource Protection (VERP) Framework: A Handbook for Planners and Managers* (Publication No. NPS D-1215). Denver, CO: NPS Denver Service Center.
- Walther, P. (1986). The meaning of zoning in the management of natural resource lands. *Journal of Environmental Management*, 22, 331-343.

## Indicator development for Yu Shan National Park in Taiwan: an adaptive process

Ying-Hung Li<sup>1</sup>, Yi-Chung Hsu<sup>2</sup>, Yu-Fai Leung<sup>3</sup>

Keywords: indicator-based framework, indicators, planning process, Yu Shan National Park, Taiwan

The Visitor Experience and Resource Protection (VERP) framework was developed by the U.S. National Park Service in the early 1990's to tackle one of the most challenging park management issues facing America's national parks – managing visitor capacities (NPS 1997). Building on an adaptive management model, the VERP framework aims to maintain the quality of visitor experience while protecting the integrity of natural resources by defining zone-specific management objectives and by establishing indicators and standards based on public involvement and empirical research (NPS 1997, Manning 2007).

Most studies that have examined or helped implement the VERP or similar frameworks (like Limits of Acceptable Change-LAC) took place in North America. In recent years there have been growing international interests in the utility and applicability of indicator-based frameworks for park systems outside North America (Brown et al. 2006, Tonge et al. 2006). In East Asia, Yu Shan National Park has become the first major protected area to apply and adapt the VERP framework since 2007. As the team who provide research support to this effort, we recognised early on that substantial adjustments were necessary in order to effectively integrate the indicator-based framework with the current management practice in Taiwan's parks. This paper illustrates one major step in the VERP application in Yu Shan – the development of indicators and its adaptive process.

Due in part to mudflows and landslides that occurred in and around Yu Shan in August 2009, and in part to social considerations and agency culture, we deviated from the 9-step process as specified in the VERP Handbook (NPS 1997) and adopted a more 'streamlined' approach. Rather than involving all stakeholders in indicator identification which seemed to be infeasible, we adopted three alternative steps to achieve the same goal of indicator identification. First, we conducted a workshop for Yu San National Park staff to discuss management zoning procedures and potential indicators. Second, 31 senior park volunteers and professional mountain climbers were selected for in-depth interviews. Third, 500 mountain hikers were surveyed with an intercept questionnaire. This three-step design was intended to evaluate the merits of potential indicators from both managerial and visitor perspectives.

Our results show that some common indicators emerged across different management zones. These indicators include vandalism, feeding wildlife, landscape quality and environmental sanitation. More specifically, natural resource indicators such as the quantity and type of wildlife, water quality of river and stream, vegetative condition, soil erosion on hiking trails, air quality, and quantity and type of exotic species were identified by both park staff and mountain hikers. Visitor experience indicators, such as crowding, vandalism, human noise, trash, trail maintenance, human waste, interpretation signs, and carrying capacity of specific facilities, were also significant for both parties. However, there were also important differences between these two parties. For example, park staff focused more on resource-oriented indicators such as trail conditions, species diversity and exotic species, and several experiential and managerial indicators, such as different levels of crowding perception (minimum, ideal, or maximum), emergency evacuation system, visitor's recognition of Yu San National Park, and research funding. On the other hand, visitors paid far less attention on natural resource conditions. Instead, they were more interested in experiential

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<sup>1</sup> Department of Architecture, Feng Chia University, Taichung, Taiwan, ROC, yhli@fcu.edu.tw

<sup>2</sup> Graduate Institute of Tourism & Recreation Management, National Dong Hwa University, Hualien, Taiwan ROC, ychsu@mail.ndhu.edu.tw

<sup>3</sup> Parks, Recreation and Tourism Management, North Carolina State University, 5107 Jordan Hall, Raleigh, NC 27695-7106, USA, Leung@ncsu.edu

indicators, such as crowding with other groups, carrying pets into mountain area, and perception of environmental impacts due to research activities. The next steps in this ongoing project are to develop a prioritised list of indicators and identify monitoring options for those listed in the high priority category.

Our experiences in Yu San National park offer some valuable insights to park agencies and researchers about the ways and challenges of implementing the VERP or similar frameworks in a different park system. For example, instead of holding a series of public hearings, the intention and importance of this project was conveyed to the public by communicating with park volunteers and professional climbers. Most of the park volunteers in this case came from the local region and they are respected leaders in their communities. Furthermore, we found that park staff were more eager to provide feedback than visitors. We will discuss the major lessons learned from this project which may inform future applications in Taiwan or other non-U.S. park systems.

## **References**

- Brown, G., Koth, B., Kreag, G., & Weber, D. (2006). *Managing Australia's Protected Areas: Review of Visitor Management Models, Frameworks and Processes* Gold Coast: CRC Sustainable Tourism.
- Manning, R. E. (2007). *Parks and Carrying Capacity: Commons Without Tragedy*. Washington, DC: Island Press.
- McCool, S. F., Clark, R. N., & Stankey, G. H. (2007). *An Assessment of Frameworks Useful for Public Land Recreation Planning* (Gen. Tech Rep. PNW-GTR-705). Portland, OR: USDA Forest Service, Pacific Northwest Research Station.
- National Park Service (1997). *The Visitor Experience and Resource Protection (VERP) Framework: A Handbook for Planners and Managers* (Publication No. NPS D-1215). Denver, CO: NPS Denver Service Center.
- Tonge J., Moore, S. A., Hockings, M., Worboys, G., & Bridle, K. (2005). *Developing Indicators for the Sustainable Management of Visitor Use of Protected Areas*. (Technical Report). Gold Coast, Queensland: Cooperative Research Centre for Sustainable Tourism.

## **Frameworks for what? Australian experiences and developments in strategic frameworks for visitor management**

**Susan A. Moore<sup>1</sup>**

Keywords: management effectiveness, planning framework, recreation opportunity spectrum, visitor monitoring

In Australia over the last three decades, planning frameworks such as the recreation opportunity spectrum (ROS) and limits of acceptable change (LAC) have been applied to protected area planning and management. A total of twenty applications was identified by McArthur and Sebastian (1998) in their comprehensive review of framework implementation in this country. These frameworks had been applied to national parks (including islands), groups of parks and reserves, walking tracks and state forest (similar to national forests in other countries). Most applications have been at a regional or state rather than a site specific level. Virtually all regional applications have involved more than one agency.

Most protected area agencies blend one or more approaches, with the most extensively applied models being ROS, LAC and Visitor Impact Management (VIM). Most applications emphasise monitoring and the selection of indicators, with limited attention paid to the assessment of data (the early, critical steps of most of these frameworks). Australia has also seen the development of the Tourism Optimisation Management Model (TOMM), which takes into account the broader social, political and environmental context, as well as using scenario generation to manage into the future (Manidis Roberts Consultants 1997, Newsome et al. 2002). This framework was developed specifically to help plan for the tourism use of Kangaroo Island off the southern coastline of Australia. The model draws heavily on ROS and LAC.

A more recent review of visitor management frameworks, with respect to Australia's protected areas (Brown et al. 2006), concluded that Australia uses these frameworks less than their North American counterparts. The reasons given included: (1) more limited staff and financial resources; (2) the dispersed management of protected areas in Australia – by many state-based agencies, rather than a small number of federal agencies as is the case in the United States (e.g. the USDA Forest Service manages wilderness areas nationwide), making nationally standardised approaches difficult to achieve; and (3) fewer ongoing partnerships between universities and protected area agencies (again a strength in North America). Half of the cases reviewed by McArthur and Sebastian (1998) used external expertise in their development stages.

The last decade in Australia and internationally has seen the emergence of management effectiveness frameworks. The most well known in protected area management is the IUCN Management Effectiveness Evaluation Framework (Hockings et al. 2000) with its focus on monitoring management effectiveness and then using the results to improve management. The selection and monitoring of indicators is central. This approach has been adopted by several of the state protected area agencies in Australia. Adoption relies on employing social researchers and committing resources to monitoring, one or both of which remain problematic for at least some of the protected area agencies in Australia.

Given that the older visitor frameworks and this newer management effectiveness approach both draw heavily on monitoring, some synergies between the two seem possible. These possibilities were explored by Moore et al. (2003). They concluded that the objective-based approach in LAC and other related frameworks helps to maintain a clear focus on measuring the effectiveness of management, directly relevant to the objectives of the protected area. Also noted was the value of LAC and other frameworks in considering both biophysical and social indicators, with management

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<sup>1</sup> School of Environmental Science, Murdoch University, Western Australia, South Street, Murdoch, Western Australia 6150, [S.Moore@murdoch.edu.au](mailto:S.Moore@murdoch.edu.au)

effectiveness work having been critiqued for having a strong biophysical emphasis with limited attention to visitor (social) related indicators (Moore & Walker 2008). A final comment from the Moore et al. (2003) work was that the older visitor frameworks needed broadening to address management processes and systems (and in turn develop indicators and standards) that are fundamental components of the IUCN framework.

Australia and other countries are moving towards adoption of the IUCN management effectiveness framework or related approaches. The challenge is to make sure that the best of the older visitor frameworks is not lost in the transition i.e. 'the baby is not thrown out with the bath water'. Features of these older frameworks of potential use to current management effectiveness efforts include: (1) explicit management objectives; (2) a range of recreation opportunities based on data; (3) resource and social indicators; and (4) public consultation as an integral part of visitor planning and management.

## **References**

- Brown, G., Koth, B., Kreag, G. and Weber, D. (2006) Managing Australia's Protected Areas: A Review of Visitor Management Models, Frameworks and Processes. Technical Report. Sustainable Tourism Cooperative Research centre, The Gold Coast, Queensland.
- Hockings, M., Stolton, S. and Dudley, N. (2000) Evaluating Effectiveness: A Framework for Assessing the Management of Protected Areas. IUCN, Gland, Switzerland and Cambridge, UK.
- Manidis Roberts Consultants (1997) Developing a Tourism Optimisation Management Model (TOMM), a model to monitor and manage tourism on Kangaroo Island. Final Report. South Australian Tourism Commission, Adelaide.
- McArthur, S. and Sebastian, I. (1998) Implementation of impact management models – who's doing or done what across Australia. Paper presented at the Sixth Annual Conference of the Ecotourism Association of Australia, Margaret River, WA, 29 October – 1 November, 1998.
- Moore, S.A. and Walker M. (2008) Progressing the evaluation of management effectiveness for protected areas: Two Australian case studies. *Journal of Environmental Policy and Planning* 10(4): 405-421.
- Newsome, D., Moore, S.A. and Dowling, R.K. (2002) *Natural Area Tourism: Ecology, Impacts and Management*. Channel View Publications, Clevedon.



# **Sustainable tourism development strategy as a tool to improve destination management: case Oulanka National Park, Finland**

**Matti Tapaninen<sup>1</sup>**

Keywords: sustainability, nature-based tourism, limits of acceptable change (LAC), national park

## **Introduction**

National Parks in Finland are often located next to holiday resorts. Previously, unspoiled nature was recognised as an important element around Finnish holiday resorts but National Parks as a brand did not play such an important role. Today, our National Parks are viewed as primary attraction, especially by international tourists. Destination management approach is often obligatory for securing the sustainability of tourism.

Tourism development in Finnish National Parks and other protected areas rely on nine sustainability principles (Högmander & Leivo 2004, Kajala et al. 2004):

1. Natural values are preserved and all activities promote nature conservation
2. The environment is subjected to as little pressure as possible
3. Local traditions and cultures are respected
4. Visitors increase their understanding and appreciation of nature and cultures
5. Improved recreational facilities are provided for visitors
6. Visitors are encouraged to enjoy both mental and physical recreation
7. Local economies and employment are promoted
8. Publicity materials are produced responsibly and carefully
9. Activities are planned and organised co-operatively.

Principles include many specified objectives and targets and are also the basis of measuring sustainability with Limits of Acceptable Change (LAC) –method (Stankey et al. 1985). Two key challenges for success are: (1) how are these principles implemented in tourism products profiled to National Parks and (2) how do principles influence the decision making process and individual actions in travel destinations?

## **Case Oulanka National Park**

Oulanka National Park covers approximately 30,000 hectares and is located in the Kuusamo-Salla highlands in North-East Finland. Natural and cultural values are very rich and diverse. Natural historical attributes have led to a unique combination of species and biotopes (Tapaninen 2003, Tapaninen 2004). Oulanka NP is also of great recreational and touristic importance. According to the research by Finnish Forest Research Institute and Metsähallitus 162,000 visits to the Park at 2009 generated the revenue of 14 million euros providing 183 jobs.

Sustainable Tourism Development Strategy has evolved to be an obligatory tool for the management of National Park. Main components of the Strategy are situation analysis, goals and vision, impact assessment, monitoring method and development plan with financial blueprint. The Strategy was prepared by the Oulanka Cooperation Group, which has representatives from Metsähallitus (National Park management), local municipalities, villagers, tourism industry and NGOs. This group is also responsible for governance and follow-up of the Strategy.

The framework of Strategy is the Principles of Sustainable Tourism and the Limits of Acceptable Change. The Strategy has 20 key indicators measuring ecological, economical and socio-cultural sustainability of nature-based tourism and recreation. In 2008-2009 the University of Oulu made an assessment of LAC used in the Oulanka National Park (Siikamäki & Kangas 2009). The main conclusion was that LAC modification seems to form a sound basis for the management

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<sup>1</sup> Metsähallitus, Natural Heritage Services, Viestitie 2, FIN-87700, Kajaani, Finland, [matti.tapaninen@metsa.fi](mailto:matti.tapaninen@metsa.fi)

of sustainable tourism. However, the study found some recommendations for future management and made a note that the challenge of the method is the incorporation of different dimensions and elements of LAC to form an integrated analysis.

Sustainable Tourism Development Strategy has taught to the management of Oulanka National Park:

- If uncontrolled tourism development is a threat to values of National Park, it is worthwhile to take a pro-active role in tourism development of the wider region.
- The National Park shares with surrounding communities a need to enhance economic sustainability. Models for sustainable regional development should be based on establishing economic and social links between Park and its surroundings.
- Realistic and binding development plan with financial blueprint is an essential part of the Strategy. Without such a plan tourism will have little chance to become a sustainable economic activity that generates the expected economic, social and ecological benefits.
- Measuring sustainability is important when recreational pressure is high. Sustainable Tourism Development Strategy is a good tool to secure the quality of indicator-based management. It is important to define how the results of monitoring will be used and how they could lead to readjustments in the Strategy.
- Sustainable Tourism Development Strategy needs co-operative governance with shared vision. The protected area, even if it had the resources to do so, should not aim to formulate and implement a Strategy by itself. This would probably have adverse effects on the support of the community and other stakeholders.

## References

- Högmander, J & Leivo, A. (2004). General Principles for Sustainable Nature Tourism in Protected Areas. In: Policies, Methods and Tools for Visitor Management. – Proceedings of the Second International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas, June 16–20, p. 345–347. Rovaniemi.
- Kajala, L., Erkkonen, J., & Perttula, M. (2004). Measures for Developing Sustainability of Nature Tourism in Protected Areas. In: Policies, Methods and Tools for Visitor Management. – Proceedings of the Second International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas, June 16–20, p. 241–246. Rovaniemi.
- Stankey, G.H., Cole, D.N., Lucas, R.C., Petersen, M.E. & Frissell, S.S. (1985). The Limits of Acceptable Change (LAC) System for Wilderness Planning. In: USDA Forest Service General Technical Report, INT-176. Ogden, Utah: Intermountain Forest and Experiment Station. 37 p.
- Tapaninen, M. (2003). Oulanka National Park Management Plan. Metsähallitus, Finland
- Tapaninen, M (2004). Sustainable Tourism Development Strategy of Oulanka National Park and it's environs. Metsähallitus, Finland.
- Siikamäki, P. & Kangas, K. (2009). Limits of acceptable change as a tool for protected area management – Oulanka National Park as an example. In: Research and monitoring of sustainability of nature-based tourism and recreational use of nature in Oulanka and Paanajärvi National Parks, Oulanka Reports 29, p. 35-52.

## **Visitor flows indicators used in Italian protected area management effectiveness methodology (MEVAP) and data base on National Protected Areas: how to improve their efficacy?**

**Pierluca Gaglioppa<sup>1</sup>, Anna Di Carlo<sup>2</sup>, Davide Marino<sup>3</sup>, Angelo Marucci<sup>4</sup>, Manuela Nicosia<sup>5</sup> and Margherita Palmieri<sup>6</sup>**

Keywords: indicator, tourism, park, management effectiveness, PAME, MEVAP

The aim of this paper is highlight how MEVAP methodology (Banini et al, 2006) can be implemented in order to evaluate and monitor management effectiveness of protected areas (PAME) through a series of indicators. The approach focuses on tourism management as the core part of the field survey. Developed in Italian protected areas, the framework takes into account the instructions and recommendations from national and international policies on bio-diversity and sustainable development (General policy law n° 394/1991, CBD, Natura 2000 Network international rules, etc.). Management effectiveness of protected areas at European level presents differences between countries: a first step analysis was run off by a seminar held in Vilm Island in 2008 (Stolton, 2008) and repeated last November by the organization of German Federal Agency on Environment Protection.

The methodology allows:-

- A macro-level assessment of protected area management: the achievement of national goals and objectives in observance of international treaties and national strategies.
- A micro-level assessment of protected area management: developing methods and criteria in order to diffuse the Best Practice arising from the assessment of local management systems.

The criteria used for selecting indicators are:

- Ease of collection
- Quantification
- Representativeness
- Scientific relevance
- Transferability.

The evaluation of management effectiveness is achieved through the assessment of a set of selected indicators. Indicators are associated with 4 domains: environment, economy, governance, and society.

The Handbook is a scientific tool designed to be flexible and accessible to different needs and contexts. It is made up of a wide range of 70 indicators which have been divided into core and supplementary groups.

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<sup>1</sup> University of Molise, Phd in Environment and Territory - Environment and Territory Science and Technology Department; c.da Lappone, 8 - 86090 Pesche, Isernia (Italy), [pgaglioppa@landsnetwork.eu](mailto:pgaglioppa@landsnetwork.eu)

<sup>2</sup> University of Molise, Phd in Environment and Territory - Environment and Territory Science and Technology Department; c.da Lappone, 8 - 86090 Pesche, Isernia (Italy), [annadicarlo@libero.it](mailto:annadicarlo@libero.it)

<sup>3</sup> University of Molise, Professor in Environmental Economy - Environment and Territory Science and Technology Department; c.da Lappone, 8 - 86090 Pesche, Isernia (Italy) [dmarino@unimol.it](mailto:dmarino@unimol.it)

<sup>4</sup> University of Molise, freelance - Environment and Territory Science and Technology Department; c.da Lappone, 8 - 86090 Pesche, Isernia (Italy), [angelo\\_marucci@libero.it](mailto:angelo_marucci@libero.it)

<sup>5</sup> University of Florence – Phd in Methodology of Social Sciences - Sociology and Political Science Department, via delle Pandette 54100 Florence, Italy, [manuela.nicosia@gmail.com](mailto:manuela.nicosia@gmail.com)

<sup>6</sup> University of Molise, Phd in Environment and Territory - Environment and Territory Science and Technology Department; c.da Lappone, 8 - 86090 Pesche, Isernia (Italy) [margherita.palmieri@unimol.it](mailto:margherita.palmieri@unimol.it)

The set of indicators can be adapted and used in different circumstances and contexts:

- Evaluation or self-evaluation of protected areas management effectiveness.
- Providing support for Best Practice diffusion.
- Supporting different environmental procedures and programs such as ISO 14001, EU Eco-Management and Audit Scheme (EMAS) and Agenda 21 or State of the Environment Reports.
- Sector studies concerning protected areas (tourism, agriculture, etc.).
- Supporting procedures for Environment Balance and/or Sustainability Balance.

Table 1: Every domain is related with macro-objectives and topics.

Domain	Macro-objective	Topic	Indicator
Environment	Resource Conservation (CBD)	Bio-diversity	Levels of threat to animal species
Economy	Reconversion of productivity and promotion of sustainable activities (L. 394/91)	Δ+ products with quality certification	Presence of trademark
Governance	Development of economic management capacity	Park as a generator of creative projects	Promotion of international co-operation
Society	Access and benefit-sharing of genetic resources (CBD)	Access to benefits	Local residents' perception of benefits

The MEVAP Survey Handbook helps to investigate into the touristic Park's accommodations (private and public) and their quality and certification (waste recycling, organic farming and local products use, clean energy production system); the core indicators are specific regarding visitors flow and their satisfaction about services. The main core indicators are:

- E6: Touristic intensity (number of visitors/resident population) and a temporal concentration index
- E11: Sustainable mobility
- S6: Satisfaction visitor degree.

The on-desk analysis about visitor flows will be carried out through a data base built by the University of Molise, which contains national data at municipally level for the National Park areas. The data base allows the study of the increasing or decreasing of bed places or the ratio of visitors to bed places, making time series in order to understand the evolution of tourism in a specific territory.

The complexity of the tourism sector determined the coexistence of many sources of information, each one created with specific finality and addressed to particular segment (tourism demand, tourist offer, transport, etc.) which leave aside important aspects related to the link between tourism and local products, its impact on the territory, etc. Moreover, the plurality of data available does not allow the comparison; results are redundant in such cases, deficient in others (Gismondi & Mirto 2003). Studying tourism in its integration with territory (aiding the relation with environment, economy and society) leads to methodological problems related to the lack of a homogeneous information system of data. MEVAP methodology represents an attempt to work on analysing the relation between tourism and territory – where protected areas constitute a specific area, with the problem of definition of their boundaries - through the integration in demographic and economical indicator of relations, direct and indirect ones, with tourism.

The main objective is to test the indicators and find the ones that are most efficient using different methodologies of acquisition. Management effectiveness evaluation is defined as the assessment of how well protected areas are being managed and visitor flows are a core part of the field survey. The work intends to highlight issues related to studying tourism in protected areas from a methodological point of view, and investigating sustainability of tourism as well.

## References

Banini S, Marino D, Lumaca C, Addis D, Alborino N, Marucci A, Palmieri M, Parasacchi A, Soffietti E, Zaottini D, Zarlenga G (2006). Assessment of Protected Areas Management

Effectiveness Report phase n° 1. CUEIM – Ministero dell’Ambiente e Tutela del territorio e del mare.

Gismondi R, A.P.M. Mirto (2003). Le fonti statistiche per l’analisi della congiuntura turistica: il mosaico italiano, Documenti 10, ISTAT, Roma.

Stolton S (Ed.) (2008). Assessment of Management Effectiveness in European Protected Areas – Sharing Experiences and Promoting Good management. Bundesamt fur Naturschutz (BfN) Germany.

# **Monitoring and management of visitor flows in recreational and protected areas: use and abuse of nature areas in Taman Negara (National Park) Pahang, Malaysia**

**Mohd Sayuti Hassan<sup>1</sup>, Yahaya Ibrahim<sup>1</sup>**

Keywords: sustainability tourism, protected area, tourism management, visitor satisfaction, Taman Negara

Many developing countries successfully use the attractions of nature to promote tourism in protected and unprotected areas. The attainment of sustainable tourism requires careful management of tourists to prevent deleterious effects on the environment, the host community and visitor satisfaction. The emphasis on tourism management and sustainable development is based on the diligent usage of available resources, especially in the context of planning, commitment and the involvement of management as well as the interested parties. The sustainability concept evolves around elements; be it the development of urban, economic, culture and the like which should ensure the continuous sustainability of the next generation, even though the demand and change of development has becoming more challenging.

The focus is on 'Taman Negara' or National Park in Malaysia which is embedded with various tourism packages. Taman Negara is a protected area of international importance as reflected in its listing as an Association of South East Asian (ASEAN) Heritage Site (DWNP 1987, ASEAN 1988). Taman Negara comes under the protection of three Malaysian states of the states of Kelantan, Pahang and Terengganu by the Taman Negara Enactments of 1938 and 1939 (DWNP 1987). The park was established for the "propagation, protection, and preservation of indigenous flora and fauna, and of the preservation of objects and places of aesthetic, historical and scientific interest" (Anon 1971, DWNP 1987, Abdullah 1995). TNNP is also governed by the Wildlife Act No. 76 of 1972 which requires the conservation of indigenous wildlife and natural habitats within this national park (Wildlife Act 1972).

Thus, the main goal of this study is: To develop a visitor management strategy in order to realize the sustainable high quality nature based visitor experience that is promised by the Taman Negara. To achieve the mentioned goal, the following objectives will looked into: To investigate the characteristic of visitor to Taman Negara; Examine the motivations of visitor to Taman Negara; Explore appropriate activities and facilities that can be introduced in the Taman Negara, for preservation and to promote the concept of sustainable use of resources to ensure its sustainability both now and in the future in Taman Negara

This paper also will analyze elements of sustainability tourism which will be realized in the research area of effective management. This paper will specifically examine the management of various departments over this national park. Among the elements examined are the ability to increase the place integrity based on the location, to generate the local economy and to protect the nature. Without proper management, over the time the number of visitors might be decreased and very minimal sources of fund flow in. As a result, the beauty of the park would be left unappreciable.

Studies are normally conducted in order to add to an existing body of knowledge through new or different research methods, techniques or operations. In preparing this study, several approaches were used towards gathering data. At the literature search stage, information about visitor management in protected areas was gathered from relevant books, journals, government publications, conference papers and reports; theses and dissertations; and from international

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<sup>1</sup> School of Social, Development and Environmental Studies, Faculty of Social Sciences and Humanities, universitikebangsaan Malaysia, [ya@umt.edu.my](mailto:ya@umt.edu.my), [sayuti@usm.my](mailto:sayuti@usm.my)

sources. During the initial study period, the researcher was based at the Department of Wildlife and National Parks, Jerantut Municipal Council, Tourism Department, Kuantan Municipal Council and Forest Department to find the relevant data. As for the collection of primary data, several different instruments were used. Firstly, a self-administered questionnaire was used to collate important information and data on visitors to the park. The use of a questionnaire is basically a process of asking questions to visitors who are believed to have the necessary information relevant to the study.

Based on the analysis of the results, the following conclusions can also be drawn from this study.

- The protected area must have a visitor management plan which is implemented, regularly evaluated and updated;
- The protected area provides a wide spectrum of nature-based activities and facilities for different target groups;
- Visitors are offered good opportunities to observe and experience wildlife and other natural features of the area, such as the emblematic charismatic species, attractive landscapes and serenity;
- Good information is provided to visitors with the aim to increase support for nature conservation.

## **References**

- The Department of Wildlife and National Parks. 1987. Taman Negara master plan. Dept. of Wildlife and National Parks, Ministry of Science, Technology and the Environment, Kuala Lumpur, Malaysia. 137 pp.
- ASEAN. 1988. ASEAN heritage parks and reserves. The Association of South East Asian Nations Group/United Nations Environment Program, Bangkok, Thailand. 83-89 pp.
- Abdullah, M. 1995. Recreation use evaluation, management and policy implications of Taman Negara, the national park in Peninsular Malaysia. Unpublished Ph.D. thesis. Department of Forestry, University of Aberdeen, Scotland, United Kingdom. 217 pp.
- Anon. 1971. Taman Negara. *Malayan Nature Journal*. (24): 113-114.

# Management of national parks and tourism development – two cases from Norway

Jan Vidar Haukeland<sup>1</sup>

Keywords: National Park, management, local stakeholder, tourism development

## Background

The establishment and operational running of national parks around the world is often a conflict ridden practice due to the fact that dissimilar values and goals are embedded in the protection and management of this type of natural resources. Broadly speaking, the planning and administering of national parks imply the handling of two goals that are both competing and overlapping at the same time, i.e. preserving the natural resource base and providing access for visitors that come to enjoy the same nature and landscape. According to McCool (2009) the resolving of these two basic values and their associated goals are especially challenging as regards to tourism development in protected natural heritage areas.

A series of problems arise not only due to more or less conflicting fundamental goals, but also as a result of dissimilar cultures and divergent social dependencies between on the one side, professionals representing the governmental protected area planning and administration agencies and, on the other side, those stakeholders that pursue local tourism industry interests associated with the national parks (McCool 2009). Tourism interests are as yet not involved in natural resource conservation and planning, which is the primary task and responsibility for the administrators and organisations in charge of managing national parks (Jamal and Stronza 2009). Nevertheless, the local tourism industry stakeholders are often totally dependent on the actual landscape and natural resources alike for their own economic benefit and social wellbeing; a reliance that may produce severe tensions unless embedded conflicting management issues are resolved in constructive ways and within reasonable time limits.

The present paper focuses on the underlying problems connected to the management obligations and the often contrasting local tourism interests in a Norwegian national park setting. The management regime in Norway has traditionally viewed tourism as a threat to the natural resources, despite the fact that there has been a shortage of research to support this - a state of affairs that Kaltenborn believes to be common in management establishments driven by natural researchers and operating in an worldview of bio-ecological science (Kaltenborn 1996). In a study of Norwegian nature managers' attitudes, Aasetre (1998) typically described the management strategies as 'classical nature protection', in which strong emphasis is placed on the safeguarding of natural elements, and far less concern is given to commercial interests and stakeholder involvement and collaboration in park management.

## The empirical study

Two basic questions are asked in the present study:

- to which extent does local tourism stakeholders' involvement influence management processes in Norwegian national parks;
- how do local tourism stakeholders assess the resulting management plans and operations.

These core issues are scrutinized by means of qualitative interviews with 14 representatives of local tourism firms in two different national park settings in Norway: Rondane national park and Jotunheimen national park in the southern part of the country. The first mentioned national park is characterised by the presence of a sensitive species, i.e. the wild reindeer, whereas the second one is regarded as less susceptible to human impact.

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<sup>1</sup> a) Department of Ecology and Natural Resource Management, Norwegian University of Life Sciences, P.O. Box 5003, NO-1432 Ås, Norway

b) Institute of Transport Economics, Gaustadalléen 21, NO-0349 Oslo, Norway, [jan.vidar.haukeland@umb.no](mailto:jan.vidar.haukeland@umb.no)



A series of disputed issues were identified throughout the empirical investigation, in spite of the general support among the local tourism industries for the national park status of the two mountain areas in question. The local tourism stakeholders experienced minor involvement in management planning and scant influence on the final planning arrangements. Further, they reported a lack of opportunities for healthy business operations due to management restrictions; they perceived a lack of competence among managers concerning business management and tourism development issues. In Rondane national park a sincere doubt regarding the legitimacy and scientific evidence for the rigid measures effectuated to protect the wild reindeer was observed, and in Jotunheimen national park partaking in co-management was called for. In both parks, the perceived incompetence among management staff regarding adequate measures for tourism developments in and around the park was raised as a concern. Our interpretation of the respondents' assessments indicates that the co-operation between the managers and the local tourism stakeholders is not sufficiently developed and a trustful relationship does not seem to exist between the two parties.

In line with these results some principal recommendations to improve the relationship between the two parties in the management system are proposed. Management authorities should preferably include sustainable tourism development in their visions and goals for the national parks, and also incorporate tourism business and management competence in their organizations. More emphasis on permanent management presence in local national parks would probably build stronger ties between the managers and local tourism interests. Such forms of structural alterations and adaptations are apparently viable ways forward in order to foster durable and trustworthy planning partnerships.

## **References**

- Jamal, T. and A. Stronza (2009). Collaboration theory and tourism practice in protected areas: stakeholders, structuring and sustainability. *Journal of Sustainable Tourism* 17(2): 169-189
- Kaltenborn, B.P. (1996). *Tourism in Svalbard: planned management or the art of stumbling through?* Chichester, Wiley: 89-108
- McCool, S. F. (2009). Constructing partnerships for protected area tourism planning in an era of change and messiness. *Journal of Sustainable Tourism* 17(2): 133-148
- Aasetre, J. (1998) *Hvordan bør vi forvalte naturen? Norske naturforvaltere sin vurdering av tre ulike miljøsituasjoner.* SMU. Trondheim, NTNU

# Development of hut systems and their influence to visitor flow in Japan's Protected Areas

Taiichi Ito<sup>1</sup>

Keywords: facility management, hut system, roadless area, trekking, visitor flow

## Introduction

Hut systems in diverse wildland for trekking are playing important roles in nature preservation as well as in visitor experiences. Especially under bad weather conditions, suitable placement and management of huts can spell the difference between life and death. On the other hand, their overdevelopment brings overuse problems and resulting environmental deterioration. In other words, the hut system can be a powerful tool to regulate visitor flow and experiences in roadless areas while controlling environmental impacts. Especially in Japan, 75 % of trekkers are over the age of forty (The Data Book of Mountains Editorial Board 2006), and the role of huts are becoming more important. This paper examines validity of hut-system management by analysing their historic development, and then clarifies the relation between their management and user types based on visitor survey results.

## Three categories of hut system

There are more than one thousand huts for trekkers in the mountain protected areas of Japan. The same figure can be said of New Zealand with similar climate, but 65 % of huts in Japan are privately owned and have a longer history. The oldest hut in the Northern Japan Alps was constructed in 1617 and used until 1986, when it was protected as a cultural heritage. Some huts in the same park have been enlarged to accommodate more than one thousand visitors a night to meet demands, or two or more huts with different owners concentrated in a certain area. In either case, the overuse problem has become serious.

On the other side, public huts or shelters were constructed in mountain protected areas that were without private huts, especially after the passing the National Park Law, 1931. The revised Nature Parks Law in 1957 stipulated government subsidy to such shelters as one of visitor facilities of parks. Shelters were allocated based on the park management plan. This is a quite a contrast with private huts which were constructed depending only on demands before the park designation. However, the local governments in charge of such public huts did not have the staff or budget to manage them. The result was their deterioration and breakout of environmental problems such as water pollution.

As the third category, in the southern part of the Southern Alps national park, an areas with less trekkers than the Northern Alps, a unique hut management system was introduced in the 1980s. A forest management company rents nine public huts from local governments without a fee, and manages thirteen in total including four owned by the company which provides a shuttle bus service to each trailhead. In short, this hut system is based on public ownership and private management.

## Discussion

Japan has an outdoor recreational record back to the early 8th century and even Mt. Fuji was ascended as early as in the 870s. During Edo period (1603 to 1868), ascending Mt. Fuji became popular first as a pilgrimage destination, and then as a sight-seeing trip among ordinary people with more than two thousand visitors every summer. The gateway communities managed both facilities and services. However, it took long time to establish a sustainable management system including visitor safety and satisfaction among profit-oriented local communities (Ito 2007, Ito 2009). Such lessons were not handed over to later hut managers, and those at Mt. Fuji or the

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<sup>1</sup> Graduate School of Life and Environmental Sciences, University of Tsukuba, Tsukuba, Ibaraki 305-8572 Japan, ito.taiichi.ft@u.tsukuba.ac.jp

Northern Alps expanded rapidly. However, because of the trekker decline and of increasing environmental concerns, private hut managers began to decrease the overnight capacities while adopting systematic management (Data Book of Mountains Editorial Board 2006).

On the other hand, the private management of public facilities has a longer history such as concessionaire-managed facilities in U.S. national parks. Unlike these concessionaires, the company in the Southern Alps does not pursue profit, but the visitor survey shows positive response to such a hut system and its management (Kawai 2008). For example, the trekkers in this park prefer about a seven-hour daily walk, and they select routes with such hut intervals. Regarding the shuttle bus service maintained by the hut fee, visitors appreciate it since local government can not supply such service.

### **Conclusion**

In mountain protected areas of Japan with heavy summer rain, the hut system developments have strongly influenced visitor flows. Hut intervals and service standard can be especially used as effective tools to manage visitor numbers as well as experiences and resulting environmental impacts. This hut-based visitor management will be applied to protected areas in other countries (Ito and Kato, 2010)

### **References**

- Data Book of Mountains Editorial Board (2006) The data book of mountains. Mountain Echo, Tokyo, 364 pp.
- Ito, T. (2006) Visitor facility management in protected areas of New Zealand. The Japanese Forest Society Congress 117: 214.
- Ito, T. (2007) Development of resting facilities at Mt. Fuji. The Japanese Forest Society Congress, 119: 248.
- Ito, T. (2009) The trail and climber management and its cost recovery from the climbers at Mt. Fuji in Edo period. Journal of Japanese Forestry Society 91: 125-135.
- Ito, T. and Kato, G. (2010) The role of hut system in promoting community-based tourism in Bhutan. Global Partnership, 6: (in press)
- Kawai, K. (2008) Influence of mountain hut location on trekker's route selection at the southern part of Japan's Southern Alps. Bulletin of Tsukuba University Forests, 24: 55-107.

# **Managerial implications for the supply of tourism services in protected areas: an empirical analysis of the Italian case.**

**Giovanni Viganò<sup>1</sup>, Cristina Mottironi<sup>1</sup>, Magda Antonioli<sup>1</sup>**

Keywords: tourism services, management, protected areas

In the literature, protected areas are considered special cases by the tourism industry. Even though the primary function of protected areas is to secure valuable natural resources, they have often promoted tourism fruition which is just as important. This is because tourism is considered a key economic sector for natural areas, both in terms of financing protection and providing opportunities for local people (Dharmaratne et al. 2000, Eagles 2002). The positive and negative effects of tourism and sustainable practices of tourism development have been at the center of the debate for long time and still are paramount (Kaltenborn et al. 2001, Mbilela et al. 2005). From a managerial point of view, the literature has broadly considered the management of environmental issues deriving from the presence of visitors as a key aspect (Eagles et al. 2002). On the other hand, the motivations and behavior of tourists have been studied consistently, recognizing the importance to have a better knowledge of the demand (Font 2000, Reinius & Fredman 2007).

This paper is located in the stream of research of the managerial implications arising from the choice to develop tourism within a protected area, and it adopts a point of view centered on the peculiarities of the management of the park. A specific topic has driven the research, namely the delivery of tourism services as a function of a protected area. The increasing competition in tourism affects protected areas as well as any other destination and leaves no space for improvisation, requiring specific strategies (Dwyer & Kim 2003, Goodwin & Francis 2003, Bremner 2005). However, besides intentions, protected areas are not always able to supply competitive tourism services. Moving from this evidence, the aim of this paper is to understand if this depends on internal factors (namely the management of the park) or external factors. In order to explore this issue, the following aspects are investigated: (a) to understand if when the case of lacking tourism services is given, this has to be ascribed mainly to managerial issues or to a still latent demand; (b) if there is a relation among the typology of protected areas (mainly national vs regional/local parks) and the amount and diversification of tourism services provided; (c) if there are visitor services generally considered as embedded in the social function of a protected area, thus provided for free, or if the choice among free and fee-paid services depends mainly on the strategic choices of the management; and finally, (d) if the contribution of the proceeds of tourism services to the budget of the protected area can reach a significant amount in terms of self-finance

These four issues have been investigated through semi-structured questionnaires submitted to the management of 182 Italian protected areas from 2008 to 2009. The choice of protected areas within the same country allows for the exclusion of differences due to public financing and regulatory framework. The response rate was 41% and questionnaire made it possible to investigate all the aspects mentioned above. The information collected supports the hypothesis that internal factors rather than external factors determine the delivery of competitive tourism services. At the same time, the potential of visitor services for the financing of protected areas emerges quite clearly, as does the need of adopting competitive strategies in order to effectively benefit of tourism development; of course without disregarding the priority of protection.

## **References**

- Bremner, C. (2005). *Global Travel and Tourism. Brand Strategy*, 195, 37-39.
- Dharmaratne, G. S., et al. (2000). Tourism potentials for financing protected areas. *Annals of Tourism Research*, 27(3), 590-610.

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<sup>1</sup> Bocconi University, Department of Institutional Analysis and Public Management, Via Roentgen, 1 - 20136 Milano, ITALY, [giovanni.vigano@unibocconi.it](mailto:giovanni.vigano@unibocconi.it), [cristina.mottironi@unibocconi.it](mailto:cristina.mottironi@unibocconi.it), [magda.antonioli@unibocconi.it](mailto:magda.antonioli@unibocconi.it)

- Dwyer, L. & Kim, C. (2003). Destination Competitiveness. Determinants and Indicators. *Current Issues in Tourism*, 6(5), 369-414.
- Eagles, P. (2002). Trends in Park Tourism: Economics, Finance and Management. *Journal of Sustainable Tourism*, 10(2).
- Eagles, P., et al. (2002). Sustainable tourism in protected areas: guidelines for planning and management: UICN.
- Font, A. R. (2000). Mass Tourism and the Demand for Protected Natural Areas: A Travel Cost Approach. *Journal of Environmental Economics and Management*, 39(1), 97-116.
- Goodwin, H. & Francis, J. (2003). Ethical and responsible tourism. Consumer trends in the UK. *Journal of Vacation Marketing*, 9(3), 271-285.
- Kaltenborn, B., et al. (2001). The Public Right of Access: Some Challenges to Sustainable Tourism Development in Scandinavia. *Journal of Sustainable Tourism*, 9, 417-433.
- Mbilea, P., et al. (2005). Linking management and livelihood in environmental conservation: case of the Korup National Park Cameroon. *Journal of Environmental Management* 76, 76, 1-13.
- Reinius, S.W. & Fredman, P. (2007). Protected areas as attractions. *Annals of Tourism Research*, 34(4), 839-854.

## **Protected areas as opportunities for recreation and tourism planning – The challenge to create synergies between nature protection and tourism development as a basis for regional development. Experiences from Switzerland.**

**Thomas Hammer<sup>1</sup>**

Keywords: protected areas and regional development, nature protection and tourism policies, Switzerland

Tourism planning is at odds with the development of protected areas. This finding is not new and has been confirmed since 2001 by the experiences with the development of protected areas in Switzerland. But the conflict lines are not as clear as generally assumed. Even the local tourism stakeholders do not agree whether the establishment of managed protected areas is positive or negative for the regional economic development. However, in Switzerland managed protected areas are installed when local politicians and local populations expect profits for tourism.

In 2007, Switzerland adopted a national law for the recognition and promotion of parks of national importance. The legal national guidelines for these parks are, given the expectations of the local population, surprisingly defensive in the fields of recreation and tourism:

In national parks, “the touristic use and the recreational use are to be arranged in an ecological manner”: This means that recreation and tourism is permitted and can even be supported. But the priority is given to make sure that touristic and recreational use harmonise in an ecological way (in the zones where they are allowed).

In regional nature parks, “nature based tourism services and environmental education-oriented services are to be promoted”. This means: offers should be promoted, but only the services (and not the infrastructure). Regional nature parks are generally located in rural-peripheral regions with mostly inadequate, outdated infrastructure. Given the lack of necessary infrastructure the question arises, how these regions can promote nature based tourism and environmental education. In nature adventure parks (which must be located near cities) “measures to promote environmental education are to be taken”. This means that they have to promote only environmental education, but not recreation and tourism in an ecologically manner.

Furthermore, particular restrictions and prohibitions concerning recreation and tourism are formulated in the legal foundation of the parks of national importance. For example, making core zones accessible is prohibited.

For every park, the funding body and the affected communities have to adopt a Charter. Yet even in that central document it remains voluntary to elaborate on recreation and tourism.

All in all, legal requirements for parks of national importance do not emphasise recreation and tourism as welcome opportunities for the development of the park. Statements about tourism are lacking, even though tourism is, or could offer, an important economic basis to the local population. Experiences from the Swiss nature park UNESCO Biosphere Entlebuch and in the Swiss nature park Gruyère-Pays d'en Haut show that actors in tourism are important driving forces, because they expect an important publicity for their region. However this publicity usually refers neither to environmental education nor to nature based services. Instead, references are made to an increased use of touristic infrastructures, which produce a high level of economic value added. Thus, the legal requirements and the interests of local actors to create a park of national importance differ in a quite obvious way.

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<sup>1</sup> Interdisciplinary Centre for General Ecology (IKAÖ), University of Bern, P.O. Box 8573, CH-3001 Berne, Switzerland, [hammer@kaoe.unibe.ch](mailto:hammer@kaoe.unibe.ch)

What could be done about this difficult situation concerning opposite demands? The legal framework concerning parks of national importance should include guidelines on how to achieve a balance between tourism and nature protection. Several projects in Swiss parks demonstrate exemplarily the feasibility of cooperation among actors in tourism and actors in nature protection. However, examples of where local strategies and politics integrate park development and tourism planning are currently lacking in Switzerland. It is exactly here, where the challenge for park development in Switzerland lies: How can strategies and policies be conceived, such that tourism is united with nature protection in a way that creates mutually beneficial synergies? Once this challenge is resolved, tourism planning can become an instrument for park development and vice versa.

## References

- Hammer, Th. & Siegrist, D. (2008). Protected Areas in the Alps. The Success Factors of Nature-Based Tourism and the Challenge for Regional Policy. In: *GAI* (17/S1), p 152-160.
- Hammer, Th., Egli, H.-R. & Atmanagara, J. (2008). Cultural Landscape in Conflict between Economy, Ecology, and Institutional Steering. The Example of the UNESCO Biosphere Entlebuch (Switzerland). In: C. Bartels, M. Ruiz del Arbol, H.v. Londen & A. Orejas (eds.) *Landmarks – Profiling Europe’s Historic Landscapes*, p 99-112. Bochum.
- Hammer, Th. (2007). Protected Areas and Regional Development: Conflicts and Opportunities. In: I. Mose (ed.) *Protected Areas and Regional Development in Europe – Towards a New Model for the 21st Century*, p 21-36. Aldershot and Burlington.
- Hammer, Th. (2007). Biosphere Reserves: An Instrument for Sustainable Regional Development? The Case of Entlebuch, Switzerland. In: I. Mose (ed.) *Protected Areas and Regional Development in Europe – Towards a New Model for the 21st Century*, p 39-54. Aldershot and Burlington.
- Hammer, Th., Mose, I., Siegrist, D. & Weixlbaumer, N. (2007). Synthesis – Protected Areas and Regional Development in Europe: Towards a New Model for the 21<sup>st</sup> Century. In: I. Mose (ed.) *Protected Areas and Regional Development in Europe – Towards a New Model for the 21st Century*, p 233-246. Aldershot and Burlington.

## Tourism and conservation on private land in Italy

Sonia Trampetti<sup>1, 2</sup>, Ralf Buckley<sup>2</sup>

Keywords: protected area, biodiversity, landscape, management

Conservation on private land is one important component of global efforts to improve landscape-scale connectivity, so as to counter increasing threats to biological diversity. Such threats include habitat clearance and fragmentation, poaching and rare-species trafficking, and climate change (Buckley 2008). Incentives, mechanisms and outcomes of conservation on private land differ greatly between countries. In some regions, tourism provides a significant source of funding and political support (Buckley 2009a, Buckley 2009b). Conservation-oriented non-government organisations (NGO's) have been particularly active in leading such initiatives in both developing and developed nations. International NGO's are best known, but local NGO's have also played a major role in some countries.

Here we introduce four such organisations which appear to have played a successful part in using tourism to promote conservation on private land in Italy. These are: LIPU (2010), the Italian League for Bird Protection, Legambiente (2010), an Italian association for the environment, WWF Italy (2010), part of the global World Wide Fund for Nature, and Fattorie del Panda (2010), a network of holiday farms. The information presented below is publicly available (in Italian) on the websites and marketing materials of the organisations concerned.

Italy has biodiversity worth conserving. Within Europe for example, it has the second highest number of native higher plant species (after Spain). One tenth of its animal species, and 13% of its plant species, are endemic. It also has populations of a number of rare bird and mammal species. As in most of the Old World, Italy has a long history of human civilisation and land use. It does not have large wilderness areas as in the New World, but a mosaic of land managed for a variety of purposes. Therefore, as elsewhere in Europe, private land is particularly important for biodiversity conservation.

We have four important conservation-oriented non-government organisations (NGO's):

- LIPU focuses on the conservation of bird species. It manages 47 reserves located in various parts of the country which are strategically significant for bird migration and breeding. Most of these reserves are wetlands and most, but not all, are on private land. They support populations of waders and waterbirds such as herons and egrets, and the rare Eurasian Bittern which is a birdwatcher's trophy species.
- Legambiente is an umbrella association of over a thousand smaller local environmental groups throughout Italy, first formed in 1980. Its principal activity is lobbying, but it also manages 55 small reserves spread across 10 regions and totalling 10,000 ha in area. Most of these reserves are targeted for the conservation of remnant wild populations of particular rare and endemic plant species, which go under common names such as carnations and catchflies, stonecrops and spurges, naked ladies and the Venus' looking-glass orchid. Legambiente has also sought external project funding on occasion for conservation of wolf, bear and chamois in mountain areas.
- WWF manages more than 100 reserves in Italy, totaling around 30,000 ha and including both private and public lands. The majority are intended to contribute to conservation of rare or endangered plant and animal species. Some of the better-known species include goshawks and golden eagles, rare frogs and newts, woodpeckers and wanderer butterflies, orchids and

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<sup>1</sup> CNR-IBIMET National Research Council - Institute of Biometeorology, Via Caproni, 8, 50145 Firenze (Italy)  
[s.trampetti@ibimet.cnr.it](mailto:s.trampetti@ibimet.cnr.it)

<sup>2</sup> International Centre for Ecotourism Research, Griffith University, Australia, PMB 50 Gold Coast Mail Centre,  
[r.buckley@griffith.edu.au](mailto:r.buckley@griffith.edu.au)



heathers, and less conspicuous but equally important species such as rare beetles and lichens.

- Fattorie del Panda is a network of 72 private holiday farms which are managed directly by the farm landowners. The network was established in 2003 through an agreement between WWF Italy, the national parks federation Federparchi, and the farm-tourism promotion organisation Agritur. It is essentially an Italian equivalent of the better-known French association Gites Panda. Its main aims are to involve farmers and educate farm tourists about biodiversity conservation. Many of the farms are adjacent to reserves.

For each of these four organizations, the basic mechanism is an agreement between the NGO and the private landowner. This may include a land-tenure component which would be known in Anglophone legal systems as a covenant, an easement, or a voluntary conservation agreement. Alternatively or additionally, it may include a management agreement, under which the NGO carries out on-ground conservation management on the land concerned.

Each of these organizations makes significant contributions to conservation on private land in Italy. The total area is small, but a number of rare and endemic species are involved. Each also employs tourism as one of its tools, both for funding and for education, but not at all the sites it manages. Since many of these arrangements are at a small and local scale and there are also privacy considerations, there are as yet no readily available data on the detailed role of tourism at each individual property. To obtain such data would require a property-by-property survey. This would be a valuable exercise for future research.

## References

- Buckley, R. 2008. World Wild Web: Funding connectivity conservation under climate change. *Biodiversity* 9(3,4): 71-78.
- Buckley, R.C. 2009a. Parks and tourism. *PLoS Biol* 7(6): e1000143.
- Buckley, R.C. 2009b. *Ecotourism: Principles and Practices*. CAB International, Oxford, 368pp.
- LIPU, 2010. Lega Italione Protezione Uccelli. <http://www.lipu.it>, accessed 28 Jan 2010.
- Legambiente, 2010. Natura e Territorio. <http://www.legambiente.eu/areeProtette/NeT.php>, accessed 28 Jan 2010.
- Fattorie del Panda, 2010. Panda Holiday Farms. <http://www.fattoriedelpanda.net/index.php?lang=english>, accessed 28 Jan 2010.
- WWF Italy, 2010. Le Oasi WWF. [http://www.wwf.it/client/default\\_oasi.aspx](http://www.wwf.it/client/default_oasi.aspx), accessed 28 Jan 2010.

## Effective park tourism planning – nature, actors, institutions

Luisa Vogt<sup>1</sup>

Keywords: park tourism, competitiveness, actor-centred institutionalism

The creation of protected areas in European peripheral regions is often connected with the hope of prosperous tourism development. Plassmann (2002) is even wondering whether protection can be called a form of development. Indeed, in the last 20-30 years, larger protected areas have been often considered to be regional management instruments that should serve nature protection and, at the same time, regional development (Hammer 2003). In protected areas the usage of the core zone is usually restricted to tourism as a non consumptive type of usage. So, regional development is mostly seen economically linked to tourism (Vogt & Job 2003).

Tourism, however, is usually not a panacea. This applies to park tourism as well. Job et al. (2009) show that the regional economic effects of park tourism in German national and nature parks should not be overestimated. The contribution of park tourism to the regional gross domestic product ranges from 0.3% (Eifel National Park, Kellerwald-Edersee National Park) to up to 10.7% (Lower Saxony Wadden Sea National Park). The oldest German national park, the Bavarian Forest National Park, accounts for only 2.9% of the regional gross domestic product.

The reasons for this are manifold. To put it provocatively, the importance of nature for tourism development is often overrated. An “intact nature” or “beautiful landscape”, characterising many protected areas, is insufficient to successfully develop tourism. So, much work has to be done if park tourism planning should focus on regional development, and if it doesn't limit itself to the management of visitors.

The present abstract is an argument statement and suggests two concepts as an initial position for an economically effective planning: first, a concept regarding the competitiveness of park tourism, and second, an heuristic directing the focus of planning and research on actors and institutions. In doing so, the paper picks up central ideas deriving from an empirical analysis of a trekking tourism project in a peripheral rural region, the Grande Traversata delle Alpi (GTA) in the Piedmont Alps (Northern Italy) (Vogt 2008), and transfers them to park tourism.

The first concept is based upon literature regarding the competitive positioning of tourism destinations (cf. e.g. Crouch & Ritchie 1999). The competitiveness of tourism projects is influenced by a large variety of factors. Factors based on a macro level can not be influenced within a specific region and have to be taken as given: the general tourism market situation (characterized by globalisation and global competition); the demand (in form of tourism trends, e.g. generally growing pretensions of tourists); the global environment (global developments such as the economic restructuring of the past years or the financial crisis); intervening variables (costs and price level, respectively, safety regarding criminality, natural disasters); the legal framework (e.g. laws regarding nature protection and protected areas); subsidies (e.g. for the development of a park planning authority and the tourism valorisation of park resources); and partly by accessibility.

Factors based on the micro and meso level which can be altered in a region are: partly accessibility; tourism attractions (natural and cultural landscape, history, material and immaterial culture); the tourism ‘hardware’ (facilities created for tourism) and ‘software’ (immaterial offers); the regional environment (the regional infrastructure and suprastructure); the service providers and

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<sup>1</sup> Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Research Unit Economics and Social Sciences, Subunit Regional Economics and Development, Zürcherstrasse 111, 8903 Birmensdorf, Switzerland, [luisa.vogt@wsl.ch](mailto:luisa.vogt@wsl.ch); South Westphalia University of Applied Sciences, i.GREEN - Institute for Green Technologies and Rural Development, Lübecker Ring 2, 59494 Soest, Germany

tourism firms; regional institutions (formal and informal ruling systems); and the management and marketing of the destination.

Following an inductive research process, guideline-based interviews with actors from the field of regional and tourism politics on different scales in Piedmont, and with GTA-accommodation providers, showed the necessity to explain the state of competitive factors by focussing upon the actors and institutions forming them. So, I adopted a heuristic of Scharpf (1997) from political sciences, and enhanced it in a tourism setting. Based upon this heuristic, I was able to explain the more decisive drivers of GTA's competitive position: the logics of actions of local, regional and supra-regional actors, the institutions and spatial structures - all influencing directly and indirectly the perceived and "consumed" tourism products and, linked to this, the competitiveness of the GTA and the impact on the regional economy (Vogt 2008).

This heuristic, oriented on actors and institutions, in connection with the first concept, should also suit park tourism settings and be in a position to explain the effectiveness of park tourism planning in terms of park tourism competitiveness. Based upon two hypothetical situations – a national park in a region with a long tourism tradition and a national park in the periphery – typical actor constellations and institutions are demonstrated. The understanding of the processes of actions that lead to specific states of competitiveness might serve to augment effectiveness of planning efforts.

## References

- Crouch, G.I. & Ritchie, J.R.B. (1999): Tourism, Competitiveness, and Societal Prosperity. In: *Journal of Business Research* (44/3), p 137-152.
- Hammer, Th. (2003): Grossschutzgebiete neu interpretiert als Instrumente nachhaltiger Regionalentwicklung. In: Th. Hammer (ed.): *Grossschutzgebiete – Instrumente nachhaltiger Entwicklung*. Munich, p 9-34.
- Job, H., Woltering, M. & Harrer, B. (2009): Regionalökonomische Effekte des Tourismus in deutschen Nationalparks (= *Naturschutz und Biologische Vielfalt* 76). Bonn-Bad Godesberg.
- Plassmann, G. (2002): Schutzgebiete – Forschungsgebiete. Fallbeispiel Alpen. In: *Revue de Géographie Alpine* (90/2), p 11-14.
- Scharpf, F.W. (1997): *Games Real Actors Play. Actor-Centered Institutionalism in Policy Research*. Boulder, CO/Oxford.
- Vogt, L. & Job, H. (2003): Strukturelle Differenzierung ausgewählter Alpen-Nationalparks hinsichtlich der nachhaltigen Inwertsetzung ihrer Schutzgüter. In: Th. Hammer (ed.): *Grossschutzgebiete – Instrumente nachhaltiger Entwicklung*. Munich, p 137-177.
- Vogt, L. (2008): Regionalentwicklung peripherer Räume mit Tourismus? Eine akteur- und handlungsorientierte Untersuchung am Beispiel des Trekkingprojekts Grande Traversata delle Alpi (= *Erlanger Geographische Arbeiten, Sonderband* 38). Erlangen

## **Tools for recreation planning and monitoring - developing a spatial explicit model of people's nearby outdoor recreation use**

**Barbara Degenhardt<sup>1</sup>, Matthias Buchecker<sup>1</sup>, Felix Kienast<sup>2</sup>**

Keywords: nearby outdoor recreation, GIS-modelling, use-intensities, landscape planning

The demand for nearby outdoor recreation is increasing in modern societies. To provide to the public a high recovery-function in these limited areas, responsible managers like foresters or landscape planners, strive to offer optimal recreation conditions. However, this is not easily done, as the knowledge about people's decision relevant factors for selecting a recreational area is fairly limited. Accordingly, decision support tools which help identify potential strengths (e.g. fallow recreation ground) and limitations of an area management (e.g. crowding, inappropriate recreation infrastructure) are lacking. To support future nearby outdoor recreation management in peri-urban regions, we are developing a geographical prognostic model of nearby outdoor recreation use in several research steps. Our final model should be able to (a) identify the intensity of use-frequency of different parts of a nearby outdoor recreation area and (b) indicate the types of recreationists (e.g. activity, recreation goals) in the different parts of a nearby outdoor recreation area.

In the first research step, the aim was to identify the main factors for people for selecting peri-urban nearby recreation areas and to geographically model the use-frequency of an area with a geographical information system (GIS). We focused on the case study of the Swiss city of Frauenfeld (22,000 inhabitants) and its nearby recreation area (within 15 km from city centre). This case study included three research phases: In the inductive Phase 1, the main factors for selecting nearby recreation areas were identified through problem-focused interviews (N = 18) and literature analysis. In the deductive Phase 2, we collected data in a representative survey including a local map to indicate preferred recreation zones (N = 656) and tested with multiple regression analysis the significance of the factors identified in Phase 1. In the modelling Phase 3, we identified with poisson regression analysis the geographical features that best predicted people's recreation use intensities in the local map, and we developed a basic GIS-based prognostic model of peri-urban nearby outdoor recreation use.

The results of the first phase show that the selection of nearby recreation areas is mainly shaped by the distance to the place of residence, but also by other environmental and personal factors such as the length of river banks, the availability of paths, the presence of hill-tops, and area-knowledge as well as the kind of personal workloads (Degenhardt et al. 2010). To improve the basic model, a second research step is being carried out. The aim of the second research step is threefold: first, to check for the external validity of the basic model; second, to improve its prognostic validity; and third, to geographically extrapolate the basic model. The case study in the second phase is the Swiss city of St. Gallen (71,000 inhabitants) and its nearby outdoor recreation area (within 5 km from city centre). In order to reach the three aims, we are carrying out a representative survey in St. Gallen similar to the one in Frauenfeld. Additionally, we will carry out a visitor survey in selected parts of the nearby outdoor recreation area of St. Gallen. The extrapolated recreation model will be presented and its significance for recreation planning and recreation monitoring will be discussed.

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<sup>1</sup> Swiss Federal Institute for Forest, Snow and Landscape WSL, Group Social Science in Landscape Research, Zürcherstrasse 111, CH-8903 Birmensdorf, [barbara.degenhardt@wsl.ch](mailto:barbara.degenhardt@wsl.ch); [matthias.buchecker@wsl.ch](mailto:matthias.buchecker@wsl.ch)

<sup>2</sup> Group Landscape Modelling, Zürcherstrasse 111, CH-8903 Birmensdorf, [felix.kienast@wsl.ch](mailto:felix.kienast@wsl.ch)

## **References**

Degenhardt, B., Kienast, F. & Buchecker, M. (accepted). Einflussfaktoren des Naherholungsverhaltens im periurbanen Raum. Schweizerische Zeitschrift für Forstwesen SZF.

## Outdoor recreation in Sweden - Can local land use planning deliver the areas needed?

Lena Petersson Forsberg<sup>1</sup>, Rosemarie Ankre<sup>2</sup>, Lars Emmelin<sup>1</sup>

Keywords: planning, outdoor recreation, shoreline protection, zoning

Nature areas suitable for outdoor recreation can be protected in local land use plans and building permits - provided that local politicians consider outdoor recreation as an important issue. Otherwise, exploitation (such as development of housing and infrastructure) is often considered as more important (Petersson Forsberg 2009). There are several rationales for the protection of nature areas. A frequently used argument is public health (Swedish Government 2002, Verheij et al. 2008), but citizens' high demand for outdoor recreation can also be a justification (Fredman et al. 2008). Local land use plans affect privately owned land as well as public land, and the right of public access ensures public access to private land. The main purpose of this paper is to describe and discuss local land use planning as a tool for the protection of nature areas suitable for outdoor recreation. Zoning will be discussed as a possible solution to strengthen outdoor recreation in planning, with examples of the planning framework Recreation Opportunity Spectrum (ROS).

There is a notion that local land use planning can function as a tool for the protection of nature areas suitable for outdoor recreation (Swedish Government 2002). To some extent this might be true, as Swedish municipalities have a 'planning monopoly'. Thus the provision of recreation areas, other than nature reserves and national parks, rests with them. The comprehensive plan has a central role in the Swedish planning and building legislation; it covers the whole municipality and it is compulsory. It is a source of knowledge where the public interests are considered (Ankre 2007).

A survey conducted in spring 2008 (to all Swedish municipalities N=290) showed that most municipalities consider outdoor recreation as an important issue in their policy documents. However, in the adjustment to other interests during the processes of planning and permits, outdoor recreation is not necessarily the winning part. Thereby the status of outdoor recreation in local land use planning appears to be weak (Peterson Forsberg 2009). Reasons for this might be that comprehensive planning is not legally binding and almost half of the municipalities do not keep their comprehensive plans up to date (National Board of Housing, Building and Planning 2009). Another explanation might be the 'compact city'; a current planning ideal where exploitation of green areas and brownfields is promoted with sustainability arguments (Neuman 2005).

The legal frame of shoreline protection<sup>3</sup> has recently been revised to better suit diverse parts of Sweden with various conditions for exploitation. The right to grant exemptions from the shoreline protection has thereby moved from a regional to a municipal level. This has led to highly divided opinions of what the effects on public access to shores might be. Interest groups<sup>4</sup> fear an increased exploitation of the shore, leading to a decreased public access (Alarik et al. 2008).

In 2007 and 2008, questionnaire surveys were conducted addressed to Swedish citizens. Results showed that 15% of the respondents perceive a lack of nature areas suitable for recreation. Furthermore, the respondents express strong opinions that the municipalities, instead of the state, should have greater influence on the protection of shorelines (Fredman et al. 2008). In a questionnaire survey (2007) directed to visitors and second home owners in the Blekinge

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<sup>1</sup> The Swedish School of Planning, Blekinge Institute of Technology, SE-371 79 Karlskrona, Sweden, [lana.peterssonforsberg@bth.se](mailto:lana.peterssonforsberg@bth.se), [lars.emmelin@bth.se](mailto:lars.emmelin@bth.se)

<sup>2</sup> European Tourism Research Institute/Mid-Sweden University, SE- 831 25 Östersund, Sweden, [rosemarie.ankre@etour.se](mailto:rosemarie.ankre@etour.se)

<sup>3</sup> The shoreline protection safeguards both public access to the shore and biodiversity 100-300 m from average water level

<sup>4</sup> The Swedish Society for Nature Conservation (SSNC), Friluftsförbundet (The Swedish Association for outdoor life) and The Swedish Tourist Association.

archipelago, Sweden, almost ¼ of the respondents had experienced that buildings, fences or activities had prevented them from moving freely in areas close to the shore (Ankre 2009).

The purpose of the planning framework Recreation Opportunity Spectrum (ROS) is to divide a region into geographical perceivable areas with various contents. The separation is both spatial and qualitative. How to implicate and use the ROS is not an obvious task (Ankre 2007). So far, in the application of the ROS in Sweden, the dilemma is the opposition between nature conservation and use, and other forms of recreation development. Also, because of the public right of access, there are other prerequisites for regulations of activities and admittance, which requires an adjustment of the ROS to Swedish conditions (Emmelin et al. 2005). However, this will be aided with the current strengthening of the comprehensive planning, along with zoning and the increased support of knowledge to planners and decision makers. Thus, in the Swedish context, the need for new policies is less than the need for a more stringent implementation of the already existing. What effects on public access the legal revision might bring is too early to say, but the use of local land use planning as a tool to protect the public access can be crucial.

## References

- Alarik, O., Karlsson, M., Håstad, T. & Silvander, U. (2008). *Strandskyddet, Allemansrätten utmed våra stränder- snart ett minne blott?*, [Elektronik] Available: [http://www.naturskyddsforeningen.se/upload/Foreningsdokument/Rapporter/rapport\\_strandskydd\\_ny.pdf](http://www.naturskyddsforeningen.se/upload/Foreningsdokument/Rapporter/rapport_strandskydd_ny.pdf), ISBN: 91 558 1701 7. [Retrieved 2008-11-12]
- Ankre, R. (2007). *Understanding the visitor. A prerequisite for coastal zone planning*. Licentiate thesis of the Dept. of Spatial Planning. Karlskrona: Blekinge Institute of Technology.
- Ankre, R. (2009). *Zoning in a future coastal biosphere reserve Planning for tourism and outdoor recreation in the Blekinge archipelago, Sweden*. Working paper 2009:1. Östersund: ETOUR Mid Sweden University.
- Emmelin, L., Fredman, P. & Sandell, K. (2005). *Planering och förvaltning för friluftsliv – en forskningsöversikt*. Report 5468. Stockholm: Swedish Environmental Protection Agency.
- Fredman, P., Karlsson, S-E., Romild, U. & Sandell, K. (ed.) (2008). *Vara i naturen, varför eller varför inte? – delresultat från en nationell enkät om friluftsliv och naturturism i Sverige*, Research program Outdoor Recreation in Change, Report nr 2, Örnsköldsvik.
- National Board of Housing, Building and Planning (2009). *Uppsikt enligt plan- och bygglagen – Utvecklingen i landet inom plan- och byggväsendet år 2008*, Karlskrona.
- Neuman, M. (2005). The Compact City Fallacy. In: *Journal of Planning Education and Research* (25), p 11-26.
- Petersson Forsberg, L. (2009). *Friluftsliv och naturturism i kommunal planering - delresultat från en webbaserad enkätundersökning våren 2008*, Research program Outdoor Recreation in Change, report nr 8. Also available as research report 2009:03. Blekinge Institute of Technology. Karlskrona.
- Swedish Government. (2002). *En samlad naturvårdspolitik*. Government writing to Parliament (Skr 2001/02: 173) Stockholm 14th March 2002.
- Verheij, R.A., Maas, J. & Groenewegen, P.P. (2008). Urban Rural Health Differences and the Availability of Green Space. In: *European Urban and Regional Studies* 2008 (15/4), p 307-316.

## Demand-driven recreation planning in progress

Sjerp de Vries<sup>1</sup>, Martin Goossen<sup>1</sup>

Keywords: outdoor recreation, regional supply, demand, quality, variation

Within the outdoor recreation domain several visitor management frameworks exist to aid managers and planners, such as: Recreation Opportunity Spectrum (ROS), Limits of Acceptable Change (LAC), Visitor Experience and Resource Protection (VERP) (McCool et al. 2007). Applying such a framework frequently starts with making an inventory of the recreation opportunities offered by and within a set of destination areas. Quite often the set of areas is limited to the public lands managed by the agency that performs or ordered the inventory. This is understandable from a managerial perspective, given that the ability of the agency to act upon the outcomes of the inventory is limited to these same areas. However, from the perspective of the recreationist such a limitation may be less relevant. Making an inventory of all the opportunities within a certain distance from home seems to make more sense. This better represents the choice set: the set of opportunities from which recreationists select a destination to go and visit. Moreover, it would be helpful if demand and supply were inventoried in comparable units (Garber-Yonts 2005); This enables assessing the local match of demand and supply.

In the Netherlands, planning tools for basic recreational activities such as walking and cycling in a natural environment, have been developed (see e.g. De Vries & Goossen 2002). These tools assess whether the local supply of such green recreational opportunities is large enough to accommodate the local demand for these activities, and if not, how much additional supply is needed to correct the situation. Although the tools include several normative choices that have a large influence on the outcomes, the calculated shortages have been empirically linked to likely negative consequences of real shortages. For example, lower levels of participation, less satisfaction with the local supply of opportunities (Van der Aa & Berkers 2008), especially less peace and quiet to be experienced during visits (De Vries 2005), and compensatory behaviour in the form of more overnight stays per year for holiday purposes (De Vries & Sijtsma, in preparation).

So the tools perform a regional analysis, with demand and supply measured in comparable units. Moreover, the outcomes have been validated, at least to some extent. However, since the tools were originally aimed at formulating and substantiating spatial claims for recreational purposes, they focus on quantities of land (hectares), with accompanying carrying capacities. In other words: they ignore the qualitative differences between recreation opportunities. From a demand perspective it is known that people like a full spectrum of opportunities. Furthermore policy makers would like to know whether it is better to invest in more opportunities (allocating new recreation areas), or in improving the quality of existing opportunities (redesigning present areas) and it is at this point that both approaches may benefit from each other. The aforementioned visitor management frameworks pay considerable attention to the experiences offered by the different categories of opportunities, and how to determine them. However, a practical problem might be that the suggested assessment procedures often require labour intensively activities and/or detailed knowledge of the area to be inventoried (Joyce & Sutton 2009); A method that is less costly is more likely to be used. If it is also more objective and robust, and its outcomes are validated, these outcomes are also more likely to be accepted, or at least harder to ignore, by different stakeholders. This is quite important in a European urban context, where ownership tends to be rather fragmented (Haider 2006) and the pressure on space is high. Research to develop an improved tool that is demand-driven in a qualitative as well as in a spatial sense was commissioned by the Dutch ministry of housing, spatial planning and the environment.

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<sup>1</sup> Alterra, Wageningen UR, P.O. Box 47, 6700 AA Wageningen, The Netherlands., [Sjerp.deVries@wur.nl](mailto:Sjerp.deVries@wur.nl), [Martin.Goossen@wur.nl](mailto:Martin.Goossen@wur.nl)



The study takes the AVANAR model as its point of departure (De Vries et al. 2004). AVANAR is a tool that is presently used by the Netherlands Environmental Assessment Agency (PBL) for monitoring purposes. It has been modified to take composition of the available supply of opportunities into account. In a first attempt, the existing supply of opportunities is classified according to three criteria that are generally considered important: scenic beauty, peace & quiet, variation. Scenic beauty is based on another model, GLAM (version 2), with naturalness as an important defining characteristic (De Vries et al, 2007). Peace & quiet is assessed at a choice set level by means of the original AVANAR-outcomes. Finally, variation, is also determined at the choice set level, and for the moment based on the type of land use. Preliminary outcomes will be presented for several cities. Issues regarding the (ongoing) further development of the improved tool will be discussed, among other things taking the differentiation at the demand side into account too.

## References

- De Vries, S. (2005). Green recreation opportunities and urban liveability. In: Gallis, Ch.Th. (Ed.). *Forests, trees and human health and well-being; proceedings of the 1st European COST E39 Conference, October 2005, Thessaloniki, Greece*: Siokis. Pp. 191-201.
- De Vries, S. & Goossen, C.M. (2002). Predicting transgressions of the social capacity of natural areas. In: Arnberger, A., Brandenburg, C. & Muhar, A. (eds.) *Proceedings of the Conference on the Monitoring and Management of Visitor Flows in Recreational and Protected Areas. Vienna (Austria), January 30 – February 2, 2002*.
- De Vries, S., Hoogerwerf, M. & Regt, W.J. de (2004). AVANAR: een ruimtelijk model voor het berekenen van vraag-aanbodverhoudingen voor recreatieve activiteiten; basisdocumentatie en gevoeligheidsanalyses. [AVANAR: a spatial model for calculating demand and supply ratios for recreational activities; technical documentation and sensitivity analyses.] *Alterra-rapport 1094*. Wageningen: Alterra.
- De Vries, S., Roos-Klein Lankhorst, Buijs, A.E. (2007). Mapping the attractiveness of the Dutch countryside; a GIS-based landscape appreciation model. *Forest, Snow and Landscape Research*, 81 (1/2), pp. 43-58.
- De Vries, S. & Sijtsma, F. (in preparation). *Recreation or tourism: local recreation opportunities and holiday behaviour*.
- Garber-Yonts, B.E. (2005). Conceptualizing and measuring demand for recreation on national forests: a review and synthesis. Gen. Tech. Rep. PNWGTR-645. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 40 p.
- Haider, W. (2006). North American Idols: Personal Observations on Visitor Management Frameworks and Recreation Research. In: Siegrist, D., Clivaz, C., Hunziker, M. & Iten, S. (eds.) (2006). *Exploring the Nature of Management. Proceedings of the Third International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas. Rapperswil (Switzerland), 13-17 September 2006*.
- Joyce, K. & Sutton, S. (2009). A method for automatic generation of the Recreation Opportunity Spectrum in New Zealand. *Applied Geography*, 29 (3): 409-418
- McCool, S.F., Clark, R.N. & Stankey, G.H. (2007). An assessment of frameworks useful for public land recreation planning. Gen. Tech. Rep. PNWGTR-705. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 125 p.
- Van der Aa, B. & Berkers, R. (2008). *Tekorten aan recreatiemogelijkheden: model of werkelijkheid? [Shortages of recreational opportunities: model or reality?]* Den Haag: Kenniscentrum Recreatie.

## Using Internet technology to map community values & develop management plans for the Victorian Alpine Parks, Australia.

Delene Weber<sup>1</sup>, Greg Brown<sup>2</sup>, Louise Rose<sup>3</sup>, Dino Zanon<sup>4</sup>,

Keywords: public-participation, GIS, public engagement, Parks Victoria, wiki, blogs

Located in southeast Australia, the Victorian Alpine parks comprise over 860,000 hectares and includes some of the most beautiful and popular protected areas in Australia. The five major national parks, historic sites and a wilderness area contain spectacular mountain scenery, diverse flora and fauna, encompass a rich and colourful cultural heritage, and provide outstanding recreational opportunities including alpine skiing, bushwalking and canoeing. However, the existing plan for this area has not been updated since 1992. Since that time, many significant changes have occurred, including an increase in recreation demand, changing community expectations, changes in administration, climate change, cessation of cattle grazing and wildfires.

This presentation explains the process used to engage the public in the development of a new Greater Alpine National Parks Management Plan. The project used public participatory GIS (PPGIS) to inform the draft management. An interactive website ([www.weplan.parks.vic.gov.au](http://www.weplan.parks.vic.gov.au)) was developed as the centerpiece of an effort designed to engage a broader demographic than has traditionally been drawn to submitting formal comments or attending public information meetings. While traditional approaches were still used, the project used PPGIS, blogs, wikis and twitter to engage the public and try to develop a sense of ownership in the final plan. Previous work with the same park agency suggested visitors wanted to participate in park planning decisions but lacked awareness pertaining to opportunities and demanded flexible, convenient approaches, such as web-based discussion forums and web-based surveys (Weber 2007).

Following interception of on-site visitors, over 350 respondents provided information about their experiences and impacts they had observed through an interactive web-based PPGIS system. Generally participants found the web-site very easy to navigate. Respondents were provided with a virtual demonstration and then proceeded to click on relevant maps and drag and drop icons representing various experiences and impacts onto the appropriate location. Key objectives of this part of the study were to:

- Increase knowledge and understanding about the types of experiences and perceived resource impacts that can be effectively mapped using an internet based PPGIS system for a large geographic area.
- Identify the spatial location of park experiences, impacts, special places, and concerns with facilities/services in the Greater Alpine Region.
- Increase knowledge about the relationships between perceived impacts and experiences
- Increase understanding of the differences and similarities between visitor and Parks Victoria staff perceptions of resource impacts.
- Assess the cost effectiveness of developing additional PPGIS systems for other parks in Victoria.

The results revealed that aesthetics/scenery and overnight experiences are an important part of the visitor experience in all parks. The mix of park experiences differed between national parks and historic areas, with national parks providing higher levels of scenery, solitude, and opportunities for

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<sup>1</sup> University of South Australia, School of Natural and Built Environments, Mawson Lakes SA 5095, Australia, [Delene.weber@unisa.edu.au](mailto:Delene.weber@unisa.edu.au)

<sup>2</sup> University of Queensland, School of Geography, Planning and Environmental Management, Brisbane, QLD 4072, Australia, [g.brown@uq.edu.au](mailto:g.brown@uq.edu.au)

<sup>3</sup> Team Leader Visitor Research and Development, Parks Victoria, Level 10 535 Bourke St, Melbourne, VIC 3000, Australia, [dzanon@parks.vic.gov.au](mailto:dzanon@parks.vic.gov.au)

<sup>4</sup> Planner, Parks Victoria, Level 10 535 Bourke St, Melbourne, VIC 3000, Australia, [lrose@parks.vic.gov.au](mailto:lrose@parks.vic.gov.au)

physical activity and historic areas providing opportunities for social interaction, learning/discovery, and higher levels of crowding. National parks in the region tended to provide similar experiences. Historic areas were relatively high in the learning/discovery and crowding experiences relative to national parks. Park experiences were mapped at a much higher rate (an average of 13 markers per respondent) than perceived environmental impacts (an average of 2 markers per respondent). The mapping of perceived impacts differed between visitors and Parks Victoria staff. Staff identified more track and campsite impacts while visitors identified relatively more noise, rubbish, wildlife, and water impacts. The methodology was very successful in establishing the types of experiences visitors were getting and where their concerns were. In terms of cost effectiveness, the large geographic area did mean the on-site surveying was expensive, but use of park staff to collect information, or using panels or pre-existing email lists to contact users would make this methodology considerably less expensive. It provides excellent visual data such as maps and radar charts to show precise locations of where additional attention may be warranted, or how visitor differ according to specific localities.

Parks Victoria used the PPGIS data to provide some base information and a table of contents for the first draft which was then created by a wiki, thus allowing multiple stakeholders to collaborate on editing it. The draft document was open for public comment for a period of 60 days before the final draft, also created by wiki, was made available for comment. Blogs were used throughout the project to allow any stakeholders to express their thoughts, ideas and opinions. With over 10,000 reads of the blogs posts, this method has proven to be a popular means of expression. While the public were still encouraged to speak to rangers and attend community open houses, the use of technology improved our ability to communicate with stakeholders and to better understand their patterns of use of the parks and their vision for its future.

## **References**

Weber, 2007. Healthy Parks, Healthy People: Improving our understanding of visitors to Wilsons Promontory National Park. Sustainable Environments Research Group, University of South Australia.

## **Note**

A detailed report on this study can be found at the Landscape Values Institute website: [www.  
http://www.landscapevalues.org/](http://www.landscapevalues.org/)

# Framework of indicators for evaluation of long-term environmental, social and economic changes in Czech National Parks

Martin Čihař<sup>1</sup>, Viktor Třebický<sup>2</sup>

Keywords: sustainability indicators, tourism monitoring, national parks, sustainable development

The main goal of this paper is to introduce a framework of aggregated indicators for sustainability evaluation and tourism monitoring of Czech National Parks and similar protected areas (e.g. protected landscape areas or biosphere reserves). Indicators are useful for assessing management effectiveness of protected areas (Hockings 2006). Employing indicators in tourism management of protected areas is recommended by several relevant international organizations (IUCN et al. 1991, WTO – UNEP 1992). Moreover, the proposed headline indicators describe and analyse trends and mutual relationships of the three pillars of sustainable development – environmental, social and economic (Guinomet 1999, Parris 2003). They allow users/target groups (protected area administrators, civil servants, academics, general public and NOGs) to measure and assess the quality of life of local communities and at the same time the quality of local ecosystems and the environment. To cover all aspects of protected areas' sustainability and tourism monitoring, the indicators were divided into eight categories. For number of indicators in each category see table 1.

Table 1: number of indicators in each category

Category	No. of indicators
Abiotic environment	6
Biotic environment	3
Management of nature protection	4
Socio-demographic structure	5
Legal and instructional framework	3
Economic structure	3
Infrastructure	4
Tourism	4
<b>Total</b>	<b>32</b>

Data for construction of indicators are provided in part by the existing national and National Park's data sources, statistics and databases, and in part by a long-term monitoring of tourism exploitation of National Parks (Čihař 2006). The monitoring has been carried out by means of research implemented in four Czech National Parks and other protected areas by the Institute for Environmental Studies, Faculty of Science, Charles University since 1996. Standardized surveys focus on three major stakeholder groups in National Parks: visitors, local people and local policymakers. The survey methods include interviewing a random sample of visitors by using an extensive questionnaire (Disman 2000) and counting visitors in the central part of National Parks. Results are transformed into indicators describing different visitors' characteristics (i.e. socio-demographic characteristics, environmental awareness or spending) and visitors' numbers in selected profiles. Long-term monitoring (1996-2009) enables us to create a time series of data and to compare results from four Czech National Parks and three stakeholder groups.

Frameworks of National Park's indicators can be used as a basis of discussion about the future of the national park and its proper management. The database of indicators results is available via the internet at [www.management-chu.cz](http://www.management-chu.cz). The results of monitoring form a basis for an effective

<sup>1</sup> Charles University in Prague, Faculty of Science, Institute for Environmental Studies, Benatska 2, 128 01 Prague 2, Czech Republic, [mcihar@natur.cuni.cz](mailto:mcihar@natur.cuni.cz)

<sup>2</sup> TIMUR, Praha, Czech Republic, [viktor.trebicky@timur.cz](mailto:viktor.trebicky@timur.cz)

environmental policy and decision making in large-scale protected areas. They are also helpful in harmonizing typically conflicting interests of nature protection and tourism development. Finally, they can be connected with international activities, assessment and membership of National Parks and wilderness areas – e.g. Europarc, Europa-Diplom or PAN Parks. To conclude, we found that indicators results, presented in proper way, enable different stakeholders groups in national parks to communicate and cooperate.

## References

- Čihař, M., Štursa, J., Třebický, V. (2002): Monitoring of tourism in Czech National Parks. In *Monitoring and Management of Visitor Flows in Recreational and Protected Areas* (Eds. A. Arngerger, C. Brandenburg, A. Muhar), Institute for Landscape Architecture and Landscape Management, Bodenkultur University Vienna, pp: 240 – 245.
- Čihař, M., Najmanová, K., 2006: Evaluation of environmental management in the Krkonoše National Park by the local people in selected resorts (Špindlerův Mlýn, Rokytnice nad Jizerou, Pec pod Sněžkou). In *Geoekologické problémy Krkonoš. Sborník abstraktů referátů a posterů. Krkonošský národní park, Karkonoski park narodowy, MaB, Vrchlabí*, pp. 50-51.
- Disman, M. (2000). *Jak se vyrábí sociologická znalost - Příručka pro uživatele*. UK, Karolinum Praha.
- Guinomet, I. (1999). *The relations between indicators of sustainable development, An overview of selected studies, background papers for 5th meeting of ISD group*, New York.
- Hockings, M., Stolton, S., Leverington, F., Dudley, N. and Courrau, J. (2006). *Evaluating Effectiveness: A framework for assessing management effectiveness of protected areas*. 2nd edition. IUCN, Gland, Switzerland and Cambridge, UK.
- IUCN, UNEP, WWF (International Union for Conservation of Nature) (1991). *Carrying for Earth. A Strategy for Sustainable Living*. Gland. Switzerland.
- Parris, T.M. and Kates, R.W. (2003): Characterizing and measuring sustainable development. *Annu. Rev. Environ. Resour.* 2003. 28:13.1–13.28
- Třebický, V., Čihař, M. (2006): Analysis of nature-based tourism in the Sumava National Park, Czech Republic: 1997-2004. In Siegrist, D., Clivaz, D., Hunziker, M., Iten, S. (eds.): *Exporing the nature of management, Switzerland, Rapperswil*. pp. 228 – 232. ISBN 3-033-00935-2
- WTO - UNEP (World Tourism Organization) (1992): *Guidelines: Development of National Parks and Protected Areas for Tourism. Tourism and the Environment Technical Report Series (13)*. World Tourism Organisation, Madrid.

## Biodiversity action plans as a way towards local sustainable development

Aysegul Cil<sup>1</sup>

Keywords: biodiversity and ecosystem services, local biodiversity action plan (LBAP), eco-tourism, Western Balkans

Local action for biodiversity is essential for ensuring better conservation status for biodiversity and maintaining ecosystem services. After years of conflict and instability, countries in Western Balkans are progressing towards more stability and increasing quality of life. Many local communities continue to face high levels of poverty and unemployment, especially in rural areas. Western Balkans is home to a large number of exceptional habitats and species, including many endemics. These include mountain mixed forests home to Brown Bear, Lynx and Wolf; wetlands that act as a refuge to pelicans, ducks and herons; but also traditionally and extensively used agricultural landscapes of high natural value. In many places this rich biodiversity is still relatively untouched and represents an outstanding asset for local sustainable development. However, biodiversity is under serious threat in the Western Balkan Region, particularly in farmland, mountain regions, and coastal zones. The loss of biodiversity happens primarily because of land use changes, urban sprawl, infrastructure development, acidification, eutrophication, desertification, overexploitation, the intensification and/or abandonment of agriculture, tourism development and climate change. Coastal zones, rivers and wetlands face the most threats in the short term; in the long term, mountain meadow ecosystems are also vulnerable. The root causes of these threats are: changes in economic activities, socio-political factors, failure of conventional economics to recognise economic values of natural capital and of the ecosystem services. Biodiversity is an important asset that the region is bringing to the EU, but it is threatened by the rapid economic development and societal changes of the last decade (UNDP, 2009). There is a clear need for a more flexible, people-oriented and visionary approach for sustainable use of the natural areas.

This paper provides an approach namely “Local Biodiversity Action Plans (LBAP)” as a part of an international project<sup>2</sup>, which is a comprehensive and integrated approach to biodiversity and ecosystem services for the sustainable development of rural municipalities and their local communities in the Western Balkans. Together with the local stakeholders, selected municipalities do so by establishing LBAPs as a process that involves stakeholder participation, communication and awareness raising, identifying pro-biodiversity business opportunities (i.e. sustainable eco-tourism), and developing partnerships. The project focuses on ten small municipalities: Peshkopia (Albania), Goražde and Srebrenica (Bosnia and Herzegovina), Gostivar and Mavrovo - Rostuša (Macedonia), Pljevlja and Žabljak (Montenegro), Bajina Bašta and Čajetina (Serbia), and Dragash (Kosovo). Municipalities are playing a key role in promoting and preserving biodiversity for several reasons. Ecosystems with greater biodiversity are more resilient to physical disturbances, natural disasters, and invasive species. Diverse ecosystems provide ecological services that are expensive to replicate, like air and water purification, attract pollinators, and provide natural material for advances in science and medicine. Ecologically rich areas also provide a great aesthetic value for recreation and reinforce a sense of place for residents and tourists, bringing a bit of nature into the area. The approach taken in the context of this project introduces biodiversity and the benefits it provides to local communities in terms of goods and services (e.g. pollination, water purification, sustainable forestry, eco-tourism, etc) as a cross cutting issue in the local development policies and actions. Through the development of the LBAPs, which on the one hand identify the main biodiversity conservation issues (red list species, ecosystems at risk, future pressures) and on the other hand search for opportunities for sustainable tourism, development associated with their conservation can be achieved. A Local Biodiversity Action Plan (LBAP) sets

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<sup>1</sup> Programme Manager, Nature and Society, ECNC - European Centre for Nature Conservation  
P.O. Box 90154, 5000 LG Tilburg, The Netherlands, [cil@ecnc.org](mailto:cil@ecnc.org)

<sup>2</sup> Lead by European Centre for Nature Conservation (ECNC) in cooperation with the Regional Environment Center (REC) and its country offices in Western Balkans funded by the Finnish Ministry of Foreign Affairs

out the necessary steps that should be taken by a municipality to protect, plan, manage and make use of its local nature and wildlife now and in the future.

The key success factor of the plans is the involvement of the local people that help to carry out the actions it contains. This framework is designed for conserving biodiversity at a local level and for ensuring public participation and awareness and community involvement. One of the clear benefits of having such a plan is to provide better quality of life and human well-being in a local area. For example, increased quality of natural life can generate more local investment through attracting more visitors in the region. As well as providing a source of cultural and spiritual development, biodiversity was seen as a source of local pride and heritage for future generations. Therefore it is a cornerstone for many local traditions that connects people and biodiversity.

### **References**

- Secretariat of the Convention on Biological Diversity (2004) The Ecosystem Approach, (CBD Guidelines) Montreal: Secretariat of the Convention on Biological Diversity 50 p
- Guide to implementing local environmental action programs (2000), by Markowitz, P., The Regional Environmental Center for Central and Eastern Europe, Hungary.
- Biodiversity matters for sustainable development (2009), Eds: Snethlage, M. and Cil, A., ECNC, The Netherlands
- ECNC (in prep.), A Handbook for Local Biodiversity Action Plans, Tilburg, The Netherlands
- UNDP, 2009; <http://europeandcis.undp.org/environment/seeurope>

## **Towards sustainable land use planning for tourism destinations: clients views about the tourism development in Finnish Lapland**

**Liisa Tyrväinen<sup>1</sup>, Eija Hasu<sup>2</sup>, Harri Silvennoinen<sup>1</sup>**

Keywords: nature-based tourism, sustainable tourism, land-use planning, tourism services

Nature-based and eco-tourism are considered to be the most rapidly growing tourism sectors, both of which increase the interest in rural areas in Europe such as Finnish Lapland. Recreational opportunities located in scenic landscapes, as well as within protected areas, form the basis for tourism attractions to nature tourism destinations. In Lapland, the largest tourism resorts are typically located close to national parks and other protected areas and a large part of the clientele visiting nature areas are accommodated in tourism resorts.

The rapid growth of tourism and development plans of tourism centres in Lapland have raised important issues, such as how urban the built environment in tourism resorts should be in nature tourism destinations and how sustainability can be achieved in planning and construction practices. The tourism literature contains a wide variety of land development policies and planning strategies for achieving greater levels of eco-efficiency. In planning and managing nature-based tourism destinations, the challenge is to choose and implement eco-efficient strategies that appeal to the tastes and interests of tourists, while also meeting the criteria for cost-efficient solutions in production of the tourism services. The key questions are 'how to combine energy efficiency and sustainable building, landscape and nature values, housing preferences and tourism services in the planning of tourism destinations?'

Today, the research information on how foreign and domestic tourists assess development options of tourism resorts in northern Europe is limited. Understanding the tourist aspirations is even more complicated if we are to recognise the rather fragmented customer desires and needs. Changing lifestyles and values have had an impact on tourism segmentation; one tourist may represent several different leisure motives, and even their values may present inconsistencies to certain extent. Therefore, the environmental expectations and housing preferences during a visit may vary among the clientele.

This presentation reports the preliminary results of a large survey studying the travel motives of foreign and domestic nature-based tourists, the assessment of the current sustainability practises in the tourism destinations, and an evaluation of various options for tourism development in terms of scale and density. Moreover, the suitability of various types of renewable energy systems that could be installed in Lappish tourist resorts have been assessed by respondents. The data consisted of more than 1200 interviews conducted on-site in Lapland, Finland during 2009–2010. Moreover, responses were collected via an internet-survey. The research was conducted as part of a larger project called 'Land Use Planning for Sustainable Tourism Destinations', which is a joint project between the Departments of Architecture and Energy Technology at the Aalto University School of Science and Technology and the Finnish Forest Research Institute.

The presentation discusses what type of solutions are needed to implement and encourage sustainable practises in tourism development areas in Lapland. Moreover, how willing are the current and the potential clients to choose sustainability as a motivator and an attribute for the destination choice will be discussed.

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<sup>1</sup> Finnish Forest Research Institute (Metla), Box 16, FI-96301 Rovaniemi, Finland [liisa.tyrvainen@metla.fi](mailto:liisa.tyrvainen@metla.fi), [harri.silvennoinen@metla.fi](mailto:harri.silvennoinen@metla.fi)

<sup>2</sup> Aalto University of Science and Technology, Department of Architecture, [Eija.hasu@tkk.fi](mailto:Eija.hasu@tkk.fi)



The results suggest that both domestic and international tourists consider the implementation of various social and ecological sustainability principles important at their travel destination. However, the willingness to act according to the sustainability principles during their stay in Lapland varies among the clientele. Domestic tourists in particular, are somewhat reluctant to use public transport to arrive to the tourism destination as well as to minimize the use of water and energy during their visit. Moreover, the domestic tourists were more hesitant to accept wind power as a solution to energy production nearby a tourism resort due to its negative visual impact on landscape.

The results suggest that the current land-use planning policies aiming at the creation of compact urban-like tourism resorts, do not meet the expectations of large share of domestic tourists. They appreciate small-scale accommodation with an immediate access to natural surroundings, peace and quietness and even direct views to nature from the accommodation. In the future, a more profound discussion of how the sustainability principles could be successfully put into practice, and also the extent that marketing of the nature-based tourism products in Lapland needs to be refined in order to attract more environmentally aware clientele.

### **References**

- Matkailualueiden kestävyden indikaattorit (Jokimäki, J. & Kaisanlahti-Jokimäki, M-L Eds.) Arktisen keskuksen tiedotteita 52. Arctic Centre, Rovaniemi, 82 p.
- Kelly, J. Haider, W., Williams, P. & Englund K. (2007). Stated preferences of tourists for eco-efficient destination planning options. *Tourism Management* 28: 377-390.
- Williams, P. & Ponsford, I. (2009): Confronting tourism's environmental paradox: Transitioning for sustainable tourism. *Futures of Tourism* (S. Cole & V.Razak Eds): Vol. 41 (6): 335-426.

# Visitors' attitudes to the collection of voluntary fees in national parks in Japan

Tetsuya Aikoh<sup>1</sup>, Kousaku Kikuchi<sup>2</sup>, Yasushi Shoji<sup>1</sup>

Keywords: voluntary fee, entrance fee, usage fee, visitor attitude

## Introduction

Although the need to charge entrance and usage fees has been recognised for some time now, only a few small protected areas and limited facilities in Japan collect voluntary fees. Charging entrance fees is rare in Japan. Therefore, some managers of facilities such as campgrounds, mountain shelters and toilets have been requesting visitors to pay fees voluntarily. Although, for legal and political reasons, it is not easy for park administrators to charge entrance and usage fees for public facilities, some managers and local stakeholders are considering the collection of fees from visitors because of decreasing park administration budgets and insufficient maintenance of facilities.

Methods for collecting usage fees vary. In some areas, the personnel of park administrators collect entrance fees and in others, visitors place usage fees in unattended donation boxes. Most managers obtain less revenue than expected. Therefore, information about visitor perceptions and attitudes would be helpful for managers (Absher et al. 2008, Park et al. 2010). In this study, we examined hikers' attitudes to voluntary fee collections in Daisetsuzan National Park, Japan, and discussed possible improvements to the current system.

## Study area and methods

Daisetsuzan National Park, which is located in the center of Hokkaido Island, is the largest national park in Japan. The gradual mountain range attracts hikers in the short summer season. An entrance fee is charged in only one area, the Sugatami alpine meadow. The amount of money given is at the visitor's discretion. Hikers who stay at Kurodake or Hakuundake shelters are asked by shelter managers to pay accommodation fees (1,500 JPY for Kurodake, 1,000 JPY for Hakuundake). In addition, visitors who use compost toilets at Kurodake are asked to pay a 200 JPY voluntary usage fee each time. These revenues are spent on the costs of employing temporary managers and the maintenance of each facility.

We distributed mail-back questionnaires to hikers at some trailheads and shelters from July to September in 2008. Respondents were asked about their hiking experience, their awareness of the voluntary fees, their actual payments, and their attitudes to voluntary fee collection and the burden of facility maintenance expenses. In total, 1,374 hikers responded, a mail-back response rate of 47.4%.

## Results and discussion

Visitors' awareness and payment of voluntary fees were highest for the Kurodake toilet usage fee and lowest for the Sugatami area entrance fee. Rates of fee payment by respondents were less than the awareness rates. The average amount of money paid at the Kurodake toilet was almost half as much as expected. Respondents preferred collections at trailheads or facilities by the personnel in charge rather than unattended donation boxes. They also agreed to collection with the selling of maps or guided tours. It seems difficult to expect more revenue from voluntary fees only. Managers should consider how to improve charging methods or locations.

We also asked respondents about the burden of the expense. Who should defray the cost of maintaining public facilities such as trails, toilets, shelters or parking lots? More respondents

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<sup>1</sup> Hokkaido University, Kita9, Nishi9, Kitaku, Sapporo, Hokkaido 0608589 Japan, [tetsu@res.agr.hokudai.ac.jp](mailto:tetsu@res.agr.hokudai.ac.jp)

<sup>2</sup> Hokkaido Government

agreed to defrayment by public funds combined with visitor fees, rather than by either public funds or visitor fees alone. It was considered that fundamental facilities, such as trails, should be maintained by public funds, whereas service facilities that benefited limited numbers of users, such as shelters or toilets, ought to be maintained by usage fees.

### **Conclusion**

Most questionnaire respondents assumed that the burden of park management expenses should be shared between park administrators and visitors. Most respondents think that a public budget is necessary for park management. Furthermore, respondents accepted that they should make individual payments to some extent. It was thought that some facilities should be paid for by park administrators and others by visitors. Introducing fee-charging systems in accordance with visitors' attitudes would improve their willingness to cooperate, and thus the sustainability of facility maintenance.

### **References**

- Absher, J., Graefe, A. & Burns, R. (2008). Longitudinal monitoring of public reactions to the U.S. Forest Service recreation fee program. In: D. Siegrist, C. Clivaz, M. Hunziker & S. Iten (eds.) *Visitor Management in Nature-based Tourism*, p 9-15.
- Park, J., Ellis, G., Kim, S. & Prideaux, B. (2010). An investigation of perceptions of social equity and price acceptability judgments for campers in the U.S. national forest. In: *Tourism Management* (31), p 202-212.

## Seasonal differences in visitor perceptions: a comparative study of three mountainous national parks in Central Europe

Martin Čihař<sup>1</sup>, Tomas Gorner<sup>1</sup>

Keywords: sustainable tourism, national parks, biosphere reserve, Natura 2000, indicators

This research focuses on a comparison of the views and attitudes of visitors to three key mountain national parks, biosphere reserves and Natura 2000 sites: Sumava National Park (Sumava NP, Czech Republic), Krkonose National Park (KRNAP, Czech Republic) and Karkonoski Park Narodowy (KPN, Poland). These areas are located relatively close to each other in seemingly homogeneous geographical regions of two neighboring post-communist countries. Their cultural and historical development, utilization and management rules however, were relatively heterogeneous in the past. Tourism is one of the most important economic factors in these regions, but large visitor numbers in protected areas threaten sustainability and create problems for the management of these areas. Tourists visit these destinations both in summer (hikers, cyclists) and in winter (hikers, skiers). A comprehensive understanding of visitor use, including visitors' attitudes and perceptions, is fundamental for effective park management (Cooper et al. 2005). Charles University in Prague (Institute for Environmental Studies), has been monitoring the tourism use of Czech national parks since 1997 (e.g. Cihar, Trebicky 1997; Cihar et al. 2002). In this study, data were collected by the means of questionnaires. Using a standardized socio-environmental survey, we attempt to characterize the basic features of the visitor population and differences in the results, in order to better understand existing processes and help management professionals in seeking optimal methods of sustainable development. Standardised personal interviews were conducted during the summer and winter of 2000 (KRNAP and KPN) and 2006 (Sumava NP), over nine days; This included five weekdays and two weekends. There were 695 respondents in KRNAP, 476 in KPN and 1081 respondents in Sumava NP. The refusal rate was low (less than 10%). The survey explored visitor's attitudes towards nature protection, park management, tourism and related issues. Preferences and perceptions were measured by respondents rating their responses using a 5-point Likert scale (Babbie 2004). In addition, standard demographic information (age, gender, occupation and nationality) was also collected to obtain a profile park users.

The primary data were entered into an MS Access database and statistically processed in the NCSS program (Hintze 2001). In the next stage, the primary data were statistically analyzed using the  $\chi^2$  test to evaluate cases where results differed between the winter and summer season. There were fifteen common questions for these three national parks. Three issues yielded significantly different results ( $P < 0.05$ ) between the two seasons in all monitored national parks – visitor's nationality, type of accommodation and financial costs. In the case of visitor's nationality, foreigners preferred the summer season in KRNAP (34.3% compared to 19.8% in winter) and Sumava NP (5.6% against 2.5% in winter). Apart from this, domestic tourists visited KPN more frequently in summer (85.5% in comparison with 67.4% in the winter season). As far as accommodation was concerned, visitors gave priority to hotels in the winter season and to private accommodation in the summer. The question concerning financial costs was connected to this issue. Winter visitors spent more money in comparison with summer tourists. The study found other significant differences for an additional seven issues – size of the visitor's city, perception of tourism intensity on hiking tracks (both KPN and Sumava NP), perception of tourism intensity in centers and their vicinity (both KRNAP and Sumava NP), length of stay, satisfaction with financial costs (KPN), means of transport to the NP (KRNAP), visitor's occupation, and visitor's level of education (Sumava NP).

Results from this study, together with data about local residents in Czech national parks, provide appropriate indicators of sustainable development in (not only) Czech protected areas. Outcomes

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<sup>1</sup> Institute for Environmental Studies, Charles University in Prague, Benatska 2, 128 01, Praha 2, Czech Republic ,  
mcihar@natur.cuni.cz, tom.gorner@seznam.cz

of the survey are being used to design priorities for the management of environmental protection on local, regional and national levels.

This comparative overview of national park users' attitudes in two main tourist seasons has been and will be very important for several reasons. First, it revealed various dynamic user profiles and their attitudes between two main tourist seasons in the selected national parks. Whereas most research is carried out during the summer season in these national parks, we demonstrate that the results from the relatively economically crucial winter season may be different. For example, in KRNAP, the feeling that tourism is too concentrated is more widely held by tourists in the winter season than in summer. The carrying capacity of visitor numbers seems to have nearly been reached. Some management options like periodic traffic limitations, new construction development or willingness to pay, could improve this situation.

Tourists also have different perceptions of environmental problems in the summer and winter seasons. Winter tourists don't see tourism as a threat, in contrast to the summer research at the same site. Management of the park should focus on consistency and the direct and indirect effects of summer and winter tourist seasons, as well as tourist awareness of the negative impacts of tourism on the sensitive mountain environment in winter (information centers, brochures, tourist guides, rangers).

### **References**

- Babbie E. (2004): *The Practice of social research*, Belmont: Wadsworth, 493 pp.
- Čihař, M., Trebický V. (1997): *Analýza rekreačně turistických aktivit v centrální části Národního parku Šumava*, Concluding report of the research project funded by the Ministry of the Environment, 212 pp.
- Čihař, M., Stursa J., Trebický V. (2002): *Monitoring of Tourism In the Czech National Parks*, In: *Monitoring and Management of Visitor Flows in Recreational and Protected Areas*, Conference Proceedings ed by A.Arnberger, C.Brandenburg, A.Muhar 2002, pages 240-245
- Cooper, C., Fletcher, J., Fyall, A., Gilbert, D. and Wanhill, S. (2005). *Tourism. Principles and Practice* (3rd edn). Edinburgh: Pearson Education, 810 pp
- Hintze J. (2001): *NCSS and PASS. Number Cruncher Statistical Systems*, Kaysville, [www.ncss.com](http://www.ncss.com)

# Urban semi-public spaces: Preferences for management scenarios and measures to enhance their acceptance

Robert Home<sup>1</sup>, Marcel Hunziker<sup>1</sup>

Keywords: urban greening, quality of life, biodiversity, flagship species, conjoint analysis

## Introduction

Urban areas are highly managed spaces characterized by a high diversity of substrates and structures in a mosaic pattern, with inherent human contact and disturbances. They can be seen as ecosystems emerged from local-scale, dynamic interactions among socio-economic and biophysical forces. Urban areas are also places where contact with nature is, almost by definition, limited. Naess (1973) maintains that the 'deep' satisfaction that we receive from close partnership with other forms of life in nature contributes significantly to our life quality. Given the established importance of contact with nature for the quality of life of citizens, urban management can reasonably include the conservation of nature within cities (Bolund & Hunhammer 1999). Yet, thorough knowledge of people's relationship with nature is necessary if they should be motivated to accept, or actively support, nature conservation measures (Hunter & Rinner 2004). This paper describes a project, carried out in Switzerland, which sought to measure preferences for habitat elements that have been shown to encourage biodiversity in urban areas and whether knowledge of ecological richness influenced preferences.

## Method

A random sample of households from three major Swiss cities, Lugano, Lucerne, and Zurich was used in a mail out survey with a response rate of 30.2% (900 valid questionnaires returned). One third of the respondents were informed of a correlation between environmental complexity and ecological richness indicated by the probability of attracting the Great Spotted Woodpecker to the site; while one third of the respondents were informed of the probability of attracting the less charismatic Clover Stem Weevil. The remaining third received no further information. Participants were shown photomontages of urban semi private spaces in which varying levels of vegetational complexity and infrastructure had been added. Information about the costs of the various landscaping options was also given as an additional attribute. Participants were asked to rate each landscapes on a likert scale of one to ten.

## Results and Conclusions

The results of the analysis are expressed in terms of utility estimates and some description of their interpretation is warranted. The part-worth estimates are expressed on a common scale so the attributes can be compared by calculating the ranges (highest–lowest) of these estimates and dividing them by the sum of all the utility ranges to give its relative importance. The mean utility scores of each attribute at each level and the relative importance of each attribute are presented for each of the target cities are presented in the table 1, which is divided into three sections according to sample location.

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<sup>1</sup> Social Science in Landscape Research Group, Economics and Social Sciences, Swiss Federal Institute of Forest, Snow and Landscape Research (WSL), Zürcherstr. 111, 8903 Birmensdorf, Switzerland, Corresponding author: marcel.hunziker@wsl.ch

Table 1: Utility estimates according to attribute and treatment group, showing the difference between the treatment groups and the control group

Attribute Level		Treatment Group to which Respondents were Allocated				
		Control (1)	Insects (2)	Effect (2-1)	Birds(3)	Effect (3-1)
Infra structure	none	-0.343	-0.364	-0.021	-0.364	-0.021
	path	0.129	0.112	-0.017	0.179	0.050
	all	0.214	0.253	0.039	0.185	-0.029
% Importance		31.039	28.945	-2.094	26.255	-4.784
lowest		0.486	0.582	0.096	0.973	0.487
Complexity	low	0.971	1.164	0.193	1.945	0.974
	high	1.457	1.745	0.288	2.918	1.461
	highest	1.943	2.327	0.384	3.890	1.947
% Importance		42.828	45.964	3.136	51.515	8.687
10Fr		-0.410	-0.346	0.064	-0.279	0.131
Cost	30Fr	-0.819	-0.692	0.127	-0.557	0.262
	50Fr	-1.229	-1.038	0.191	-0.836	0.393
	70Fr	-1.638	-1.384	0.254	-1.115	0.523
% Importance		26.133	25.091	-1.042	22.229	-3.904

The expected negative linear correlation between utility estimates and cost was found in each sample and adds confidence that the respondents considered all of the randomly assigned attributes when making their assessments. There was a clear preference for complexity as utility estimates rose with increasing complexity in each sample and for each treatment. Similarly there was a preference for the inclusion of infrastructure, although the relative importance was considerably lower than that of the complexity variable. The infrastructure variable did not significantly change according to the treatments. We can conclude that infrastructure is related to established preferences for useful spaces and the usefulness of a space, and in contrast to preferences, it does not change with ecological richness.

Evidence was found from each sample city that a respondent who is informed that a particular course of action will provide a habitat for a creature, and thus receives evidence of ecological richness, will tend to favour that course of action over actions that are less favourable for the species. Increased likelihood of providing a habitat resulted in a corresponding increase in utility estimate. For example, the utility estimate of the 'best' habitat increased by 2.319 in Lucerne, by 1.947 in Zurich, and by 1.637 in Lugano when comparing the woodpecker treatment group with the control group. Furthermore, the importance of the habitat variable was greater for the woodpecker treatment group than for the control group in the samples from Lucerne (8.7%) and Zurich (16.7%). As could be expected, the willingness to pay decreased with rises in costs, yet the woodpecker treatment groups from both Lucerne and Zurich rejected extra costs less strongly.

The result that utility estimates of habitat variables for the treatment groups are higher than for the control group in all of the samples, with greater increases corresponding to increases in the likelihood of providing habitats, provides clear evidence that knowledge of ecological richness does have the ability to influence public attitudes towards habitat variables. The clear implication is that this can be translated to influencing acceptance of conservation interventions – also in visitor management.

## References

- Bolund, P. & Hunhammar S. (1999). Ecosystem Services in Urban Areas, *Ecological Economics*, 29, 293–301.
- Hunter, L. & Rinner, L. (2004). The association between environmental perspective and knowledge and concern with species diversity. *Society and Natural Resources* 17: 517- 532.
- Naess, A. (1973) The Shallow and the Deep, Long Range Ecology Movement, In *Environmental Philosophy: Critical Concepts in the Environment*, Vol. 2 Society and Politics (Eds, Callicott, J. B. and Palmer, C.) Routledge, London. 51-56.

# Climbers' attitudes toward nature conservation and management in Tatra National Park, Poland

Miłosz Jodłowski<sup>1</sup>

Keywords: management, attitudes, questionnaire survey, Tatra National Park

The Tatra Mts. are the only high-mountain range in Poland and are protected as a national park since 1954. Numerous limestone and granite cliffs can be found in the area of 225 sq km, between 1000-2500 metres above sea level, both in the forest and alpine belt. The environment of rock cliffs and especially vegetation is unique within the mountain ecosystem (Larson et al., 2000). However, harsh environmental conditions result in a high level of ecosystem vulnerability. On the other hand, the Tatra Mts. are the most popular area for mountain climbing in Poland. In Tatra National Park climbing activity encompasses all of its disciplines: sport climbing on equipped routes, both short and multi-pitched, traditional climbing as well as alpine climbing in the winter season. Recently, new climbing disciplines such as dry-tooling and bouldering have also become popular (Jodłowski, 2004).

Since the 1990s, with the growing popularity of rock climbing in Poland, the climbing activity in Tatra NP has significantly increased, reaching approximately 10,000 ascents in 2006 (Jodłowski, 2007). The only climbing regulations in the national park encompass a total closure of the western part of the mountains, however limestone cliffs located in this area are frequently illegally explored by climbers, especially in winter. Numerous conflicts involving climbers and rangers have been observed. Thus, extensive studies on climbing impact have been conducted. Observed landscape changes caused by climbers include mainly mechanical damage to vegetation, growing instability of slope covers, and micro-relief alteration. The impact significantly differs with reference to climbing disciplines and geological substrate. The largest changes encompassing a complete removal of vegetation layer and soil cover result from dry-tooling on limestone cliffs, whereas sport climbing on granite cliffs causes only a limited removal of weathered rocks and restraining of lichens succession (Jodłowski et al., 2008).

As a conclusion of the research, a number of detailed climbing regulations have been proposed, including partial or temporal closure of the most vulnerable cliffs and limitations for specific types of climbing and use of climbing equipment. Also, bolting the existing and newly opened climbing routes has been a subject of regulations. However, the main strategy towards managing the climbing activity in Tatra NP should be based on co-operation between managers and climbers' representatives (see Pyke, 1997; Prato, Fagre, 2005). Thus, to understand what is climbers' attitudinal dimension toward nature conservation and climbing management in Tatra NP, a survey was conducted among the climbers, who visited Tatra NP at least once. They were contacted on site, in the mountain shelters, climbing gyms and in local clubs (members of Polish Association of Alpinism, representing approximately 50% of climbers visiting the Tatra Mts.). The group of respondents encompassed 480 climbers in total. It comprised approximately 20% of climbers visiting the Tatra Mts. in 2008. The standard questionnaire included 5 groups of questions concerning climbers' self-characteristics, perception of natural values of Tatra NP, perception of climbing impact on the natural environment, expectations and reservations about management process in general as well as attitudes toward potential detailed climbing regulations.

The results correspond well with those obtained by Waldrup and McEwen (1994), and Schuster et al. (2001) in surveys of American climbers. There is a strong need among climbers to be incorporated into the managing process in Tatra NP. The current regulations are considered to be oppressive; Nevertheless, there is an understanding for the detailed solutions. On the other hand, climbers have a poor knowledge on the threat to the environment they may cause as well as the environmental impact resulting from different types of climbing.

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<sup>1</sup> Institute of Geography and Spatial Management, Jagiellonian University, Gronostajowa 7, 30-387 Kraków, Poland, [m.jodlowski@uj.edu.pl](mailto:m.jodlowski@uj.edu.pl)



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## References

- Jodłowski M. (2004), Development of new branches of climbing and its impact on the natural environment of the Tatra Mountains, *Fizyczna Geografija ta Geomorfologija* (Kiev), 46: 229-235.
- Jodłowski M. (2007), Monitoring ruchu wspinaczkowego w Tatrzańskim Parku Narodowym w sezonie letnim 2006 r. [in:] Stan i perspektywy rozwoju turystyki w Tatrzańskim Parku Narodowym, ed. J. Pociask-Karteczka, A. Matuszyk, P. Skawiński, *Studia i Monografie, Akademia Wychowania Fizycznego w Krakowie*, 46, 131-142
- Jodłowski M., Depta Ł., Wójcik P. (2008), Rock climbing impact on the relief and vegetation of the Tatra National Park, *The Fourth International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas, Management for Protection and Development. Montecatini Terme (Tuscany, Italy), 14/19 October 2008.*
- Larson, D. W., Matthes U., Kelly P. E. (2000), *Cliff ecology: pattern and process in cliff ecosystems*, Cambridge University Press, Cambridge, United Kingdom, 344 pp.
- Schuster R.M., Thompson J.G., Hamitt W.E. (2001), Rock Climbers' Attitudes Toward Management of Climbing and the Use of Bolts, *Environmental Management*, 28: 403-412.
- Prato T., Fagre D. (2005), *National Parks and Protected Areas: Approaches for Balancing Social, Economic, and Ecological Values*, Blackwell Publishing Professional, 446 pp.
- Pyke K. (1997), *Climbing management: a guide to climbing issues and the production of a climbing management plan*, Access Fund, Boulder, Colorado, 96 pp.
- Waldrup R., McEwen D. (1994), Rock climbing and wilderness: A study of climbers' attitudes toward wilderness, climbing impacts, and regulation, *Trends*, 31: 38-42.

## Wild reindeer interactions with recreationists: estimating spatiotemporal habitat use and potential conflict areas in two national parks in Norway

Oddgeir Andersen<sup>1</sup>, Vegard Gundersen<sup>1</sup>, Olav Strand<sup>2</sup>, Manuela Panzacchi<sup>2</sup>, Marit Vorkinn<sup>3</sup>, Kirstin Fangel<sup>1</sup> & Bram Van Moorter<sup>4</sup>.

Keywords: wild reindeer, visitor impact, monitoring, resource selection function model (RSF), conflict areas

Rondane national park (RNP) and Dovre-Sunnalsfjella national park (DSNP), covering respectively 963 km<sup>2</sup> and 1693 km<sup>2</sup>, are two popular parks for recreationists in Norway. The year-around recreational use in the two national parks may overlap and conflict with the spatial use of wild reindeer (*Rangifer tarandus tarandus*) throughout the year (Vistnes et al. 2004, Nellemann et al. 2009).

To monitor the amount of recreational use during summer season 2009 (July-October), 36 Eco-counters (<http://www.eco-compteur.com/>) were installed along the main tracks: 20 in DSNP and 16 in RNP. We used pyroelectric double-sensors, sensitive to the infrared radiation emitted by the human body, which also allows the discrimination of the walking direction. The counters were activated in first of July 2009. Some of the counters were located on sites considered as vulnerable wild reindeer habitats during the summer period from primo July until mid October. In addition, self-registration checkpoints (boxes with a short questionnaire) were placed along the same tracks, but not far away (with a few exceptions) from the counter locations. We obtained a total of 44066 counts in DSNP and 76259 counts in RNP along the main tracks. Almost 4000 persons, 15 years age and older, registered through questionnaires in DSNP and with the same figure in RNP, 5500 persons. When answering the questionnaire, visitors drew their planned route on a map and answered a few questions related to the purpose of their trip, the number of days they will stay and the number of people they are travelling with. Surprisingly, 90 per cent reported that they never walked outside the tracks. The digitalized map-drawings enable us to estimate spatial use, also outside tracks, in addition to temporal variation. The recreational use will be further investigated through an e-mail survey to the users registered at the self-registration checkpoints.

RNP and DSNP are located inside 2 (of a total of 23) management areas for wild reindeer, and are the only 2 management areas keeping remnants of the original European mountain wild reindeer population in Norway (The Wild Reindeer Council 2009). Earlier, wild reindeer used both areas as one biogeographic and topographic unit, but they are now split into several subpopulations after the construction of a railway (Dovrebanen, in 1926) and a road (also built in the same decade, now upgraded to highway E6) over the Dovrefjell plateau (Bevanger & Jordhøy 2004). In all, 20 wild reindeer in DSNP and 6 reindeer in RNP were captured and tagged with GPS collars in the spring 2009 to monitor spatiotemporal habitat use. 1 radio-collared reindeer in RNP was shot during hunting season. GPS collars are programmed to plot the location every 3rd hour in general and with intervals of 15 minutes if reindeer is located in areas of special interest; and to send SMS to a open-access database for GPS-collared game in Norway ([www.dyreposisjon.no](http://www.dyreposisjon.no)) for every 6th plot.

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<sup>1</sup> Norwegian institute for nature research, Human dimension department, Fakkeltgården, NO-2624 Lillehammer, Norway. [oan@nina.no](mailto: oan@nina.no), [Vegard.gundersen@nina.no](mailto: Vegard.gundersen@nina.no), [Kirstin.fangel@nina.no](mailto: Kirstin.fangel@nina.no)

<sup>2</sup> Norwegian institute for nature research, Terrestrial ecology department. NO-7485 Trondheim, Norway. [olav.strand@nina.no](mailto: olav.strand@nina.no), [Manuela.panzacchi@nina.no](mailto: Manuela.panzacchi@nina.no)

<sup>3</sup> The County Governor in Oppland, Department for environmental protection. Serviceboks, NO-2626 Lillehammer, Norway. [mvo@fmop.no](mailto: mvo@fmop.no)

<sup>4</sup> Norwegian University of Science and Technology, Center for conservation biology. NO-7491 Trondheim, Norway. [bram.van.moorter@gmail.com](mailto: bram.van.moorter@gmail.com)

Spatiotemporal data from wild reindeer will be analyzed in a resource selection function (RSF) model, which is a GIS-based model, containing data from snow-conditions, topography vegetation type (food availability). The RSF model can then be combined with data from the spatiotemporal recreational use, to identify areas with potential for conflicts.

The aim of the project is to:

- Estimate the volume and geographical dispersion of recreational use in DSNP and RNP in the summer season 2009;
- Link the spatiotemporal recreational use with data from the RSF-model, obtained from 25 GPS-collared wild reindeer in DSNP and RNP;
- Look for relationships between habitat use of wild reindeer and recreational activity.

Preliminary results from RNP show a negative interaction effect between recreational use and habitat use of wild reindeer. The average weekly range size for wild reindeer was smaller in the high season for recreational use, than in the low and hunting season. Average step length between each 3 hour GPS fix was longer in the high season, compared to low season. The closest distance to trails/roads was negatively correlated to increasing number of visitors during season. The same pattern was found for use of areas with high density of trails/roads during the season. We also found that the frequency of trail crossings was negatively correlated with the number of visitors (Fig. 1, results from GAM-smoothing). However, we underline that this results are preliminary because we still lack data on habitat availability of natural conditions, e.g. food availability in the summer season.

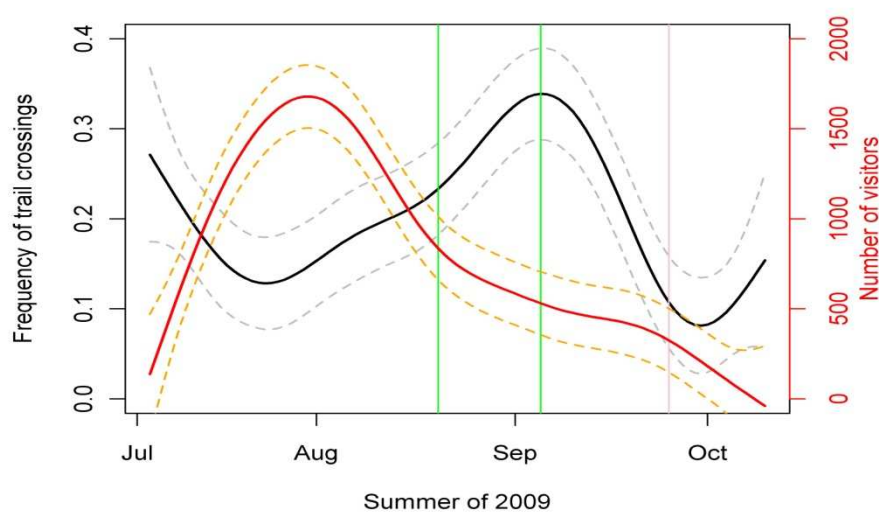


Figure 1: Frequency of trail crossings and number of visitors in Rondane from July 1<sup>st</sup> -October 15<sup>th</sup>. Green vertical lines indicate the start and the end of the first 2 weeks of the hunting season for wild reindeer. The pink vertical line shows start of the reindeer rut.

## References

- Bevanger, K. & Jordhøy, P. 2004. Reindeer – the mountain nomad. Naturforlaget, Oslo: 168pp.
- Eco-counter. (<http://www.eco-compteur.com/>) website accessed 11.11.2009
- Nellemann, C., Vistnes, I., Jordhøy, P., Støen, O. G., Kaltenborn, B. P., Hanssen, F. and Helgesen, R. 2009. Effects of Recreational Cabins, Trails and Their Removal for Restoration of Reindeer Winter Ranges. *Restoration ecology* doi: 10.1111/j.1526-100X.2009.00517.x
- Villreintrådet I Norge (The wild reindeer council). (<http://www.villrein.no/en/Thewildreindeerareas/tabid/7067/Default.aspx>). Website accessed 11. 11.2009.
- Vistnes, I., Nellemann, C., Jordhøy, P., Strand, O. 2004. Effects of infrastructure on migration and range use of wild reindeer. *Journal of wildlife management* (61) 1: 101-108.

# **Are they listening? Monitoring cottager's compliance in reducing a property's attractiveness to bears in response to a targeted educational campaign**

**J. Michael Campbell<sup>1</sup>**

Keywords: Bear Smart, Manitoba, audits

## **Introduction**

Over the past few years we have witnessed a number of dramatic and tragic events resulting from conflicts between humans and black bears in Manitoba, including one human fatality and numerous bear deaths which reflect trends in human-bear conflict across North America. The reasons behind the apparent increase in conflicts between bears and humans are complex and have been posited to include increasing human encroachment and activity in bear habitat (Beckmann and Berger, 2003), population fluctuations (Peine, 2001), seasonal food shortages (Peine, 2001, Warburton and Maddrey, 1994), habituation (McCullough, 1982, Williams, 2002) and a reduction in population controls (Schull, 1994). In Manitoba, managers attempt to maintain provincial bear populations at or below biological and social carrying capacity in order to reduce the potential for human-bear conflicts (Manitoba Conservation). Among the many factors that contribute to human-bear conflict, one of the most important is the behaviour of people living in bear habitat.

Despite the generally accepted use of education to influence humans to engage in what might be termed *bear smart* behaviour decades (McCullough, 1982, McCarthy and Seavoy, 1994, Peine, 2001), there has been relatively little research to examine its effectiveness. This paper presents results of audits of bear attractants on cottage properties before and after the implementation of a Bear Smart education program.

## **Audit method**

Bear attractant audits were conducted in Pinawa (n=547), Victoria Beach (n=643) and Grand Beach (n=513). In all cases, the audits were conducted both pre- and post survey. Every cottage property in the three communities (n= 1748) was visited twice and all bear attractants visible on the property were identified and recorded. Additionally, a sub sample of Pinawa properties (n= 140) was audited weekly throughout the summer to assess trends. In order to expedite the process and remove the threat of bias by differing observers, counts were made by simple dichotomous counts; that is, attractants were identified only as to whether they were present or not. Fifteen types of attractants, ranging from natural attractants such as wild fruit trees and mast, to human created attractants such as garbage and pet food, were identified and recorded and attractants were aggregated by type and are identified in Table 1 below (Human foods, Natural foods, Visual Attractants, Odor Attractants). As can be seen from the table several of the attractants might fit into one or more categories however, the categorisation used reflects the manner in which the province collects its nuisance bear reports and assesses an attractant on the basis of its primary attraction.

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<sup>1</sup> Professor, Recreation Management University of Manitoba, Faculty of Kinesiology and Recreation Management  
112 Frank Kennedy Centre, Winnipeg, Manitoba, R3T 2N2, [campblm@cc.umanitoba.ca](mailto:campblm@cc.umanitoba.ca)

Table 1. Categories and Types of Bear Attractants Identified on Property

Natural Attractants	Human Food Attractants	Visual Attractants	Odor Attractants
Hard Mast (acorns) Soft Mast ruit	Garbage Food left out Pet food Vegetable Garden Planted Fruit Trees Bird Feeders Compost	Freezers Coolers Fridges	BBQ Fire Barrel/Pit

## Results and Discussion

Results of the attractant audits are presented in Table 2. Comparison of audits conducted at the beginning of the cottage season and those conducted at the end show little if any difference between bears attractants at either of the two cottage communities. Pinawa, a residential community, differed significantly in the nature and number of attractants measured. Comparisons of attractants between Grand Beach, which is located inside the Provincial Park, and Victoria Beach, located outside the park (but in the same cottage region) provide a striking contrast, particularly with respect to anthropogenic attractants (human foods, odors and visuals). Independent sample t-tests for all attractant categories (Natural, Human, Odor, Visual, Total of combined attractants) showed significant differences ( $p < .001$ ) between the number of attractants at Grand Beach and Victoria Beach. Of the attractant categories Anthropogenic attractants (human foods, visual and odor) are significantly higher in Victoria Beach than in Grand Beach and can be largely attributed to the improper disposal of refuse. That is, garbage is the single biggest categorical difference between the two communities.

Table 2. Results of Attractant Audits

Victoria Beach n=690			Grand Beach n=501		Pinawa n=547	
	June	Sept.	June	Sept.	June	Sept.
<b>Natural Foods</b>						
Mast	390	395	208	208	0	35
Fruit	260	260	117	119	4	1
Total	<b>650</b>	<b>660</b>	<b>325</b>	<b>327</b>	<b>4</b>	<b>36</b>
<b>Human Foods</b>						
Veg. Garden	28	30	0	0	158	140
Garbage	142	96	9	7	125	140
Bird Feeder	82	75	72	75	175	170
Food	3	7	3	1	0	0
Pet food	10	6	1	0	0	0
Planted fruit	19	20	4	4	147	187
Compost	24	25	0	0	43	67
Total	<b>322</b>	<b>259</b>	<b>89</b>	<b>87</b>	<b>648</b>	<b>704</b>
<b>Odor</b>						
B-B-Q	487	455	94	98	369	395
Fire Pit/Barrel	37	38	19	23	206	238
Petro Products	18	15	2	3	26	29
Total	<b>532</b>	<b>508</b>	<b>115</b>	<b>123</b>	<b>601</b>	<b>662</b>
<b>Visual</b>						
Cooler	30	22	6	5	5	6
Freezer	7	7	0	0	6	6
Fridge	27	27	2	2	1	2
Total	<b>64</b>	<b>56</b>	<b>8</b>	<b>7</b>	<b>12</b>	<b>14</b>
<b>Grand Total</b>	<b>1568</b>	<b>1483</b>	<b>537</b>	<b>544</b>	<b>1265</b>	<b>1416</b>

Table 3 displays the weekly attractant audits on a subsample of Pinawa properties. Despite the significant differences between Pinawa and the two cottage communities, what is most evident in this subsample is the seasonal increase in attractants. In addition, this increase occurs during hyperphagia and as such represents a significantly greater risk for contributing to human bear conflicts. In both non-park communities bird feeders represent a significant attractant. According to Manitoba Conservation, bird feeders are the single greatest attractant involved in problem bear encounters suggesting that at least this part of the Bear Smart message is not necessarily resulting in changing behaviors. While beyond the scope of this paper, results of the survey on awareness and attitudes towards bear smart behavior conducted in parallel with this study indicate that there is a small but significant cohort who do not believe that bird feeders are attractants. Therefore it is imperative that the message must be reinforced and that direct management intervention (fines etc) be employed if bear-human conflicts are to be averted.

Table 3. Pinawa weekly partial audits (22.4 % of properties)

	July 3	July 8	July 17	Aug 2	Aug 8	Aug 15	Aug 19	Aug 28
Mast								
Fruit	1							
Vegetable Garden	3	3	9	36	37	54	51	51
Planted Fruit	2	3	12	42	45	56	44	53
Garbage	1	1	6	27	25	37	37	36
Compost	1		4	12	7	13	14	13
Food								
Bird Feeder	2	4	6	40	40	53	50	52
Pet Food								
BBQ	8	9	28	95	102	112	112	112
Cooler		1	2	2	2	1	1	1
Freezer								
Fridge								
Petroleum products	1	1		4	4	12	10	9
Fire Barrel/Fire Pit	4	3	17	43	41	56	55	53
	23	25	84	301	303	395	375	381

## References

- Beckmann, J.P. & Berger, J. (2003). Rapid ecological and behavioral changes in carnivores: the responses of black bears (*Ursus Americanus*) to altered food. *Journal of Zoology* (261), p 207-212.
- Manitoba Conservation. (2007). Nuisance Bear Data.
- McCarthy, T.M. & Seavoy, R.J. (1994). Reducing non-sport losses attributable to food conditioning: human and bear behavior modification in an urban environment. *International Conference of Bear Research and Management*. (9/1), p 74-84.
- McCullough, D.R. (1982). Behavior, bears and humans. *Wildlife Society Bulletin*. (10/1), p 27-33.
- Peine, J.D. (2001). Nuisance bears in communities: strategies to reduce conflict. *Human Dimensions of Wildlife*. (6), p 223-237.
- Schull, S.D. (1994). Management of nuisance black bears (*Ursus Americanus*) in the interior highlands of Arkansas. MSc. Thesis University of Arkansas, Fayetteville Arkansas, 101p.
- Warburton, G.S. & Maddrey, R.C. (1994). Survey of nuisance bear programs in eastern North America. *Eastern Workshop Black Bear Research and Management*. (12), p 115-23.

Williams, D. (2002). Conspicuous consumption: some park animals, either fed deliberately or inadvertently by visitors have become so addicted to human food, that many parks have begun aggressive campaigns to reduce the number of panhandling animals and to discourage visitors from feeding them. *National Parks*. (April/May), p 41-4.

## **Natura2000: a policy framework for wilderness protection in Europe?**

**Steve Carver<sup>1</sup>**

Keywords: Natura2000, wilderness, GIS, policy development

Natura2000 originates from the EU Birds Directive (1979) and the Habitats Directive (1991) and aims to ensure the long-term survival of Europe's most valuable and threatened species and habitats. The network comprises of over 26,000 protected areas covering all EU member states with a total area of around 850,000km<sup>2</sup> (EU 2009). As such, Natura2000 is the largest protected area network of its kind in the world and forms the centrepiece of EU nature and biodiversity policy. Wilderness areas, by comparison, are those landscapes that are ecologically intact and have been largely untouched by human activity. They tend by definition, to be large and relatively remote. In Europe, most wilderness areas can be found in high altitude and/or high latitude areas and as such are dominated, though not exclusively, by montane and arctic/tundra/boreal forest landscapes. Smaller wilderness areas can be found elsewhere scattered across the continent where local conditions dictate. Marine wilderness areas are also the subject of much recent interest. Strict definitions of wilderness vary, but the concept of wilderness does not focus on ecological condition alone, but also on a range of landscape attributes more allied to human values such as scale, lack of human influence and remoteness from settlement and access.

While there is no explicit mention of wilderness within the Natura2000 legislation, it seems logical that the network's objective of halting biodiversity loss and habitat protection may well be complementary to wilderness protection. This is a point developed by the European Parliament resolution of February 2009 on "Wilderness in Europe". This resolution recognises that wilderness is important in helping halt the loss of biodiversity and maintains that the Natura2000 network is an appropriate vehicle for achieving this and should be developed into "a significantly strengthened and ambitious new policy framework for biodiversity after 2010" (EP 2009). The protection and conservation status of wilderness areas varies widely between countries according to their location, fauna, flora, cultural meaning and history. In some countries wilderness is a valued landscape and as such wild areas are subject to conservation measures and legislative status and definition. The resolution on wilderness calls for action in protecting Europe's remaining wilderness areas, while according to the Natura2000 web pages "a preliminary survey (shows that) 99% of these areas in the EU are covered by the Natura2000 network" (EU 2009).

Recent work by the author has concentrated on developing GIS approaches to defining and mapping the wilderness continuum based on a range of spatial attributes including remoteness from settlement and mechanised access, perceived naturalness of land cover, absence of modern human artefacts and land uses, rugged and challenging nature of the terrain (Carver et al. 2002, Carver 2009). This landscape continuum or environmental modification spectrum defines a range of wilderness conditions between "the paved to the primeval" (Nash 1982). By combining maps of these attributes, it is possible to define the wilderness continuum for any area at a range of spatial scales and resolutions. By close examination of the wilder end of the continuum it is possible to identify the wildest parts (i.e. wilderness) of any region, country or local area. These can be used to inform decision-making about land use planning, development control, protected area management, recreation and tourism as well as policy development on protected areas and ecological restoration.

This paper evaluates the utility of the existing Natura2000 network of protected areas as a policy framework for the promotion and protection of wilderness in Europe. While broad conclusions from the recent conference in Prague on "Wilderness and Large Natural Habitat Areas in Europe" held during May 2009 suggest that the Natura2000 network "offers an excellent framework for wilderness protection", it is suggested here that the spatial correspondence might not be as

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<sup>1</sup> Wildland Research Institute, School of Geography, University of Leeds, LS2 9JT, UK, s.j.carver@leeds.ac.uk



optimistic as indicated and that Europe's remaining wilderness areas might have more to offer Natura2000 if the network were expanded to include more wilderness areas. The spatial distribution and correlation exhibited between the Natura2000 network and wilderness areas are examined using GIS both across Europe as a whole and at the scale of individual member states. Conclusions are drawn as to the actual utility of the Natura2000 network in protecting wilderness and suggestions made as to how the network could be further developed to meet the call for better wilderness protection as laid out in the resolution of wilderness in Europe.

### **References**

- Carver, S. (2009) in A.Coleman and T.Aykroyd Conference Proceedings: Wild Europe and Large Natural Habitat Areas, Prague 2009. 15-16.
- Carver, S., Evans, A. & Fritz, S. (2002) Wilderness attribute mapping in the United Kingdom. In: International Journal of Wilderness. 8(1), 24-29.
- European Parliament (2009) Wilderness in Europe. European Parliament Resolution of 3 February 2009 on Wilderness in Europe (2008/2210(INI)) P6\_TA(2009)0034.
- European Union (2009) Nature and biodiversity. Web site accessed 16/01/10  
[http://ec.europa.eu/environment/nature/index\\_en.htm](http://ec.europa.eu/environment/nature/index_en.htm)
- Nash, R (1982) Wilderness and the American mind. Yale University Press, New Haven.

## Visitor's experiences with wildlife in protected nature areas

**Akke Folmer<sup>1</sup>**

Keywords: sense of place, wildlife, visitors, experiences, protected areas

What role does wildlife play in creating a sense of place among visitors to protected areas? This is the central question of a pilot study, carried out in National Park Lauwersmeer, The Netherlands. The main question is further subdivided into two questions: "How do visitors experience wildlife in protected areas?" and "which external circumstances and personal characteristics of visitors have an influence on wildlife experiences"? The pilot study was carried out to explore what approach and which research methods are most useful to gain insight into these aspects and how to adapt these for further research. The pilot study took place in January, February and March 2010 in the Lauwersmeer area, which is situated on the border of the provinces Fryslân and Groningen in the north of The Netherlands.

In the spatial policy plan of the National Park, 'experiencing nature' plays a central role as the first step towards involvement and participation of visitors in nature management (Logemann et al 2003). According to Curtin (2009), understanding people's attitudes towards wildlife is an essential component of the management of wildlife-oriented recreation. In this research project, attitudes are related to visitors' sense of place. More understanding of how wildlife experiences shapes a sense of place of visitors in protected areas may contribute to nature management of the National Park.

How could 'a sense of place' be defined in relation to protected areas? To understand the meaning of 'place', it is also necessary to define 'space' as these are interrelated concepts (Malpas 1999). The term 'place' is often associated with security, stability and feeling at home (Tuan 1977, Massey and Jess 1995), while 'space' is associated with openness, freedom, fear and threat (Tuan 1977). For visitors, wildlife may impose threats or evoke feelings of fear. On the other hand, visitors may identify with or feel attracted to wildlife. Wildlife may contribute to a sense of place either way. Notions of place and the meaning of place also vary among people. Understanding of place may vary over time because the world is changing and because of shifts in the way in which different groups in society think about place and how places are represented (Massey and Jess 1995). Different groups might have different views of the places and different senses of identity.

Tuan (1977) suggests that more (intense) experiences are more likely to create a sense of place. According to DeMares and Krycka (1998), experiences with wildlife sometimes have spiritual and emotional effects on people, leading to a peak experience. Maslow (1970) defines a peak experience as a disorientation in time and space, or even a lack of consciousness of time and space. He suggests that a peak experience with wildlife may create a feeling of being at home in nature.

Many experiences are difficult to express as visitors know them via senses of touch, taste, smell, hearing or vision. This does not mean that these experiences are less important than experiences that can be expressed; but it does raise the question of how to get insight into these experiences.

The methodological approach for the pilot study was a mix of quantitative and qualitative research methods; participant observation, in-depth interviews and surveys were used. To explore visitor experiences with wildlife, a phenomenological approach was used, consisting of participant observation and in-depth-interviews (Moustakas 1994, Phillimore and Goodson 2004). The primary question of the interviews was: "Tell me about your most memorable experience with wildlife in the Lauwersmeer area". To get insight into which external circumstances and personal characteristics

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<sup>1</sup> Stenden University of Applied Sciences, P.O. Box 1298, 8900 CG Leeuwarden, The Netherlands.  
[akke.folmer@stenden.com](mailto:akke.folmer@stenden.com)

of visitors have a part in wildlife experiences and a sense of place, a survey was done. The survey included both closed and open questions. From the results of the survey, an attempt was made to classify experiences from 'everyday experiences' to 'peak experiences', and to relate this to visitors' sense of place, which is divided into place identity, place dependence and care for a place.

Each method will be evaluated on the results and on the role of the researcher in the interpretation of tourist experiences with wildlife and the role of wildlife in creating a sense of place. The results and conclusions will be used to alter the research methods and to set up a research project in another protected area in Europe.

### **Acknowledgements**

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### **References**

- Cresswell, T. (2005), *Place, a short introduction*, Malden, Blackwell.
- Curtin, S. (2009), Wildlife tourism: the intangible, psychological benefits of human-wildlife encounters, *Current Issues in Tourism*, Vol. 12, Nos 5-6, September-November 2009, p. 451-474.
- DeMares, R., and Krycka, K., (1998), Wild-animal-triggered peak experiences: transpersonal aspects, *The Journal of Transpersonal Psychology*, Vol. 30., No. 2., p. 161-177.
- Kampkuiper, M., Klasberg, M., and van Leussen, J. and Logemann, D., (2003), *Beheer- en Inrichtingsplan Nationaal Park Lauwersmeer*, Arcadis Ruimtelijke Ontwikkeling BV Assen, Overlegorgaan Nationaal Park Lauwersmeer.
- Malpas, J.E. (1999), *Place and Experience, A philosophical Topography*, Cambridge University Press.
- Massey D. and Jess, P. (1995), *A place in the world? Places, cultures and globalisation*, The Open University, Oxford University Press Inc., New York.
- Moustakas, C. (1994), *Phenomenological research methods*. Thousands Oaks, CA: SAGE publications.
- Goodson, L. and Phillimore, J. (2004), *Qualitative Research in Tourism, Ontologies, epistemologies and methodologies*, Routledge, London/New York.
- Relph, E.C. (1976), *Place and Placelessness*, Pion, London.
- Tuan, Y. (1977), *Space and Place, The Perspective of Experience*, University of Minnesota Press, Minneapolis.

# Acceptability of lethal control of geese and deer that damage agriculture in the Netherlands

Mette T. J. Sijtsma<sup>1</sup>, Jerry J. Vaske<sup>2</sup>, Maarten H. Jacobs<sup>1</sup>

Keywords: wildlife value orientations, lethal control, human-wildlife conflict

This study examined the acceptability of using lethal control to minimize the impacts of geese and deer on agricultural crops in the Netherlands. Two sets of predictor variables were examined: (a) demographics and (b) wildlife value orientations (WVO). Demographic variables included age, gender, education and current residence. Two wildlife value orientations were examined – domination and mutualism (Manfredo 2008). Individuals with a domination WVO believe that wildlife should be used and managed for human benefit. People with a mutualism wildlife value orientation think that humans and wildlife should co-exist and live in harmony. Based on the specificity principle (Vaske & Manfredo, in press) and prior research (Teel et al. 2007), two hypotheses were advanced. First, the wildlife value orientations will be better predictors of the acceptability of lethal control than the demographic variables. Second, of the two value orientations, the traditional domination WVO will account for more of the variability in the acceptability ratings than mutualism. Data was obtained from a mailed survey (n = 353) sent to randomly selected individuals from the Dutch population. The two dependent variables were the acceptability of using lethal control for either: (a) geese that trample farmers' crops, and (b) deer that damage agriculture. These variables were coded as unacceptable (0) and acceptable (1). Among the independent variables, age was measured on a continuous scale. The other three demographics – gender (male vs. female), current residence (rural vs. urban) and education (high school vs. higher degree) – were dummy variables. The domination value orientation was based on two basic belief dimensions each comprised of multiple items (appropriate use beliefs [6 items] and hunting beliefs [4 items]). The overall Cronbach's alpha for this 10 item scale was .85. The mutualism value orientation contained two multi-item basic beliefs (social affiliation beliefs [4 items] and caring beliefs [5 items]); Cronbach's alpha = .88. The composite indices for each WVO were coded on a 7-point scale ranging from -3 to +3.

Acceptability ratings for lethal control of deer and geese were highly correlated ( $r = .753$ ). Males and individuals living in rural areas were more likely to agree with lethal control than females and urbanites. Older individuals were statistically more likely to support lethal control than younger respondents. Education was not statistically related to the acceptability ratings for either geese or deer. Respondents who held a domination orientation slightly agreed with using lethal control for both geese and deer. Those with a mutualism orientation believed lethal control was not acceptable.

Six separate logistic regression models (i.e., demographics only, WVO only, both demographics and WVO) were examined (3 for geese and 3 for deer). When only the demographic variables were in the model, < 10% of the variance was explained. The two WVO only logistic models accounted for 38% (geese) and 34% (deer) of the variability. When both the demographics and value orientation predictors were included in the model, only the value orientations were statistically significant predictors, accounting for 40% (geese) and 36% (deer) of the variance. These findings support hypothesis one.

Of the two WVOs, domination (Odds Ratio [OR] = 2.70 for geese, OR = 2.46 for deer) was a better predictor of acceptability ratings than mutualism (OR = 0.69 for geese, OR = 0.76 for deer).

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<sup>1</sup> Wageningen University Wageningen, The Netherlands [mette.sijtsma@wur.nl](mailto:mette.sijtsma@wur.nl), [maarten.jacobs@wur.nl](mailto:maarten.jacobs@wur.nl)

<sup>2</sup> Human Dimensions of Natural Resources Colorado State University Fort Collins, Colorado, USA  
[jerry@cnr.colostate.edu](mailto:jerry@cnr.colostate.edu)

These findings support hypothesis two. The final models correctly classified about 75% of the respondents' acceptability ratings for using lethal control for geese and deer.

Consistent with research from the United States (Teel et al. 2007), our results indicate that general demographic variables (i.e., age, gender, place of residence and education) have less predictive potential than the wildlife value orientations. As hypothesized, the traditional domination WVO had more influence on acceptability ratings than mutualism. Although our final models explained a substantial proportion of the variance, lethal control is a complex controversial issue that is likely to be situation specific. Our sample was drawn from the Dutch population in general. Before adopting a lethal control strategy to minimize wildlife impacts, managers are encouraged to consider the severity of the problem within a local context.

## **References**

- Manfredo, M. J. (2008). *Who cares about wildlife?* New York, NY: Springer. 228 pp.
- Teel, T. L., Manfredo, M. J., & Stinchfield, H. M. (2007). The need and theoretical basis for exploring wildlife value orientations cross-culturally. *Human Dimensions of Wildlife, 12*(5), 297-305.
- Vaske, J. J., & Manfredo, M. J. (in press). Social science theories in wildlife management. In D. J. Decker, S. Riley, & W. F. Siemer (Eds.), *Human Dimensions of Wildlife Management*. Baltimore, MD: The Johns Hopkins University Press.

# Wildlife tourism, community-based natural resource management, wildlife value orientations, and quality-of-life indicators in indigenous Namibian villages

Harry Zinn<sup>1</sup>, Alfons Mosimane<sup>2</sup>, Duarte Morais<sup>1</sup>

Keywords: community-based natural resource management, indigenous peoples, subjective well-being, wildlife value orientations

## Introduction

With support from World Wildlife Fund, other non-governmental organizations and the U.S. Agency for International Development, the government of Namibia is testing community-based natural resource management (CBNRM) as an alternative to traditional top-down economic development models in indigenous villages that depend, in part, on wildlife tourism (App et al. 2008, Weaver & Skyer 2003). We investigated the impact of CBNRM on indigenous villages by comparing CBNRM communities and non-CBNRM communities in regard to wildlife interaction, wildlife value orientations (WVOs), and two quality of life indicators: subjective well-being and self-determination.

## Conceptual Background

WVOs are value-laden beliefs about how humans should relate to wildlife. Cross-cultural research has identified dimensions of WVOs that include materialism, mutualism, symbolism, caring, safety and security, attraction, and repulsion (e.g., Kaczensky 2007, Zinn & Shen 2007), and WVOs have been used to predict and explain responses to wildlife attacks on humans; wildlife damage and disease transmission to domestic animals and humans; wildlife-related tourism and recreation; and the acceptability of wildlife management actions.

Subjective well-being has been defined as the balance between positive and negative events and conditions in life, and, to the degree that individuals experience high subjective well-being, the report of a sense of happiness, peace, fulfillment and life satisfaction (Diener 1984). We operationalized subjective well-being by explaining to study participants that “people’s overall happiness is affected by the combination of good and bad things in life,” and then asking them to help us make a list of things in their lives that make them happy and a list of things in their lives that make them sad.

Self-determination has been defined as people’s ability to pursue goals that are meaningful (Ryan & Deci 2000) at both the individual and the aggregate level (e.g., indigenous group, village, sub-segment of a community). Self-determination theory (Ryan & Deci 2000) posits that fulfilling the psychological needs of competence, autonomy and relatedness enables humans to achieve optimal development. Accordingly, social contexts that facilitate competence, autonomy, and relatedness facilitate intrinsically motivated behavior, whereas contexts that hinder these needs result in diminished motivation and well-being.

## Methods

Using a controlled comparison method (Eggen 1954, Nyaupane et al. 2006), two pairs of CRNRM-participating and CRNRM-non-participating communities were selected for comparison on the basis of physical proximity, size and ethnicity. In each village, we used Nominal Group Technique (NGT) to interview three to five small groups of homogeneous age, sex and social status. Using NGT has been shown to be less intimidating than individual interviews while mitigating problems associated with unstructured group interviews (Ritchie 1985, Nyaupane et al. 2006).

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<sup>1</sup> Department of Recreation, Park & Tourism Management, 801 Ford Building, The Pennsylvania State University, University Park, PA 16802 U.S.A., [hzinn@psu.edu](mailto:hzinn@psu.edu), [dmorais@psu.edu](mailto:dmorais@psu.edu)

<sup>2</sup> Multidisciplinary Research & Consultancy Centre, University of Namibia, Private Bag 13301, 340 Mandume Ndemufayo Avenue, Windhoek, Namibia, [amosimane@unam.na](mailto:amosimane@unam.na)

## Results

Content analysis of interview responses demonstrates that residents of CBNRM and non- CBNRM villages interact with similar wildlife, experience similar conflicts with wildlife, and hold similar materialistic (i.e., instrumental) WVOs, and share similar beliefs about the benefits of participating in CBNRM. Compared to residents of nonparticipating villages, however, residents of participating villages express a richer sets of mutualistic WVOs (e.g., benefits of balanced co-existence) and symbolic WVOs (e.g., traditional ritual uses of wildlife). Residents of participating villages report being more prosperous and perceiving harmony between themselves and the natural world. Conversely, they report more problems related to health and social relatedness; however, their general well-being depended increasingly on prosperity factors, rendering health and relatedness less influential. In addition, males in participating villages appear to have internalised wildlife conservation behaviors, while other men and all women reported that they refrained from poaching only as a result of externally imposed prohibition.

## Discussion

Results demonstrate that implementing CBNRM among indigenous Namibian villages is associated with an elaborated set of WVOs, higher subjective well-being and an enhanced sense of self-determination, suggesting that opportunities for indigenous communities to practice CBNRM may contribute to quality of life, enhance wildlife conservation, and support for sustainable wildlife tourism. Importantly, this study does not establish causation between participation in CBNRM and the dependent variables. To determine causal effects, relationships will need to be explicitly tested in larger-scale longitudinal research.

## References

- App, B., & Mosimane, A.W., Resch, T., & Robinson, D. (2008). USAID Support to the Community-Based Natural Resource Management Program in Namibia: LIFE Program Review. Washington, DC: Chemonics International, Inc. [for USAID]. Retrieved Jan. 7, 2009, from <http://dec.usaid.gov>.
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin*, 95(3), 542-575.
- Eggan, F. (1954). Social anthropology and the method of controlled comparison. *American Anthropologist*, 56, 743-763.
- Kaczensky, P. (2007). Wildlife value orientations of rural Mongolians. *Human Dimensions of Wildlife*, 12, 317-329.
- Nyaupane, G.P., Morais, D.B. & Dowler, L. (2006). The role of community involvement and number /type of visitors on tourism impacts: A controlled comparison of Annapurna, Nepal and Northwest Yunnan, China. *Tourism Management*, 27, 1373-1385.
- Ritchie, J.R.B. (1985). The nominal group technique — An approach to consensus policy formulation in tourism. *Tourism Management*, 6(2), 82-94.
- Ryan, R.M., & Deci, E.L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55, 68-78.
- Weaver, L.C., & Skyer, P. (2003). Conservancies: Integrating wildlife land-use options into the livelihood, development, and conservation strategies of Namibian communities. Paper presented at the 5th World Parks Congress, Animal Health And Development Forum, Durban, Republic of South Africa, September 8-17, 2003. Retrieved Jan. 7, 2009, from [http://pdf.dec.org/pdf\\_docs/Pnacx280.pdf](http://pdf.dec.org/pdf_docs/Pnacx280.pdf).
- Zinn, H.C., & Shen, X.S. (2007). Wildlife value orientations in China. *Human Dimensions of Wildlife*, 12, 331-338.

## **Visitors' attitude towards climate change adaptation strategies for ski tourism areas in a German low mountain range – Results from a visitor survey in Oberwiesenthal, Erzgebirge**

**Alexandra Dehnhardt<sup>1</sup>, Dennis Kalisch<sup>2</sup>**

Keywords: climate change, snow tourism, low mountain range, Germany

Current climate change models project great changes for European mountain areas in the coming decades (IPCC 2007). Adaptation to the expected climate change and impacts is essential for future planning concepts as winter tourism is highly vulnerable to global warming. The expected scenarios for European mountain regions predict a reduction in snow cover, changes in temperature, and occurrence of precipitation extremes (Nicholls 2006). Less snow, a shorter ski season and less income for regional tourism industry is expected to be the negative impacts of these changes. Snow cover in the lower parts of Alps and low mountain ranges is already decreasing in the last years. A sufficient amount of snow is a key element in the tourism industry (Elsasser & Bürki 2002). Ski areas in Germany are most sensitive, for example with only a 1 °C warming leading to a 60% decrease (relative to present) in the number of naturally snow-reliable ski areas in the Alps (OECD 2007). Actual predictions show that winter sport in low mountain ranges in Germany could be impossible within the next 20 years. While snow reliability in German low mountain ranges is constantly on a decrease, potential reactions of visitors remain unknown by tourism managers.

Climate change and related negative impacts have been recognised by managers as a threat for winter sport tourism. The winter tourism industry has responded to the implications of observed changes, and a range of technological, spatial and behavioural adaptation measures have been put into practice. On one hand, in most areas artificial snow production remains the key adaptation strategy to rising temperatures. On the other hand, construction of artificial snow-making facilities are characterised by high construction and operation costs and negative ecological impacts on vegetation, soil, and the aquatic ecosystem (Teich et al. 2007).

In recent years a series of papers have addressed the impacts of snow deficient winters on the tourism industry and their dependence on the duration of snow cover (König & Abegg 1997, Elsasser & Bürki 2002). However, studies examining the demand-side in the case of reductions in the snow cover are rare. Studies in the Black forest indicate that reliable snow conditions are important for visitors in the choice of a holiday destination. Our study analyses the current visitors' perceptions of climate change impacts in Erzgebirge, and if personal attitudes and expectations to their winter holiday are both affected by climate change. The study area is a low mountain range in Saxony in the south-east of Germany. It is a popular destination for winter sports and attracts around 950,000 visitors annually. Skiing areas in Oberwiesenthal as the main tourist spot for winter tourism in the Erzgebirge extend from 900 to 1,215 m altitude. Cross-country and downhill skiing are the main winter sport opportunities.

The basis for the analysis is an on-site survey that was conducted in January 2010. All in all, 347 visitors of the ski areas in Oberwiesenthal were surveyed to gather data about their perception of adaptation strategies and to what degree they support those measures. They were asked about their knowledge of climate change and their reaction towards possible changes within the area. Also, the importance of factors like snow reliability for the choice of winter holiday destination was included in the questionnaire. Results showed that 73% of respondents believe that global warming will threaten winter sport opportunities in general. Respondents expressed that snow reliability and

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<sup>1</sup> Department of Landscape Economics, Institute for Landscape and Environmental Planning, Technische Universität Berlin, Sekr. EB 4-2, Strasse des 17. Juni 145, 10623 Berlin, [alexandra.dehnhardt@tu-berlin.de](mailto:alexandra.dehnhardt@tu-berlin.de), [dennis.kalisch@mailbox.tu-berlin.de](mailto:dennis.kalisch@mailbox.tu-berlin.de)



attractive winter sport opportunities were the main criteria in choosing destination. Only a minority would visit the Erzgebirge if snow reliability is not ensured. We found that the application of snow cannons and cooperation with Czech ski resorts were rated as important adaptation strategies. Study results provided data about demand sides' attitude towards technical adaptation strategies, demand for snow-independent offers and possible displacement effects due to climate change impacts and will be helpful for a future-oriented management of the ski resort.

## References

- Bürki, R., Elsasser, H., Abegg B. (2003). Climate change: impacts on the tourism industry in mountain areas. Proceedings, 1st International Conference on Climate Change and Tourism, Djerba, 9-11 April 2003
- Elsasser, H. and Bürki, R. (2002). Climate change as a threat to tourism in the Alps. *Climate Research* (20). pp. 253-257
- IPCC (2007). Climate change 2007: Impacts, adaptations and vulnerability. Fourth assessment report. Online document 11/2009 (<http://worktoplan.com/Documents/climate%20change.pdf>)
- König, U. and Abegg, B. (1997). Impacts of climate change on winter tourism in the Swiss Alps. *Journal of Sustainable Tourism* (5/1). pp. 46-58
- Nicholls, S. (2006). Climate change, tourism and outdoor recreation in Europe. *Managing Leisure* (11). pp. 151-163
- OECD (2007). Climate change in the European Alps: adapting winter tourism and natural hazards management. Online document 11/2009 (<http://www.oecd.org/dataoecd/25/40/37909236.pdf>)
- Teich, M.; Lardelli, C.; Bebi, P.; Gallati, D.; Kytzia, S.; Pohl, M.; Pütz, M.; Rixen, C. (2007). Climate change and winter tourism: Ecological and economic effects of artificial snow. Eidg. Forschungsanstalt für Wald, Schnee und Landschaft WSL, Birmensdorf

## Highly underestimated risks of wildland fire in the rural-urban interface and the need for evacuation preparedness in recreational and protected areas in The Netherlands

Alette Getz-Smeenk<sup>1</sup>

Keywords: wildland fire, disaster management, visitor flows, recreational areas, protected areas, evacuation strategies

In the Netherlands the risks of wildland fires are generally underestimated by the public and researchers, and by the policy and decision makers of public and private organizations. Research has shown, however that it is quite probable that uncontrollable wildland fires occur in the country's largest forest and nature area, the Veluwe: 4 % a year on average, and up to 50 % in years with drought. These probability rates are much higher than those considered to be socially acceptable for other environmental risks like floods or the transport, storage and use of hazardous substances (Van Gulik 2008). Additionally, the latest National Risk Assessment shows that rapidly expanding wildland fire incidents can have a considerable disruptive impact, that transcends the regional capacity of disaster management in various ways. National involvement is required to reduce risks to a level acceptable to society (BZK 2009a,b). The elaborated incident scenario withstood a reality check only a few months after publication of this national review, as a dune fire occurred in Schoorl in north-western part of The Netherlands. Due to direct threats of fire and smoke about 550 civilians were quickly evacuated, including pensioners and hotel guests. They could not return to their homes and hotels until the next day. Fortunately there were no reports of personal accidents or major physical damages other than the affected dune area.

Recently a Dutch initiative was launched to start a national programme of intergovernmental cooperation in wildland fire risk management. The aim is to develop a strategy of public-private cooperation that leads to the prevention of wildland fire risks, as well as the improved performance of the multidisciplinary crisis organisation in situations of large wildland fires. Effective crisis communication and traffic measures are essential. Additional measures are needed, including research on:

- Issues of access, escape routes and evacuation strategies in natural areas which are visited by large numbers of tourists especially during dry seasons;
- The influence of the management of visitor flows on evacuation strategies in recreational and protected areas and vice versa;
- The possible use of data on visitor flows in fire behaviour and fire danger software, and its relevance for existing evacuation models;
- Situational factors that increase the capacity of self reliance in crisis situations of large wildland fires, such as do's and don'ts and visibility of escape routes;
- Effective strategies of risk and crisis communication that allow civilians, public and private organizations to be prepared for crisis situations;
- Decision making issues regarding the adequacy of measures and the necessary level of preparedness, including social parameters, cost-benefit analysis and the probability of casualties.

At present there are no models or data available which are adapted to the specific characteristics of the Dutch protected areas, and provide an effective and cost-efficient approach of addressing these issues in a satisfactory way. Recently held experiments to enhance self-reliance of visitors in case of evacuation in protected areas underline the necessity to find problem-solving methods that are more than an educated guess. There is an urgent need to learn from experiences and research abroad in order to develop effective evacuation strategies of green areas, or any other

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<sup>1</sup> National programme development Wildland fire risk management, The Netherlands, VNOG, P.O. Box 234, 7300 AE Apeldoorn, [a.getz@vnog.nl](mailto:a.getz@vnog.nl)

alternative, especially in a densely populated country such as The Netherlands. A multidisciplinary programme approach integrating scientific insights on land use, geo-spatial planning, management of (visitor flows in) protected areas as well as risk and disaster management, appears to be the most promising. The multi-level agenda setting achievements of the regional public safety organization VNOG provide a promising basis for such an innovative approach. It has been rewarded with the national Public Safety Award 2009 ([www.veiligheidaward.nl](http://www.veiligheidaward.nl)). The challenge is to bring it into the next stage of development in an integral and sustainable manner.

## References

- BZK (2009a). "Nationale Risicobeoordeling. Bevindingenrapportage 2008", Ministry of Interior and Kingdom Relations, The Netherlands. [www.minbzk.nl](http://www.minbzk.nl)
- BZK (2009b). "Aanvullende analyse Aanvullende analyse voor de taak 'grootschalige evacuatie' (bij een chemisch, nucleair en natuurbrand-scenario)", Ministry of Interior and Kingdom Relations, The Netherlands. [www.minbzk.nl](http://www.minbzk.nl)
- Gulik, A.T.W. van (2008). "Natuurbrand, een onderschat risico. Kwantitatieve en kwalitatieve benadering om te komen tot bestuurlijke en operationele prioritering in risico's in de Veiligheidsregio Noord- en Oost-Gelderland.", Master of Public Safety, Delft University of Technology, The Netherlands. [www.vnog.nl](http://www.vnog.nl)

# Perception and evaluation of natural hazards as a consequence of glacier retreat and permafrost degradation in tourism destinations

Ulrike Pröbstl<sup>1</sup>, Bodo Damm<sup>2</sup>, Wolfgang Haider<sup>3</sup>

Keywords: permafrost degradation, risk perception, mountain tourism

In the cryosphere of the European Alps, glacial ice and permafrost respond sensitively to climate change. In this context, glacier retreat, increasing subsurface temperature, increase of slope instability, and mass movements indicate clearly climate and landscape change in alpine environments. Thus, these processes affect current and future potential of natural hazards to a considerable extent.

The study analysed, estimated and simulated the present and future extents of glaciers and permafrost related to geomorphologic changes. Furthermore, it was focused on impacts on geomorphologic hazards and risks for tourism in the upper Tuxer Valley. The geo-physical part of the study was based on a field survey, remote sensing and GIS. In order to study the risk perception and the expected behaviour of mountain tourists we used a web-based questionnaire.

In 1850 glaciers covered 20.6 km<sup>2</sup> along the main ridge of the Zillertaler Alps. At present, the glaciated area has been reduced to approx. 7 km<sup>2</sup> thus reflecting a decrease of 65%. As a consequence, only three glaciers will remain with a limited spatial extent. Mass movement relating to glacier retreat and degradation of permafrost, affects and limits high alpine tourism and recreation. In the meantime, due to the extensive retreat of glacier tongues, respectively to the complete meltdown of glacier surfaces, traditional mountain routes cross morainic debris and hardly accessible mountain flanks. Thus, the traditional mountain routes have now become much more challenging, time consuming and in consequence more risky, especially for hikers with average or below average skills. Many trails are affected by erosion, rock fall, meltdown of the glacier tongues to the exposure of steep terrain, the reduction of glacier thickness to the emergence of cliffs and significant changes to the runs of glacial creeks. In order to reduce or avoid associated risks, many high altitude trails, trails over passes, and access routes to alpine huts, have become more expensive to maintain or must be adapted to these new terrain features. In some cases new infrastructure, such as creek crossings, must be constructed. A survey of over 300 high alpine tourists and recreationists documented the importance of anticipating these increasing concerns about risk and safety correctly, as well as planning mitigating measures early. One quarter of respondents feel strongly that they want to avoid any risk, while the vast majority (71%) is risk neutral, and only 4% are actually seeking risk. Half of all respondents are highly uncertain about the concept of danger and risk in the alpine environment, and any deterioration of what quickly lead to declining participation. These responses are based on a survey of regular visitors to the mountains, who are fairly familiar with the concepts, and who contribute significantly to the economic basis of the region with their expenses for accommodation and other trip related items.

The routes that should receive the major attentions for monitoring safety and improvements are the ones leading up to peaks, or which offer considerable time savings, as it is those reasons that are the most likely to make hikers take risks. The survey also showed that the preparation of maps is perceived to be primarily as the responsibility of the public sector (provincial and federal governments) and to a lesser extent, as the domain of the tourism sector. On the other hand, the marking of trails and provision of signage is perceived to be the predominant responsibility of the

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<sup>1</sup> University of Natural Resources and Applied Life Sciences, Vienna, Institute of Landscape Development, Recreation and Conservation Planning, Peter-Jordan-Str. 82, A-1190 Vienna, Austria, [ulrike.proebstl@boku.ac.at](mailto:ulrike.proebstl@boku.ac.at)

<sup>2</sup> Catholic University Eichstätt-Ingolstadt, Institute for Physical Geography, Ostenstraße 18 D-85072 Eichstätt, [bodo.damm@ku-eichstaett.de](mailto:bodo.damm@ku-eichstaett.de)

<sup>3</sup> Simon Fraser University, Burnaby, B.C., Canada, School of Resource and Environmental Management, 8888 University Drive, Burnaby, B.C. V5A 1S6, [wolfgang\\_haider@sfu.ca](mailto:wolfgang_haider@sfu.ca),

alpine clubs. These clubs should also be responsible for guiding and for training, as well as trail maintenance. One quarter of respondents suggested that the local communities be predominantly responsible for trail maintenance and marking, and other protective measures. Finally, the perceived responsibility for major investments, including more sophisticated maintenance of trails is spread more evenly between the provinces (32%), the local communities (22%), the tourism sector (21%) and the federal government (18%).

### **References**

Pröbstl, U, Damm, B. (2008): Wahrnehmungen und Bewertungen von Naturgefahren als Folge von Gletscherschwund und Permafrostdegradation in Tourismus-Destinationen am Beispiel des Tuxer Tals (Zillertaler Alpen/Österreich), Endbericht von StartClim2008.F; in StartClim2008: Anpassung an den Klimawandel in Österreich.. BMLFUW, BMWF, BMWFJ, ÖBF, Österreichische Hagelversicherung, Umweltbundesamt, 51 p.

# Current situations and issues of risk management in protected areas; A case study of the Oirase Stream Area in Towada-Hachimantai National Park, Japan

Shigemitsu Shibasaki<sup>1</sup>, Shin Onodera<sup>1</sup>, Tetsuya Aiko<sup>2</sup>, Takahiro Tsuge<sup>3</sup>, Yasushi Shoji<sup>2</sup>  
Kazunari Yamaki<sup>4</sup>

Keywords: risk management, protected areas, visitor safety, Oirase Stream Area

## Background

A beach tree along the Oirase Stream fell on a tourist in August 2003. The injured person became paraplegic because of the accident and sued the Forest Agency (FA) and the Aomori prefecture (AP) for lack of appropriate management. Both authorities rebutted the claim, for the accident happened in a special protection zone and the visitors in principle are responsible for their own safety. In February 2009, the Supreme Court admitted that the Oirase Stream Area (OSA) should be regarded as "a tourist site" regardless of the zoning category considering the large number of annual visitors (500 thousand people). Finally, the Supreme Court ordered the defendants to pay in all 247 million yen to the claimant in damages.

This research aims to illustrate the current risk management system of the OSA. In particular, personal interviews were conducted with public authorities to know how these authorities were involved in risk controls. A visitor questionnaire was also carried out in the OSA. The data were analyzed by using factor analysis and cluster analysis to clarify the visitor profiles with regard to risk preference.

## Defining Risk

There are a variety of definitions of risk such as "the chance of injury or loss as defined as a measure of the probability and severity of an adverse effect to health, property, the environment, or other things of value" (National Standard of Canada 1997:3). Our research focused both on risks to individual visitors and on risks to public authorities (Visitor Safety in the Countryside Group 2005).

## Risk management system of the OSA

Almost all lands and forests in the area are owned by the FA. Tourism facilities such as footpaths, toilets, and a visitor center were constructed by the Tourism Division of the AP on land borrowed from the FA. Further, the FA has been delegating the management of the forests adjacent to the footpaths to the Tourism Division of the AP. There is also a national road -Route 102- that runs along the boardwalks. The cliffs around Route 102 and the route in itself are managed by the Road Construction Division of the AP. The AP strengthened the monitoring activity of the beach trees after the accident of 2003 and set up signs warning about the risk of falling beach trees/branches. However, there exists neither coordination among the institutions nor a comprehensive management plan to promote truly collaborative management.

## Results of the visitor questionnaire

We received a valid response from 915 people, of which 57% are males. Further, 40 % of the respondents came from Kanto District (including Tokyo), followed by 37% from Tohoku District (including Sendai), and 16% from Chubu/Kinki District (including Nagoya and Osaka). People aged

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<sup>1</sup> Iwate University, 3-18-8 Ueda, Morioka, Iwate, 020-8550, JAPAN, [shiba@iwate-u.ac.jp](mailto:shiba@iwate-u.ac.jp), [onoderashin\\_ra@msn.com](mailto:onoderashin_ra@msn.com)

<sup>2</sup> Hokkaido University, [tetsu@res.agr.hokudai.ac.jp](mailto:tetsu@res.agr.hokudai.ac.jp), [yshoji@for.agr.hokudai.ac.jp](mailto:yshoji@for.agr.hokudai.ac.jp)

<sup>3</sup> Konan University, [tsuge@center.konan-u.ac.jp](mailto:tsuge@center.konan-u.ac.jp)

<sup>4</sup> Forestry and Forest Products Research Institute, [yamaki@ffpri.affrc.go.jp](mailto:yamaki@ffpri.affrc.go.jp)

over 50 comprised 64% of all respondents; while the percentage of young people aged less than 20 were only 10%.

The factor analysis helped us extract three principal components:

- the component pertaining to the injuries/deaths occurring outside the footpaths;
- the component pertaining to the injuries/deaths caused by natural factors such as falling rocks or trees;
- the component pertaining to injuries/deaths occurring on the footpaths and caused by the safety failure of facilities, such as the collapse of boardwalks.

The cluster analysis showed that the visitors can be classified into four groups:

- Group 1 visitors who think that public authorities should take responsibility for the injuries/deaths happened on the footpaths and caused by safety failure of facilities;
- Group 2 visitors who think that public authorities should take responsibility for the injuries/deaths caused by natural factors;
- Group 3 visitors who think that public authorities should take responsibility for injuries/deaths occurring outside the footpaths;
- Group 4 visitors who think that any injuries/deaths occurring in the OSA should be treated as the responsibility of the victim.

### **Visitors' profiles by group**

The members of Group 3 tend to be aged over 50, while those of Group 1 tend to be comparatively young. The Group 3 visitors urged the AP to monitor the beach trees outside the footpaths more frequently, while the Group 1 and Group 4 visitors did not feel the necessity of any such monitoring activities.

### **Discussions**

After the tragedy, the risk management system of the OSA has been gradually improving. However, the inclusion of even more institutions and other various stakeholders is necessary. Our research further found that there are four types of visitors with regard to risk preference. Public authorities need to conduct management activities considering the type of visitors they are targeting.

### **References**

- Bennet, L. and Crowe, L (2008) Landowners' liability -Is perception of the risk of liability for visitor accidents a barrier to countryside access?-. Sheffield Hallam University. [http://digitalcommons.shu.ac.uk/lrg\\_papers/38](http://digitalcommons.shu.ac.uk/lrg_papers/38).
- Japan National Tourist Organization (n.a.) Towada-Hachimantai National Park. <http://www.jnto.go.jp/eng/location/rtg/pdf/pg-201.pdf>
- National Standard of Canada (1997) Risk management: guideline for decision-makers (CAN/CSA-Q850-97). Canadian Standards Association
- Visitor Safety in the Countryside Group (2005) Managing visitor safety in the countryside -principles and practice-. Visitor Safety in the Countryside

## National parks management approaches and parks financing principles: practical findings

Agita Livina<sup>1</sup>, Iluta Berzina<sup>2</sup>

Keywords: national park, park management, collaboration, park financing

The paper has a character of findings on National parks (NP) management approaches and parks financing principles towards applying the business approach to financing NPs, Latvia.

Data from 2009 shows that there are 273 NPs in Europe covering 98 000 km<sup>2</sup> in total, but 182 of them are in the European Union (EU 27) and four of them are established in Latvia during 1975 till 2007 (EUROPARC 2009, WDPA, 2009). Traditionally, NPs have been managed by government agencies (GoBi Research Group 2009). Funding for the NPs management is usually insufficient – a deficit in the USA and Canada approximately 70%, in Europe – 80% of protected areas are under-financed (Eagles 2008, PANParks, 2008). Protected areas in developing countries receive an average of less than 30 % of the funding that is necessary (Spergel 2001); Latvia is not an exception. Defined development problem objectives in the Guidelines of Environment Policy of Latvia for 2009 till 2015 include indications that there is no practical collaboration with land owners which is mainly a private sector (LR VIDM 2009). We believed the reasons must be searched by investigating: (1) the form of maintaining and managing NPs; (2) finance attraction as money generation. We analyzed examples of USA and Canada to determine differences in these fields. We used qualitative methods in the research as content analyse of scientific literature and practical information.

Our main findings of the research are as follows:

- In the 20th century in the agencies of NPs operate under two management models: (i) “exclusive” and (ii) “inclusive”. The first is largely adopted in the USA, and the second model is more frequently adopted in Western Europe. While “exclusive” management approach is generally successful, the “inclusive” approach, which widely expanded in Europe including Latvia, still affects local quality of life and development (Borrini-Feyerabend 1996). According to the latest scientific literature, there is a new trend in the world: new management approaches to nature protection and development; for instance, in effective stakeholders’ collaboration (Buckley et al. 2003) Therefore, problems and new objective setting become similar in the NPs territories where both management models are represented.
- New models are emerging by changing the governance forms of the protected area and putting more stress on collaboration (Eagles 2008) in the USA as well as in Canada.
- Partnerships are an accepted mechanism to generate additional park and recreation resources that otherwise could not be provided with public funds. Partnerships are increasingly important in the management of public agencies, specifically parks and recreation service providers. Citizens’ heightened awareness of broader social issues creates demands to find solutions to financial, human, and capital problems through alternative methods such as collaborative agreements. Through collaboration managers of park agencies provide goods for supporting their agencies (Weddell et al. 2009).
- Existing tendency to perceive each protected area as a separate entity is being broken. Good practice now recommends that they be planned, managed and financed as a system (Borrini-Feyerabend 2003).
- Ways of financing NPs fall under three basic categories: (i) Annual budget allocations from a government’s general revenues; (ii) Grants and donations from individuals, corporations, foundations, and international donor agency; (iii) User fees, conservation taxes, fines, and

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<sup>1</sup> Latvia University of Agriculture, Svetes Street 18, Jelgava, LV 3001, Latvia; [iluta.berzina@va.lv](mailto:iluta.berzina@va.lv)

<sup>2</sup> Vidzeme University of Applied Sciences, Cesu Street 4, Valmiera, LV 4201, Latvia; [agita.livina@va.lv](mailto:agita.livina@va.lv)



other revenues. Most protected areas in developing countries will need to rely on a combination of all these sources (Spergel, 2001).

- At a World Parks Congress Eagles (2003) outlined 17 trends for 25 next years of what will affect park management, park management shifts to financially flexible and entrepreneurial forms (Eagles, 2003).
- Income of NPs in Latvia is basically formed by state budget allocations that does not provide full accomplishment of all NP functions. The other and most important source of income for NPs in Latvia is forest cutting or selling in low protection status areas. Maintenance organization forms of NPs include voluntary agreements, positive support mechanisms, state and private partnership, although the use of them in Latvia is not widely spread (LR VIDM, 2009).
- In the management approaches of NPs, Latvia could be recommended to integrate the “collaborative management” elements because stakeholders are usually aware of their interests in the management of the NP. They usually possess specific capacities (knowledge, skills) and/or comparative advantage and they are usually willing to invest (e.g., time, political authority, money) (Borrini-Feyerabend 1996).
- The road ahead: continue to collect the financial relations statistical information to determine opportunities for a business approach to financing NPs, as well as how stakeholders financial relations impact on parks attendance.

## References

- Borrini-Feyerabend G. (1996). Collaborative management of Protected Areas : Tailoring the Approach to the Context. IUNC. Available at: <http://data.iucn.org/dbtw-wpd/commande/&MR=20&RL=0&DL=0>
- Borrini-Feyerabend G. (2003). Governance of Protected Areas – Innovation in the Air. Available at: [http://www.earthlore.ca/clients/WPC/English/grfx/sessions/PDFs/session\\_1/Borrini\\_Feyerabend.pdf](http://www.earthlore.ca/clients/WPC/English/grfx/sessions/PDFs/session_1/Borrini_Feyerabend.pdf)
- Buckley R., Weaver D.B., Pickering C. (2003). Nature-based Tourism, Environment and Land management. Biddles Ltd, Kinsg’s Lynn, UK
- Eagles, P. (2003). International Trends in Park Tourism : a Macro View of Park Tourism Finance. World Parks Congress, South Africa, Durban. Available at: [http://www.conservationfinance.org/Workshops\\_Conferences/WPC/WPC\\_documents/Apps\\_12\\_Eagles\\_v1.pdf](http://www.conservationfinance.org/Workshops_Conferences/WPC/WPC_documents/Apps_12_Eagles_v1.pdf)
- Eagles P., Hillel O. (2008). Improving protected area finance through tourism. Available at: <http://www.ahs.uwaterloo.ca/~eagles/documents/EaglesandHillelArticleonEconomicsandFinanceofTourisminProtectedAreas.pdf>
- EUROPARC Federation (2009). Living Parks : 100 Years of National Parks in Europe, Kessler Druck + Medien, Germany, Bobingen.
- GoBi Research Group (2009). Protected Area Governance. Available at: [http://www.biodiversitygovernance.de/project\\_details.php?p=gir](http://www.biodiversitygovernance.de/project_details.php?p=gir)
- LR VIDM (2009). Vides politikas pamatnostādnes 2009. – 2015.gadam. Available at: <http://www.vidm.gov.lv/lat/dokumenti/ppd/files/text/dokumenti/Pamatnostadnes-WWW.doc>
- PANParks (2008). Financing Tourism in Protected Areas through an Innovative investment proposal for developing nature-based tourism. Available at: <http://www.iuhei.org/activities/past/assets/tourism3-kun.pdf>
- Spergel B. (2001). Raising Revenues for Protected Areas : a Menu of Options. Available at: <http://www.worldwildlife.org/what/howwedoit/conservationfinance/WWFBinaryitem7128.pdf>
- WDPA (2009). Advanced protected Area Search, Available at: <http://www.wdpa.org/MultiSelect.aspx>

Weddell M.S., Fedorchak R., Wright B.A. (2009). The partnership phenomenon, *Journal Park Science*, Fall, No. 2., Vol. 26. Available at:  
<http://www.nature.nps.gov/ParkScience/print.cfm?PrintFormat=pdf>

# Diversification of the tourism offer in rural and natural areas: the implementation of a Dark-Sky Reserve in Portugal

Apolónia Rodrigues<sup>1</sup>, Áurea Rodrigues<sup>2</sup>

Keywords: Dark-Sky Reserve, Portugal, tourism, light pollution, protected areas

The tourism sector plays an important role in Portugal, representing about 15.7% of the GNP and providing employment for approximately 19% of the country's active population (World Travel & Tourism Council, TSA Research 2008 cited by Blanke & Chiesa 2009). The relevance of the sector is reflected not only by its economic impacts, but also by its consequences on a social, cultural and environmental level; namely by its potential to balance inter-regional development, to value and help preserve cultural and environmental heritage as well to enhance the well being of the resident's local population, aiming at a sustainable development of the destination (Rodrigues & Kastenholtz 2007). Tourism in Portugal is being mainly concentrated in Algarve and structured around the "sun and sea" product. Large rural and natural areas of its relatively deserted hinterland are still mostly neglected by tourists, as well as by residents and politicians. Although, natural and cultural attractions abound and show a potential of sustainable tourism development, which may help these areas in maintaining some economic activity and thereby fixing its young population ?? Fixing? (Rodrigues & Kastenholtz 2007). In 2005 a dam was built in a hinterland region of the country that resulted in the largest artificial lake in Europe – Alqueva. The country gained a new valuable resource with a huge potential for tourism development. The dam has as length of about 83 km which runs next to the municipalities of Moura, Mourão, Portel, Reguengos de Monsaraz and Alandroal, whose margins comprehend about 1.160 km. The lake has a surface of 250 km<sup>2</sup>. In this area a natural protected area was created and a Dark-Sky Reserve with some distinctive objectives to preserve the natural environment, promote sustainable use of electric power, implement sustainable development measures in the region and develop a distinct tourism offer in Portugal.

With the implementation of the Dark-Sky Reserve, the strategy is based on a contact with the territory in a sense that the night is geared towards the enjoyment of the stars and the night landscape, winning another life when it gets dark. The Dark-Sky Reserve is a tourism product that can make a difference in the destination since there is no similar project in southern Europe while the absence of light help to preserve the biodiversity of the region. Light pollution is the excessive use of artificial light. The International Dark-Sky Association defines light pollution as: "Any adverse effect of artificial light including" sky glow " trespass, mild confusion, decreased visibility at night. It obscures the stars that exist in the night sky for city dwellers (Chalkias et al. 2006), interferes with astronomical (Pedani 2004), and, like any other form of pollution, disrupts ecosystems (Bourgeois et al. 2009) and has adverse effects on health (Pauley 2004, Kerenyib et al. 1990).

In this article we intend to present a case study of developing a tourism product in a protected natural area and a rural region that as well as being innovative, is also able to attract markets with purchasing power and allows for clear commitments under the sustainability in economic and environmental field. The immediate result is reduction of the energy bill and a privileged position with new markets resulting in positive economic impacts.

## References

- Pauley, S. (2004). Lighting for the human circadian clock: recent research indicates that lighting has become a public health issue, *Medical Hypotheses*, p. 588-596
- Kerenyib, A.; Pandulab, E. & G. Feuerb, G. (1990). Why the incidence of cancer is increasing: the role of light pollution, *Medical Hypotheses*, (33/ 2), p. 75-78

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<sup>1</sup> GENUINELAND, Évora, Portugal, [genuineland@gmail.com](mailto:genuineland@gmail.com)

<sup>2</sup> University of Aveiro, Aveiro, Portugal, ISPGAYA, Gaia, Portugal, [aurea@ua.pt](mailto:aurea@ua.pt)

- Bourgeois, S.; Gilot-Fromont, E.; Viallefont, A., Boussamba, F. & Deemd, S. (2009) Influence of artificial lights logs and erosion on leatherback sea turtle hatchling orientation at Pongara National Park, Gabon, *Biological Conservation*, Vol. 142 (1), pp. 85-93
- Pedani, M. (2004) Light pollution at the Roque de los Muchachos Observatory, *New Astronomy*, (9/8), pp. 641-650
- Chalkias, C.; Petrakis, M; Psiloglou, B. & Lianou, M. (2006) Modelling of light pollution in suburban areas using remotely sensed imagery and GIS, *Journal of Environmental Management*, (79/1), p 57-63
- Rodrigues, A.; Kastenholz, E. (2007). Hiking as a Recreational and Tourist Activity - Comparing Portuguese Hikers with those from other Nationalities, *Revista Turismo & Desenvolvimento* (7/8), p 83 - 91.
- Blanke, J. & Chiesa, T. (2009). *The travel & tourism competitiveness report 2008, balancing economic development and environmental sustainability*, CH: World Economic Forum

## The recreational value of urban parks in the Veneto Region (Italy)

**Tiziano Tempesta<sup>1</sup>**

Keywords: urban parks, recreation, contingent valuation

The importance of urban public parks in producing a great number of benefits for the inhabitants is nowadays widely accepted (Kaplan 2001). Urban green areas improve the physical and the psychological wellbeing of the citizens and, as a consequence, they affect house prices, especially in dense urban settlements. The value of urban parks can be estimated using the contingent valuation method (CVM), (Dwyer 1989, Tyrväinen & Väänänen 1998, Tyrväinen 2001, del Saz Salazar & Mendez 2007) and the hedonic pricing approach (More et al. 1988, Tyrväinen 1997, Poudyal et al. 2006). The first approach measures the recreational benefits of the people living in a wide area surrounding the park, whereas in the second method the price of the houses is affected essentially by the green areas that can be seen through the windows (Bourassa et al. 2004). Despite the limits of the CVM (Baker et al. 2008), it has been argued that in the case of familiar goods this approach gives unbiased estimates (MacMillan et al. 2006).

To analyse the demand for urban parks in the Veneto Region, five research projects have been undertaken using the same methodology. The first one was carried out in a green space of the city of Padova in 1996. From 2005 to 2009, four studies were undertaken in three small towns (Montebelluna, Castelfranco and Monselice) and in a rural municipality (Cervarese Santa Croce). The parks are quite different from each other. The park of Padova is very recent (1991) and is located in the suburbs, outside the city. On the other hand, the park of Castelfranco is the garden of an historical Venetian villa (Villa Bolasco) and it is near the medieval walls of the city. The parks of Montebelluna and Monselice occupy two areas that in the past belonged to two historical mansions, but they have been deeply modified in recent years. They are located inside the towns. Finally, the park of Cervarese Santa Croce is located in the countryside, in front of a thirteenth century castle, and it has been recently created through the diversion of a river. With the exception of Cervarese Santa Croce, all the green spaces are equipped with playgrounds and other recreational facilities. The surface area of the public parks ranges from 2 to 6 hectares and they can be considered representative of the whole regional situation.

More than 200 interviews were collected in each park. The recreational value has been estimated by means of the contingent valuation method. The open-ended format was used. The interviewees were asked to state their maximum willingness to pay for an entrance ticket to continue visiting the park in the future without reducing the number of visits per year.

The average number of visits per year is very high in the case of the city of Padova (58) and Montebelluna (44), whereas it is lower in the other towns. The number of trips per year depends on the characteristics of the green spaces, the period in which the parks are open to public and also the population density. In the municipalities where the population density is lower, people travel more to reach the parks and make a lower number of visits per year. There also is an inverse relationship between the average distance travelled and the percentage of people that drive to reach the park. About 70% drive in the rural municipality, whereas about two-thirds walk and cycle in the urban areas.

The willingness to pay (WTP) was deflated and expressed in constant prices for 2009. The WTP ranges from €0.90 (Monselice) to €2.79 (Castelfranco). To compare the recreational value of the five public parks, the total benefits per hectare were calculated. The recreational value is higher in the city of Padova (€18,748 per hectare per year) and lower in the rural municipality of Cervarese

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<sup>1</sup> Department Territory and Agro-forestry – University of Padova Agropolis, Viale dell'Università 16, 35020 Legnaro (PD) Italy, E-mail [tiziano.tempesta@unipd.it](mailto:tiziano.tempesta@unipd.it)

Santa Croce (€1,535 per hectare per year). An inverse relationship exists between the total WTP per hectare, per day of opening, and the density of the population living in the five municipalities considered. The recreational value of the land is greater than that of the agricultural one in the rural areas as well. This suggests that the urban sprawl does not reduce the demand for public parks. In the urban areas the recreational value is more or less equal to that of the land suitable for development and it is eight to ten times higher than that in the rural areas. From this point of view it is possible to suppose that urban sprawl causes a reduction in the efficiency of the public expenditure in this field.

## References

- Baker R., Robinson A. and Richard Smith R. (2008). How do respondents explain WTP responses? A review of the qualitative evidence. In: *The Journal of Socio-Economics* (37), p 1427–1442.
- Bourassa S. C., Hoesli M. and Sun J. (2004). What's in a View?. In: *Environment and Planning* (36), p1427-1450.
- Dwyer J.F., Schroeder H.W, Louviere J.J. and Anderson D.H (1989). Urbanities willingness to pay for trees and forests in recreation areas. In: *Journal of Arboriculture*, 15(10), p 247-252.
- Del Saz Salazar S. and Menéndez L.G. (2007). Estimating the non-market benefits of an urban park: Does proximity matter?. In: *Land Use Policy*, 24, p 296–305.
- Kaplan R. (2001). The Nature of the View from Home: Psychological Benefits. In: *Environment and Behaviour* (33) (4), p 507-542.
- MacMillan D., Nick Hanley N. and Lienhoop N. (2006). Contingent valuation: Environmental polling or preference engine?. In: *Ecological Economics*, 60, p 299–307.
- More T.A., Stevens T. and Allen P.G. (1988), Valuation of urban parks. In: *Landscape and Urban Planning* (15), p 139-152.
- Poudyal N.C., Hodgesa D.G. and Merrett C.D. (2006). A hedonic analysis of the demand for and benefits of urban recreation parks. In: *Land Use Policy* (26), p 975–983.
- Tyrväinen L. and Väänänen H (1998). The economic value of urban forest amenities: An application of the contingent valuation method. In: *Landscape and Urban Planning* (43), p 105-118.
- Tyrväinen L. (1997). The amenity value of the urban forest: an application of the hedonic pricing method. In: *Landscape and Urban Planning* (37), p 211-222.
- Tyrväinen L. (2001). Economic valuation of urban forest benefits in Finland. In: *Journal of Environmental Management* (62), p 75–92.

# Economic effects of tourism in the Souss-Massa-National Park, Morocco

Julius Arnegger<sup>1</sup>

Keywords: national park, nature-based tourism, economic effects, Morocco, Souss-Massa

## Introduction

National parks in Morocco have existed since 1942 when the Toubkal National Park in the High Atlas was inaugurated. Today, there are ten national parks which represent such diverse landscapes as the Atlas Mountains (Toubkal, Haut-Atlas Oriental, Ifrane, Tazekka), the Atlantic coast (Souss-Massa, Khenifiss) or the arid desert (Iriqui) (CHMBM 2009). Despite this long tradition of national parks in Morocco, most of them lack sufficient funding and management structures, and it is only recently that they are more and more considered as tools for sustainable development, especially through the promotion of nature-based tourism (Billand 1996).

However, data on socioeconomic issues, including visitation numbers, is scarce. On this account, a pilot study on the economic effects of tourism in the Souss-Massa National Park was conducted. This study, funded by the German Technical Cooperation, is based on a methodology that has already been applied in nine German national and nature parks, which means that results from different survey areas are comparable internationally (e.g. Job et al. 2005, 2009).

## Case Study

The Souss-Massa National Park is facing considerable pressure from (mass) tourism development and population growth due to its spatial proximity to the resort town of Agadir. The latter is dominated by Fordist mass tourism, which focuses on economies of scale by marketing highly standardized products to large numbers of indifferent customers, e.g. the classic "3S" (sun, sand, sea) beach vacation (Ioannides & Debbage 1998, Torres 2002).

Under these circumstances, the pilot study in the Souss-Massa National Park essentially focused on the following issue: to what extent does tourism in the national park contribute to the regional economy? Answering this question should enable the High Commission for Water, Forestry and Desertification Control, in charge of protected area management, to promote nature protection among local, regional and national stakeholders, relying on hard economic facts.

## Methodology

Seven census points were selected in cooperation with the park management to coincide with the main access points to the park so as to record park visitation. Twenty census days were chosen to reflect variations in visitation by season and the day of the week. Between May 2007 and March 2008, a total of 3,790 face-to-face interviews were conducted, of which 2,450 were short interviews in which the place and duration of the stay, visitor type (day-tripper vs. overnight visitor, local vs. external visitor), accommodation type and classification and the organization of the trip (self-organized vs. package tour) were recorded. The remaining 1,340 long interviews focused on the structure and size of tourist expenditure by economic sectors (the basis for calculating the regional income deriving from visitor spending), the affinity with the national park, and socio-demographic data. Additionally, visitors were counted on every census day and at every census point. The total number of visitors per year was extrapolated using adjustment factors for the season (high season/low season/Ramadan) and the day of the week (weekday/weekend, holiday) (Mayer et al., 2009).

These values were adjusted with the share of visitors for whom the existence of the national park was the primary reason to visit the Souss-Massa area, as one can argue that other visitors'

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<sup>1</sup> Institute of Geography, Julius Maximilian University of Würzburg, Am Hubland, 97074 Würzburg, Germany, julius.arnegger@uni-wuerzburg.de

expenditures might have occurred in the region anyway. The share of visitors with high national park affinity was defined as the percentage of tourists that answered affirmatively to a determined sequence of questions (Fig.1)

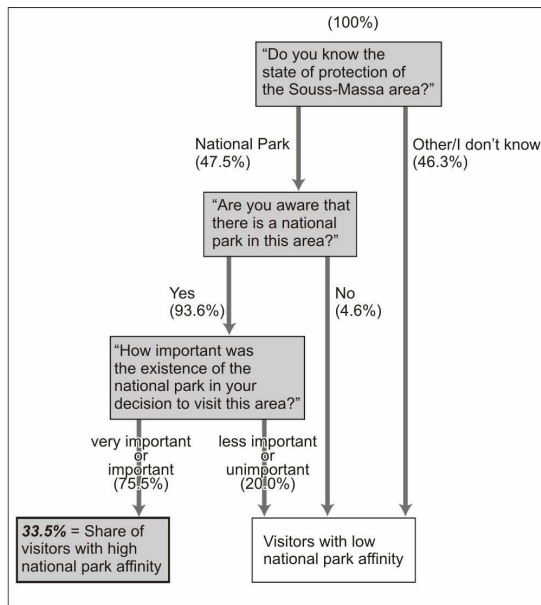


Figure 1: Decision tree to determine the share of visitors with high national park affinity.

## Results

The Souss-Massa National Park is visited by 300,000 tourists annually. The seasonality is comparable to overnight stays at hotels in Agadir, which underlines the importance of this resort town, not at least as a starting point for excursions to nearby attractions such as the Souss-Massa National Park (Fig. 2). The latter creates economic effects of approximately EUR 1.2 million annually if only expenses from visitors with high national park affinity are taken into account.

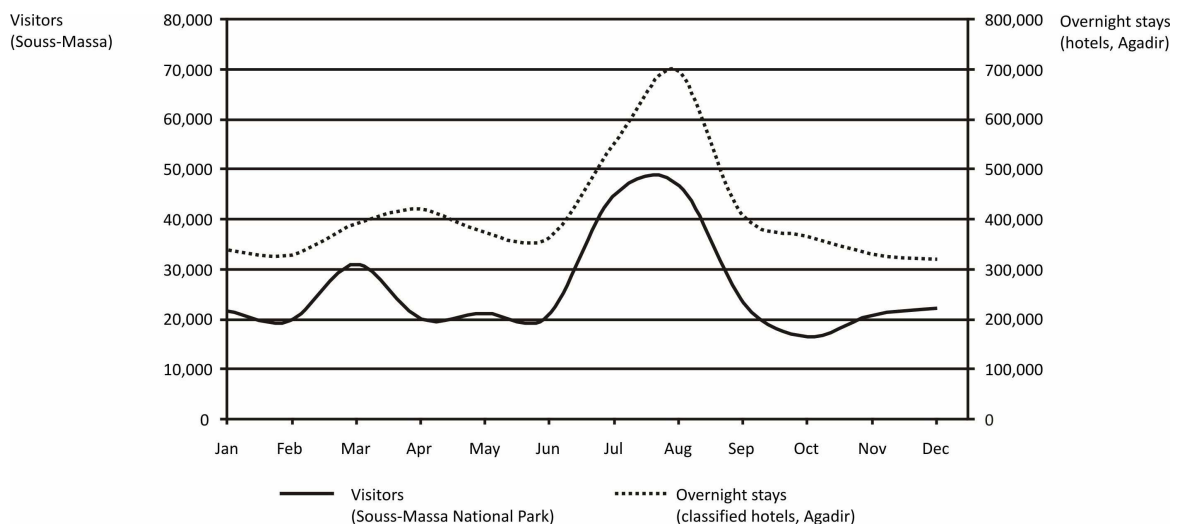


Figure 2: Visitation in the Souss-Massa National Park (2007/08) and number of overnight stays in classified hotels in Agadir (2006) (sources: own research; MTAES, 2007).

The majority of all visitors, however, mainly visit the park as an add-on to a standard beach vacation and can be classified as somewhat indifferent to nature protection. Less than half of the visitors know that they are in a national park, and only one third represents visitors with high national park affinity. That said, those environmentally conscious tourists tend to have higher expenditures and are therefore an interesting market segment which is, until now, not adequately



valorized. By contrast, existing plans for the development of hard tourism infrastructure within the park's boundaries might put Souss-Massa's ecotourism potential at risk (Job et al., 2008).

## References

- Billand, A. (1996). Développement Touristique des Parcs de Montagne au Maroc: Principes de Zonage et d'Aménagement. In: *Revue de Géographie Alpine*, 84(4), pp. 96-108.
- CHMBM: Clearing House Mechanism on Biodiversity of Morocco (2009). Convention on Biological Diversity. Retrieved 06/08/2009, from <http://www.biodiv.be/maroc/>
- Ioannides, D., & Debbage, K. G. (1998). Neo-Fordism and Flexible Specialization in the Travel Industry. Dissecting the Polyglot. In: D. Ioannides & K. G. Debbage (eds.), *The Economic Geography of the Tourist Industry. A Supply-side Analysis*, pp. 99-122. London & New York.
- Job, H., Arnegger, J., & Hnaka, A. (2008). Les Effets Economiques Régionaux des Activités Touristiques dans le Parc National de Souss-Massa (= unpublished project report). Würzburg & Rabat.
- Job, H., Harrer, B., Metzler, D., & Hajizadeh-Alamdary, D. (2005). *Ökonomische Effekte von Großschutzgebieten* (= BfN-Skripten, Vol. 151). Bonn.
- Job, H., Woltering, M., & Harrer, B. (2009). *Regionalökonomische Effekte des Tourismus in deutschen Nationalparks* (= Naturschutz und Biologische Vielfalt, Vol. 73). Bonn.
- Mayer, M., Müller, M., Woltering, M., Arnegger, J., & Job, H. (2009). *The Economic Impact of Tourism in six German National Parks* (= working paper). Würzburg.
- MTAES: Ministère du Tourisme de l'Artisanat et de l'Economie Sociale (2007): *Statistique pour la fréquentation touristique à Agadir pour le mois de décembre 2006*. Rabat.
- Torres, R. (2002). Cancun's Tourism Development from a Fordist Spectrum of Analysis. In: *Tourist Studies*, 2(1), pp. 87-116.

# Comparing the economic impacts of recreation to rural and urban National Forests

Donald B.K. English<sup>1</sup>, Eric M. White<sup>2</sup>

Keywords: economic impacts, visitor spending, GDP, urban national forests

There is renewed interest in the United States to quantify the contributions to jobs and Gross Domestic Product (GDP) that are created when visitors to National Forests spend money during their visits. A large part of that interest is due to an emphasis by the US Department of Agriculture in improving the economic health of rural communities. The impacts of recreation visitation, about \$13 billion, account for nearly half of the Forest Service's total contribution to GDP. However, not all National Forests are in rural areas. Sixteen forests have been classified as 'urban' national forests because of their proximity to major metropolitan areas. Almost half of these include major ski area complexes that draw from national and international markets, which greatly affects the average per-visit spending patterns. Some previous work has identified factors that affect spending patterns across visitors, including distance travelled, length of stay, and type of lodging (Stynes and White 2006, White and Stynes 2008). However, it is not clear whether there are consistent differences between National Forests located in urban versus rural areas in the per-visit and total impacts that come from visitation. Urban areas often have more complex economies, so the multiplier effects of visitor spending would likely be somewhat greater than in rural areas. However, the visitation and spending patterns have a greater influence on both the per-visit and the total impacts, and research on differences in these variables is lacking.

In this paper, we compare the set of urban National Forests to an equal number that are located in rural areas. The rural forests are selected to be geographically close to the urban ones, so as to have the same regional mix as the urban forests (Table 1). We compare per-party spending patterns, as well as key visitation characteristics that are related to spending patterns, including the percentage of visits from the local area, visit duration, duration of time away from home, and size of visiting party. The comparisons are made both for all visits, and excluding visits for the purpose of downhill skiing.

Table 1. Urban National Forests and associated rural National Forests.

Urban Forest	Region	Rural Forest
Arapaho – Roosevelt	2	White River
Pike – San Isabel	2	Rio Grande
Tonto	3	Coconino
Cibola	3	Carson
Wasatch – Cache	4	Ashley
Uinta	4	Fishlake
Angeles	5	Stanislaus
Cleveland	5	Sierra
Los Padres	5	Sequoia
San Bernadino	5	Inyo
Gifford Pinchot	6	Okanogan
Mt Baker – Snoqualmie	6	Wenatchee
Mount Hood	6	Willamette
Chattahoochee – Oconee	8	Cherokee
NFS in Florida	8	NFS in Mississippi
White Mountain	9	Green Mountain

Data for the analyses come from the Forest Service's National Visitor Use Monitoring (NVUM) program. The NVUM program employs a stratified random sample of dates and locations on each forest to estimate visitation use and visitor characteristics (English, et al., 2002). Data from the

<sup>1</sup> USDA-Forest Service, 1400 Independence Ave SW, Washington, DC, USA 20250, [denglish@fs.fed.us](mailto:denglish@fs.fed.us)

<sup>2</sup> Department of Forest Engineering Resources and Management, Oregon State University, 3200 SW Jefferson Way, Corvallis, OR, USA 97331, [eric.white@oregonstate.edu](mailto:eric.white@oregonstate.edu)

most recent sampling effort on each selected national forest, which range from 2004 through 2008, are used. Preliminary results show that there are important differences for spending patterns as well as for several of the visitor characteristics. We present the results and discuss implications for managers, economists, and policy makers.

### **References**

- English, D.B.K.; Kocis, S.M.; Zarnoch, S.J.; Arnold, J.R. 2002. Forest Service national visitor use monitoring process: research method documentation. USDA Forest Service Gen. Tech. Rep. SRS-57. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 14 p.
- Stynes, D.J. and E.M. White. (2006). Reflections on measuring recreation and travel spending. *Journal of Travel Research* 45(August): 8 – 16.
- White, E.M. and D.J. Stynes. (2008). National forest visitor spending averages and the influence of trip-type and recreation activity. *Journal of Forestry* 116(1): 17 – 24.

## Local economic impacts of national park visitation in Finland

**Maija Huhtala<sup>1</sup>, Liisa Kajala<sup>2</sup>**

Keywords: economic impacts, visitor monitoring, national parks, nature recreation

National parks and other nature protected areas are often well monitored when it comes to ecological issues, but their economic values have received less attention. However, a recent TEEB report (2009) emphasizes the need to measure, monitor and report the value of natural capital in order to produce information for decision-makers.

Information about economic impacts of national parks is needed especially in those countries where parks are funded by the state. The values and benefits of the national parks are well recognised by people visiting them but for citizens not interested in nature trips or nature values, national parks and nature protection areas may seem to be waste of public funds. The values attached to the national parks include non-use (e.g. heritage values) and use values (e.g. effects for well-being, recreation). Measuring all the values simultaneously is practically impossible, but a part of use-values can be reflected by the local economic impacts originating from park visitors' spending. That is to say, how the money spent by visitors shows in the local economy. The economic impacts should not be mixed with the concept of economic efficiency (benefit-cost) (see Alward et al. 1992).

Understanding the economic impacts of visitor spending is useful at local level where the information can be utilised in marketing, in establishing new enterprises and even in increasing general acceptance of national parks among interested parties in the locality. Economic impact information can also be used to measure the effectiveness of a national park's management in the economic sense, and in planning and justifying new investments and their allocation. Comparing economic impacts between different parks may also help to explain which factors affect the size of the impacts.

In Finland, the increased interest, need and demand for local economic impact information of national parks has resulted in a number of case studies. The methods applied have varied considerably, and so the results cannot often be compared. The methods have also been quite expensive and laborious to conduct which has hampered the annual follow-up of the impacts.

Based on this background, the Finnish Forest Research Institute and Metsähallitus (the national park authority) have developed a method for standardised estimation of local economic impacts (Huhtala et al. 2010). The method is based on the U.S. Money Generation Model 2 (Stynes et al. 2000) which is an Excel-application designed to estimate the economic impacts of national parks. The method requires three inputs which are multiplied for each park separately: number of visits, average spending of the visitors, and multipliers. The multipliers indicate how the visitor spending circulates and multiplies in the local economy.

For the Finnish application, the number of visits for each park and average spending is obtained from Metsähallitus's data base (ASTA) which contains data from standardised visitor monitoring. Standardised visitor monitoring is a prerequisite for comparable economic impact estimation between national parks and over time. It also enables the annual follow-up of the impacts in a cost-effective way.

Deriving the multipliers for each national park is considered to be too expensive compared to the benefits. Therefore the parks are classified into four groups based on the density of population in

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<sup>1</sup> Finnish Forest Research Institute, Väisäläntie 16, FIN-21500 Piikkiö, Finland, [majja.huhtala@metla.fi](mailto:majja.huhtala@metla.fi)

<sup>2</sup> Metsähallitus, Kulmatie 4, FIN- 57210 Savonlinna, Finland, [liisa.kajala@metsa.fi](mailto:liisa.kajala@metsa.fi)

their hinterland, and average multipliers are calculated for these classes. The hinterland of each park is defined by adjacent municipalities and other municipalities if most of the services used by visitors to the park in question are located in them.

The method is currently Excel-based, but it will be integrated to a customer database in the near future. The method produces annual income and employment effects for each national park for which visitor survey data is available. For those national parks where visitor survey is unavailable, the economic impacts can be approximated by applying visitor spending data from similar types of national parks. The impacts per park range from an income of 0.1 to 14.2 mill. euros, and 1 to 183 man-years of employment. When all the Finnish national parks are summed, the respective figures are 70.1 mill. euros, and 893 man-years (Metsähallitus 2009). The reliability of the results is highly dependent on the quality of visitor monitoring.

An interesting question is to what extent the above impacts can be attributed to the national parks only. In Finland, visitors are asked whether the national park is their only or the most important destination, or a destination among others. The responses provide an assessment of the minimum impact - calculated from those visitors who have come to the area to visit only the national park.

## References

- Alward, G. S., Workman, W.K. and Maki, W. R. (1992). Regional Economic Impact Analysis for Alaskan Wildlife Resources. In Peterson, G. L., Swanson, C., McCollum, D. W. and Thomas, M. H. (eds.) Valuing Wildlife Resources in Alaska, Westview Press. pp. 61-86.
- Huhtala, M., Kajala, L. and Vatanen, E. (2010). Local economic impacts of national park visitors' spending in Finland: The development process of an estimation method. *Metlan työraportteja / Working papers of the Finnish Forest Research Institute* 149. Available at: <http://www.metla.fi/julkaisut/workingpapers/2010/index-en.htm>
- Metsähallitus (2009). The report on local economic impacts of national parks [in Finnish]. (4.12.2009). Available at: [http://www.metsa.fi/sivustot/metsa/fi/Eraasiatjaretkeily/Virkistyskaytonsuunnittelu/suojelua\\_lueidenmerkityspaikallistaloudelle/Sivut/Kansallispuistoihinsijoitetutrahatpalautuvatmonikertaisina.aspx](http://www.metsa.fi/sivustot/metsa/fi/Eraasiatjaretkeily/Virkistyskaytonsuunnittelu/suojelua_lueidenmerkityspaikallistaloudelle/Sivut/Kansallispuistoihinsijoitetutrahatpalautuvatmonikertaisina.aspx)
- Stynes, D.J., Propst, D.P., Chang, W-H. and Sun, Y.Y. (2000). Estimating National Park Visitor Spending and Economic Impacts; The MGM2 Model. (4.12.2009). Available at: <http://web4.canr.msu.edu/MGM2/MGM2.pdf>
- TEEB - The Economics of Ecosystems and Biodiversity for National and International Policy Makers (2009). (4.12.2009). Available at: <http://ec.europa.eu/environment/nature/biodiversity/economics/>

# The economics of outdoor recreation participation among the Swedish population

Peter Fredman<sup>1</sup>, Mattias Boman<sup>2</sup>, Linda Lundmark<sup>3</sup>, Leif Mattsson<sup>4</sup>, Bo Svensson<sup>5</sup>

Keywords: expenditures, economic impact, recreation, Sweden

Participation in outdoor recreation often implies the consumption of market goods and services (travel, food, equipment, services etc.) associated with out of pocket expenditures. Such expenditures measure the direct economic impacts, but in most cases this kind of spending also involves several indirect and induced economic effects, such as re-spending by the tourism industry and households on other sectors of the economy (Loomis & Walsh 1997, Lindberg, 2001). Since natural resources provide the basis for recreation in the outdoors, most visits in natural areas also involve the consumption of non-market goods and services (scenery, wildlife, clean air, public trails etc.). The consumption of these services is often free of charge and not priced by any market, but nevertheless, they often represent a significant part of the total nature experience. The value placed above and beyond the actual expenses incurred to participate is considered a consumer surplus – which is a net benefit relevant for both market and non-market goods (Peterson et al. 1992). Understanding the economic values associated with outdoor recreation is important in various planning situations and when making strategic decisions, in particular when they concern the supply of different types of activities and services connected with outdoor recreation, both privately and publicly.

This presentation is based on two projects – a recently finalised review of the economics associated with outdoor recreation in Sweden, and an ongoing survey aiming at the measurement of economic expenditures, impacts and values among the Swedish population. The focus of this presentation is on the expenditure and impact parts of the study.

The review of economic values in Sweden by Fredman et al. (2008a) finds that there is no comprehensive illustration of the values studied, and figures found are sourced from various types of studies with different purposes. This means that a compilation of this kind shows not only great gaps but also that there are obvious overlaps and double calculations. Many of the studies reported do not consider the total of the values, i.e. the aggregate values for a certain population or group of practisers. In conclusion, Fredman et al (2008a) find that:

- (i) There is a lack of systematically collected data on the economic values of outdoor recreation on national and regional levels.
- (ii) Some forms of outdoor recreation and nature types (e.g. sports fishing and forests) have been more subjected to research than others.
- (iii) The perceived total value of outdoor recreation often reaches relatively high amounts in comparison with other sectors (such as forestry, fisheries), when summarising across the population in a region or a country.
- (iv) Commercial values of outdoor recreation mainly go towards 'traditional' products and services such as travelling, food and overnight stays whilst less is spent on activities and experiences.
- (v) An increasing amount of money is spent on equipment, a fact which is evident from the growth in the outdoor sector.

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<sup>1</sup> Mid-Sweden University / Etour, 831 25 Östersund, Sweden, peter.fredman@miun.se

<sup>2</sup> Swedish University of Agricultural Sciences, mattias.boman@ess.slu.se

<sup>3</sup> Umeå University, linda.lundmark@geography.umu.se

<sup>4</sup> Swedish University of Agricultural Sciences, leif.mattsson@ess.slu.se

<sup>5</sup> Mid-Sweden University / Etour, bo.svensson@miun.se

## **The measurement of economic expenditures and impacts associated with outdoor recreation participation among the Swedish population**

Following the literature review, economic expenditures associated with the consumption of outdoor recreation in Sweden are measured at a national scale using panels of 2000 randomly selected individuals. An Internet-based survey was distributed on three occasions during 2009 in order to reduce the potential of recall bias. The first survey, distributed in early May, had a frame from January – April, the second survey, distributed in early September had a frame from May – August, and the third survey distributed in early January 2010, had a frame from September – December. A primary objective of the study was to ask about expenditures related to participation in a large number of outdoor recreation activities, i.e. the same activities that were used in an earlier national survey on outdoor recreation participation in Sweden (Fredman et al., 2008b). Among the expenditure items measured were transport, accommodation, food, restaurants, equipment, clothing and services, and for the total amount respondents estimated the geographical distribution (i.e. regional, national and international) of their expenditures. In addition to a summary of the above mentioned literature review, the presentation will address preliminary estimates of economic expenditure patterns, impacts associated with outdoor recreation participation among the Swedish population, and a discussion on sampling quality and coverage of the data used.

### **References**

- Fredman, P., Boman, M., Lundmark, L. & Mattsson, L. 2008a. Friluftslivets ekonomiska värden – en översikt. Forskningsprogrammet Friluftsliv i förändring, rapport nr. 5, september 2008. [www.friluftsforskning.se](http://www.friluftsforskning.se)
- Fredman, P., Karlsson, S-E., Romild, U. & Sandell, K. (Red.) 2008b. Vilka är ute i naturen? Delresultat från en nationell enkät om friluftsliv och naturturism i Sverige. Forskningsprogrammet Friluftsliv i förändring, rapport nr. 1, juni 2008. [www.friluftsforskning.se](http://www.friluftsforskning.se)
- Lindberg, K. 2001. 'Economic impacts'. In: Weaver, D.B. (Ed.) The Encyclopedia of Ecotourism. CAB International.
- Pettersson, G.L. Swanson, C.S. McCollum, D.W. and Thomas, M.H. 1992. Valuing Wildlife Resources in Alaska. Westview Press, Boulder, CO.
- Loomis, J.B. and Walsh, R.G. 1997. Recreation Economic Decisions. Comparing Benefits and Costs. Venture Publishing, Pennsylvania.

## **High attachment and poor relationships: how social processes influence the development of diverging views into social conflicts.**

**Arjen Buijs<sup>1</sup>**

Keywords: social conflicts, nature management, national parks, images of nature

For the last decade, the establishment and management of National Parks has resulted in numerous social conflicts all around Europe. The implementation of Nature 2000 gives rise to renewed conflicts between local groups and management authorities. Based on an ongoing research project in a National Park in the Netherlands, we describe the development and partial resolution of a conflict between local residents and Park authorities.

The study is based on qualitative research methodology. We have organized 7 focus group discussions in 2005 and repeated these with the same respondents in 2007. Furthermore, we analyzed 127 documents produced by the most important stakeholders and interviewed 8 representatives of a range of authorities related to the National Park (e.g. municipalities, nature conservation agencies). These data are analyzed and coded using ATLAS.ti.

Local residents set up a protest groups to resist implementation of the management plan. This group collected 7000 signatures to protest against the management of the Park. After two years of conflicts, managing authorities decided to invest in the relationship with the protest group. Soon after, the protest group and park managers signed a covenant on the management of the Park. To describe this public conflict, we have adjusted Stoll-Kleemann's well known model of social barriers to nature conservation (Stoll-Kleemann 2001). Based on our study as well as on the mounting literature on public participation (Coenen 2009), we argue that the scope of this model could be enhanced. Instead of focusing only on cultural and emotional factors as starting point for the development of attitudes on Park management, we argue that public protest is often based on a combination of strong attachment to the area and the existence of diverging views on the content of the initiative. All ingredients are present for a local conflict to emerge especially when the relationship between the different stakeholders is weak and not effectively managed..

Based on this adjusted model, we describe:

- i) How the views on the content of the management differ and how these diverging views relate to diverging values, preferences and ecological beliefs.
- ii) How attachment to the area influences the process of implementation and reactance.
- iii) How the relationship and lack of public participation stimulate critical framing processes.
- iv) How perception and communication barriers have lead to group processes encouraging social identity in combination with processes of stereotyping of opponents.

In this study we focus especially on the influence of the two prime driving forces for local conflicts: diverging images of nature (Buijs 2009) and stakeholder attachment to the area. Based on both focus groups and questionnaires, we have developed a 'conflict intensity matrix' as a heuristic tool to identify possible conflicts. Based on the level of attachment to the area and the level of agreement and disagreement with management plans, this matrix distinguishes between four possible reactions: protest, enthusiasm, resignation and acceptance. We hope the matrix can be a useful tool for managers to prevent, manage or understand local conflicts on nature and biodiversity management.

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<sup>1</sup> Wageningen University and Research Centre, P.O. Box 47, 6700 AA Wageningen, Netherlands, [Arjen.Buijs@wur.nl](mailto:Arjen.Buijs@wur.nl)



The results suggest that small adjustments in Stoll-Kleemann's model could improve its usefulness to understand real life management issues related to environmental conflicts. We consider the matrix we developed based on this model as a first step in further understanding the diversity of positions people and groups can have in a environmental conflict. We suggest to further develop this matrix using also quantitative research methods.

### **References**

- Buijs, A.E., (2009). Lay people's images of nature: frameworks of values, beliefs and value orientations. *Society and Natural Resources*, 22: 417-432.
- Coenen, F.H.J.M., (2009). Public participation and better environmental decisions: the promise and limits of participatory processes for the quality of environmentally related decision-making. Springer, Dordrecht.
- Stoll-Kleemann, S., (2001). Barriers to nature conservation in Germany: A model explaining opposition to protected areas. *Journal of environmental psychology*, 21: 369-385.

# **Integrating local community interests in large protected area management – challenges and opportunities**

**Eick von Ruschkowski<sup>1</sup>**

Keywords: National Park, Germany, local communities

## **Introduction**

The designation of protected areas (e.g. national parks) and their management often leads to conflicts between local communities and the park's administration, which is being regarded as a global phenomenon (Pretty and Pimbert 1995). These conflicts commonly affect both the management of protected areas and the local communities as strained relations bear the danger of gridlock on park planning, conservation objectives or regional economic development (Jarvis 2000). National parks in Germany seem specifically vulnerable to such conflicts for a number of reasons: German landscape has been altered throughout many centuries, hence creating cultural landscapes rather than unimpaired wilderness. Thus, the management of stakeholder issues in order to increase support among local communities remains one of the most important modern day sociological challenges for German park managers.

This paper presents the results from a field study carried out in Harz National Park. The scope of the study was to identify and analyze existing and potential conflicts between park management and the local population. Based on the results, measures to improve local support for the park were proposed. A specific focus was put on known and hidden communication channels between stakeholders and the park's administration in order to develop a strategy that makes outreach more efficient (v. Ruschkowski 2010).

## **Study area and methods**

Harz National Park encompasses about 247 km<sup>2</sup> of colin and montane habitat zones and is located in the German states of Lower Saxony and Saxony-Anhalt. A quantitative survey was chosen as method. The sample size was set to be at least 200 households, taken as a stratified random sample from selected communities in the Harz region that directly lie on, or at, the park's boundaries. The questionnaire contained a mixture of closed and open questions that ranged from nominal to interval scale. The survey was carried out in February and March 2005. The data was coded and analyzed, using SPSS. Results were compared to a previous study carried out in the region in 1995 (Job 1996).

## **Results**

Survey results from the Harz region indicated a positive trend towards the national park with a 2:1 ratio between positive and negative attitudes across the sample. However, a significant portion of the respondents showed a neutral attitude towards the park. Given a worst-case scenario, this group would be large enough to turn the overall attitude to the negative end of the scale and thus should be a main focus of future outreach activities. Traditional measures did not seem sufficient though as 80% of the respondents had not changed their attitude towards the park at all since its establishment in the early 1990s.

The park's designation led to the prohibition of some conventional uses in the region. While most laws in effect today were widely accepted by the respondents, the ban on picking berries and mushrooms (an activity carried out by many locals) was unacceptable for 56.5% of the respondents and thus contained huge conflict potential. Similar results were reported from a study at Eifel National Park in Western Germany (Sieberath 2007).

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<sup>1</sup> Institute of Environmental Planning, Leibniz Universität Hannover, Herrenhäuser Straße 2, 30419 Hannover, Germany, ruschkowski@umwelt.uni-hannover.de

The study also found that two print publications that included a four-page extra section on Harz National Park reached only 3.9% of the respondents, most of them reading these publications rather irregularly. Also, the park's website was used by only 2.4% of the respondents. Overall, those outreach efforts that are tailored towards national park issues did not even reach 5% of the respondents. One important finding to the contrary was that 51.2% of the respondents knew at least one national park employee personally. This fact could play an important role in future outreach activities, especially since park employees were affiliated with positive impressions.

## **Discussion**

A number of factors contributed to a positive or negative attitude towards the park, with many of them rooted in communication processes. Overall survey results indicated that an integrated approach is required to address the existing communication deficit. This would include strengthening communication on a personal level. The fundamentals are already present as park employees play a significant role as communicators and are mostly well-respected in the communities. As most of the surveyed communities are rather small and found in rural settings, a key aspect of this strategy is to address and involve local decision makers. Another worthwhile tool could be to provide hands-on opportunities for locals to learn the basics of park management. Experience from other protected areas show that such events help local people to make a personal connection to the park and understand the complexity of management decisions. Different stakeholders certainly require different approaches, thus the park management should develop new initiatives tailored towards all stakeholder groups.

## **References**

- Jarvis, T.D. (2000) The Responsibility of National Parks in Rural Development. In: Machlis, G. and Field, D. (editors)(2000) National Parks and Rural Development. Washington, D.C.; pp. 219 - 229.
- Job, H. (1996) Großschutzgebiete und ihre Akzeptanz bei Einheimischen Das Beispiel der Nationalparke im Harz. Geographische Rundschau, 48 (3), 159-165.
- Pretty, J. and Pimbert, M. (1995) Beyond Conversation Ideology and the Wilderness Myth. Natural Resources Forum 19 (1), S. 5 - 14.
- v. Ruschkowski, E. (2010). Ursachen und Lösungsansätze für Akzeptanzprobleme von Großschutzgebieten am Beispiel von zwei Fallstudien im Nationalpark Harz und im Yosemite National Park. Hannover/Stuttgart: ibidem-Verlag.
- Sieberath, J. (2007) Die Akzeptanz des Nationalparks Eifel bei der lokalen Bevölkerung. BfN-Skripten 206, Bundesamt für Naturschutz (Federal Agency for Nature Conservation): Bonn.

# Formulating a policy on public support for the Goois Natuurreservaat, the Netherlands

Jan Jaap Thijs<sup>1</sup>

Keywords: public support, policy, cooperation, nature reserve

The Goois Natuurreservaat, a nature reserve in 'Gooi' area in The Netherlands, is owned and managed by the Foundation 'Goois Natuurreservaat. In this Foundation the six municipalities based in the area, the municipality of Amsterdam and the province of Noord Holland work together to preserve the area. For the Netherlands, this situation with such direct involvement of municipalities in nature conservation is rather unique. The size of the nature reserve is approximately 27 square kilometers (mostly forest and heath). The reserve is situated in a densely populated area and is easy accessible by the inhabitants.

The foundation was established in 1932 with two main aims:

- The preservation of nature in the Gooi area;
- Assuring the accessibility of the nature to the public.

Furthermore, the foundation aims at rising the interest of people in nature conservation. Nowadays most of the nature area is owned by the Goois Natuurreservaat. Many people visit the areas of the nature reserve to walk, cycle or undertake other recreational activities. In general, visitors and inhabitants of the area appreciate the reserve and the work of the foundation. Some inhabitants support the Goois Natuurreservaat financially or by doing voluntary work for the organisation. A detailed survey amongst visitors or inhabitants has so far not been conducted; In general, however, the Goois Natuurreservaat does not face much resistance against its nature management policies. The foundation manages various facilities, like a sheep-fold and a watchtower. The foundation realised that it lacked a clear policy on what these facilities should be used for and how they should be managed. The organisation concluded that the facilities should be utilised to gain and keep public support for the Goois Natuurreservaat.

The Goois Natuurreservaat asked Kenniscentrum Recreatie to support them in formulating a policy on public support. We did so by making an inventory of experiences of other nature conservation organisations in the Netherlands. Employees of Goois Natuurreservaat voiced their vision on public support in various sessions, which led to important choices concerning the overall policy.

For the Goois Natuurreservaat creating public support means:

- Preserving and enlarging the knowledge of the target groups about the Goois Natuurreservaat (the organisation and the nature reserve).
- Preserving and creating a positive attitude towards (the management of) nature and of the Goois Natuurreservaat.
- Stimulating positive behaviour towards the Goois Natuurreservaat, for instance by financial support or by doing voluntary work.

The organisation formulated various target groups. First of all, **prime target groups**, which include inhabitants of the region, specifically: children, families, and elderly people. Besides, prime target groups consists of those people who visit the area with the motives 'amusement', 'having a break' and 'interest' (Goossen & De Boer 2008). **Secondary target groups** include organisations and actors closely involved with the Goois Natuurreservaat, for instance: the board of the foundation, municipality councils, environmental groups, sponsors. Finally, **tertiary target groups**: visitors from other areas and primary schools.

For all these target groups the organisation formulated goals on knowledge, attitude and behavior.

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<sup>1</sup> Kenniscentrum Recreatie (Dutch Expert Centre on Outdoor Recreation), Raamweg 19, 2596 HL The Hague, The Netherlands, [jj.thijs@kenniscentrumrecreatie.nl](mailto:jj.thijs@kenniscentrumrecreatie.nl)

Based on the formulated goals and target groups, we developed a framework which can be used to make a judgment of the facilities and activities regarding their contribution to public support. The framework has been used to score each facility on its contribution to public support. The maximum theoretical score is 100%, the minimum score 0%. Figure 1 and 2 show, as an example, the score of the sheepfold, which can be regarded as an important facility with regard to public support.

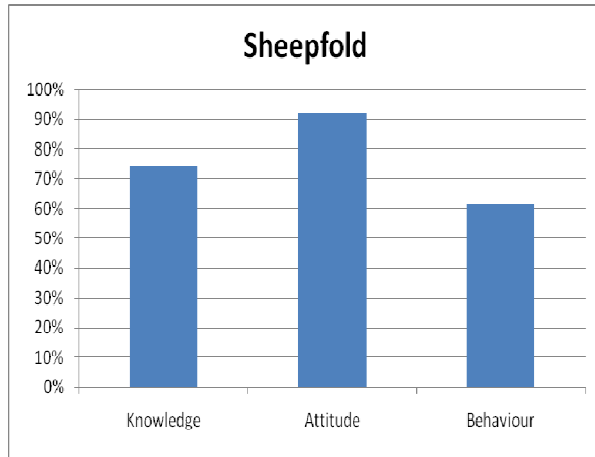


Figure 1 Scores sheepfold on knowledge, attitude and behaviour

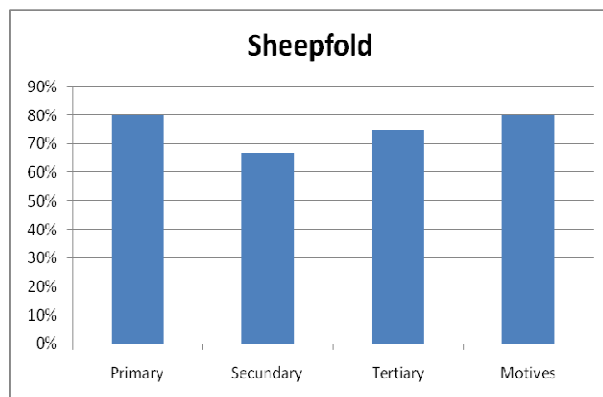


Figure 2 Scores sheepfold on target groups

It is important to notice that the scores are the results of the opinion of the employees of the Goois Natuurreservaat and not the result of research amongst the public. The results therefore are not used as research-based evidence, but as input for discussion within the organisation about the role and function of each facility and how improve this function in relation to public support.

At the time of writing this abstract, the project has not been completed yet. In the organised session we will present the definite outcomes of the project and present the policy on public support of the Goois Natuurreservaat.

## References

- Goossen, C.M. & T.A. de Boer (2008). Recreatiemotieven en belevings-sferen in een recreatief landschap; Literatuuronderzoek. Wageningen, Alterra. Alterra-rapport 1692.
- Stichting Goois Natuurreservaat (2009). Jaarverslag 2008 en meerjarenbeleid 2009-2010

# Green lifestyle or greening lifestyles? The social dimension of halting the loss of biological diversity

Gerd Lupp<sup>1</sup>

Keywords: biodiversity, lifestyles, 'in-situ' vs. 'ex-xitu', interview design

## Introduction

Among other aspects, research on biodiversity issues means dealing with people and their demand for nature and its perception. Therefore, in the Convention on Biological Diversity (CBD) and national strategies conserving biological diversity, an emphasis is also laid on human dimensions. National strategies in Central Europe for conserving biological diversity demand further research on some following examples: developing environmentally friendly recreation offers; education concepts raising awareness for biodiversity issues; as well as a higher appreciation; and acceptance for nature (e.g. Bundesministerium für Umwelt et al. 1998, BMU 2007). However, which concepts are needed to address the whole society?

## Theoretical Background

Post-modern theories claim individualization with a wide range of options for conducting life. Humans act as individuals, but societal and cultural imprints as well as socialization, lead to similarities in behavior patterns. On a voluntary basis groups are formed with shared values, norms, similar tastes and preferences. These clusters are named 'lifestyle groups'. Lifestyles demonstrate and stage economic chances, unrestricted options of conducting life, cultural aspects, personal views, opinions, mentality and values. These concepts were developed in the mid-1980s for psephology and marketing. In Central Europe a number of concepts exist, with SINUS (e.g. Ploeger et al. 2005; 10 milieus) and the lifestyle-group concept developed by the German sociologist Schulze (1997; 5 groups) being the most popular ones. A literature survey is carried out to find out methodologies used and the main findings of the studies were summarized. They were compared with the researcher's own results gathered during on-site face-to-face interviews. Asking for education levels as a main indicator for lifestyles is reported to be a problem in this interview design (e.g. Korff 2005). Therefore, an alternative method was developed to assign interviewees to certain lifestyles.

## First results

Studies conducting telephone interviews and postal questionnaires ('Ex-Situ') indicate a high acceptance of environmental protection in almost every lifestyle-group. People characterized by a high educational background and high incomes serve as trendsetters and role-models in society. They already have a very high awareness, but also 'the middle of the society' shows high acceptance for nature protection issues (Sinus Sociovision 2009, UBA 2009).

Nature experiences are considered to be an important tool raising awareness for nature protection issues (BMU 2007). Forests as an important resource of biodiversity are highly appreciated in all groups of society. Old persons with low educational background mentioned fewer visits due to a lack of mobility. They often have a functional relation with forests for example, collecting berries and fuelwood in their childhood. Preference was given for properly maintained forests. Beside trend sport activities, young people seem to not visit forests very frequently. Braun (1999) claims that forests therefore are mainly visited by middle-educated older persons with regular working-hours and relatively high income.

On-site surveys ('In-Situ') found that mainly elder visitors with a high educational background seem to visit protected areas, but there is also a larger group of younger persons leading lifestyles

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<sup>1</sup> Leibniz Institute of Ecological and Regional Development (IOER), Weberplatz 1 01217 Dresden, Germany, [g.lupp@ioer.de](mailto:g.lupp@ioer.de)

characterized by a high formal education (Lupp & Konold 2008). It was shown that for these groups, preferences for certain types of landscape were often based on knowledge or experiences made in nature.

### **Discussion**

Looking at Lifestyle Group Concepts, they tend to order people according to stereotypes and assumptions are often idealized. The advantage of these concepts is to provide insights in everyday life and reality of various groups in society. They help to understand people and are useful to establish target-oriented information concepts. More research is necessary on groups characterized by lower education levels. People assigned to these lifestyles cannot be found in nature very frequently, although these groups form a large proportion of society and they claim to be interested in natural experiences in ex-situ interviews. Why is there a distinction between willingness to explore nature as an important tool in environmental education? Is there a difference between answers posted in surveys and real preferences? Do these people agree on trendsetters opinions since these groups are role-models, although personal interests are different?

### **Conclusion**

Looking at the characteristics and values of lifestyles, distribution patterns might change but it does not seem to be very likely that a majority will turn collectively to similar 'green' lifestyles such as those described by Rey & Anderson (2000) or Wenzel et al. (2007). Raising awareness in all lifestyle groups by providing adequate offers and communication for each group seems to be a more adequate strategy. However, it is important to fill the gap of information between posted statements in off-site surveys and actual on-site use and perception of nature. There is a necessity for more on site-data and for certain lifestyle groups.

### **References**

- Wagar, J.A. (1964). The carrying capacity of wild lands for recreation. Washington, DC.
- Anderson, R. and Ray, P. H. (2000). The Cultural Creatives: How 50 Million People Are Changing the World. Harmony Books, New York
- BMU: Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, (2007). National Strategy on Biological Diversity. Berlin
- Braun, A. (1999). Wahrnehmung von Wald und Natur. Leske&Buderich, Opladen
- Bundesministerium für Umwelt, Jugend und Familie (1998). Österreichische Strategie zur Umsetzung des Übereinkommens über die biologische Vielfalt. Wien.
- Korff, C. (2005). Mit den Augen des Urlaubsgastes. Studien zur Natur- und Kulturlandschaftswahrnehmung am Beispiel regionalkundlicher Themenwege. Forum lfl 4. Leipzig.
- Lupp, G. & Konold, W. (2008). Landscape Preferences and Perception of Both Residents and Tourists: A Case Study in Müritzer National Park (Germany). In: Siegrist, D.; Clivaz, C.; Hunziker, M.; Iten, S.(Eds.). Visitor Management in Nature-based Tourism -Strategies and Success Factors for Parks and Recreational Areas, Series of the Institute for Landscape and Open Space, HSR University of Applied Sciences Rapperswil 2, Rapperswil. pp. 47-58
- Plöger, W.; Schipperges, M.; Mayr, M. (2005). Die Sinus-Milieus in Deutschland, Österreich und der Schweiz. Heidelberg, Wien (Online source: [http://www.sociovision.de/uploads/tx\\_mpdownloadcenter/Micro-Marketing\\_forum\\_2005.pdf](http://www.sociovision.de/uploads/tx_mpdownloadcenter/Micro-Marketing_forum_2005.pdf), access 12/08/2009)
- Schulze, G. (1997). Die Erlebnisgesellschaft: Kultursoziologie der Gegenwart (7). Auflage. - Campus, Frankfurt, New York, 765 S.
- Sinus Sociovision (2009). Kommunikation zur Agro-Biodiversität – Voraussetzungen für und Anforderungen an eine integrierte Kommunikationsstrategie zu biologischer Vielfalt und genetischen Ressourcen in der Land-, Forst-, Fischerei- und Ernährungswirtschaft (einschließlich Gartenbau). Studie im Auftrag des Bundesministeriums für Ernährung, Landwirtschaft und Verbraucherschutz

- UBA (ed.) (2009). Umweltbewusstsein und Umweltverhalten der sozialen Milieus in Deutschland.  
Dessau-Roßlau
- Wenzel, E., Rauch, C., Kirig, A. (2007). Zielgruppe LOHAS: Wie der grüne Lifestyle die Märkte  
erobert



# Green tourist perception and motivation: a study of the domestic market in Thailand

**Kaewta Muangasame<sup>1</sup>**

Keywords: green tourism, Thailand, tourist behavior, decision-making process, motivation

There are many definitions of green tourism such as sustainable tourism, eco-tourism, community based tourism. However, the many labels of green issues all summarise the same meanings: low-impact, environmentally-friendly tourism that appreciates, not destroys. In terms of Thailand, green tourism ideas and its practice has initiatively been implemented to promote Thailand with research of domestic consumer behavior study.

Hence, a comparative case study was carried out at Klong Klone, Samut Songkram and Surin Island and Koh Yao Noi, Phang-Nga Provinces to gather information on the perceptions and motivations of Thai tourists towards 'green tourism'. Samut Songkram and Phang-Nga Provinces are respectively located in the central and southern parts of Thailand. These communities are renowned for their sustainable tourism development, as well as for their green tourism products.

The study's aim was to collate and analyse the perceptions and motivations of Thai green tourists, and this comprised two primary objectives. Firstly, to document the existing green tourist activities and to evaluate the level of 'greenness' based on the Thai green tourists' experience. Secondly, to examine the factors associated with the decision-making process. A third, but secondary objective was to offer appropriate suggestions and recommendations in better promoting the Thai green tourist campaign for sustainable tourism development.

The study employed respondent-filled questionnaires as the survey instrument. 400 questionnaires were distributed at the two provinces, based on a diversity of landscapes, destination types, and accessibility. In addition, in-depth interviews with key respondents were also carried out in attempt to gather a better understanding on their perceptions of the domestic green tourism project.

The survey focused on the decision-making process of green tourists, comprising relevant elements such as aforementioned motivation, perception, determinant, and experience. The responses were then used to analyse the Thai green tourists' perceptions and motivation for being 'green', and the findings were summarised into the green tourist motivator typologies, and by the 'push and pull' factors that influenced their decision-making process.

Survey findings show that 41% of the respondents perceived green tourism as "environmentally responsible tourism". A significant finding was that almost four out of five Thai green tourists wish to improve their images by going green. In addition, findings show that Thai green tourists' decision-making is typically more influenced by external factors such as the media, friends and relatives, and the tour operators, particularly those that apparently complement their personal interests and desires. This is in contrast to findings of the Seers & Mair (2009), which showed that the 'push' factors are more significant than the 'pull' factors on the international green tourists' decision-making, therefore suggesting that external factors have little influence.

In their promotions and marketing, the Tourism Authority of Thailand has focused more on the international green tourist market rather than domestic Thai market. Nevertheless, findings also show that there exists a strong potential for developing the domestic green tourism market. To better develop green tourism for domestic market, the Tourism Authority of Thailand would need to focus on the five major motivators influencing Thai green tourists travel behavior. These include:

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<sup>1</sup> Mahidol University International College, Travel Industry Management Division, Mahidol University, Salaya Campus, Nakhonpathom 73170, Thailand, [ickaewta@mahidol.ac.th](mailto:ickaewta@mahidol.ac.th)

their physical needs; opportunities for personal development; emotional, culture, and personal needs; and products complementary to the tourists' statuses.

Hence, it can be tentatively concluded that to understand the decision-making process of green tourists is not only to consider the development of green products, but it should also be concerned with the consumer perception and the channel of information for green tourism. The study shows that information provided by travel agencies, relatives, or friends would, more than other channels, strengthen the awareness and help build-up a sense of environmentally-friendly travel behaviour.

Hence, it is suggested that the Thai government should make green tourism products more tangible, such as by providing a clear definition of what is meant by green tourism products, a clear green product identity, and creating a recognizable green tourist image and personality. Moreover, the study showed that the lack of clarity in the green tourists' perception apparently resulted from the fact that green tourism does not appear tangible from the consumers' point of view. Thus, it is important to provide more information on green issues to assist in increasing the tourists' green awareness.

It is recommended that future studies should lay emphasis on the different 'shades' of green tourist behavior in relation to the different segments of green tourism. In addition, although this study has made some interesting findings, there are nevertheless limitations as the data was obtained from respondents at only two provinces, therefore it is not necessarily representative of tourists in other parts of Thailand.

### **Related References**

- McDonald, S., Oates, C., Alevizon, P.J., Young, W. and Hwang, K. (2006). Communication strategies for sustainable technologies: Identifying patterns in consumer behaviour. The Greening of Industry Network's 13th International Conference Interaction and Communication: A Clear route to Sustainability? 2-5 July. University of Cardiff.
- Paco, A and Raposo, M. (2009). "Green" segmentation: an application to the Portuguese consumer market. *Marketing Intelligence & Planning*. Vol 27, No. 3 , p 364-379.
- Page, S., and Connell, J. (2006). *Tourism – a modern synthesis*, Second Edition, –Chapter 4 "Understanding the Tourists as a Consumer"; p 62 – 85. Oxford.
- Seers, S., & Mair, J. (2009). Emerging green tourists in Australia: Their behaviours and attitudes. *Tourism and Hospitality research* , Vol 9, No.2, p109-119.
- Swarbrooke, J., & Horner, S. (2007). *Consumer behaviour in tourism*. oxford: Butterworth-Heinemann.

## Nature on TV: deep interests on flat screens

Frans J. Sijtsma<sup>1</sup>, Michiel Daams<sup>2</sup>, and Samantha van der Sluis<sup>2</sup>

Keywords: nature, experience, television, real visits, favorite sites, geography

The amount of time people spend watching TV has grown very fast in recent decades. Watching nature has a marked and prominent place here. In this paper we will address two issues concerning Nature on TV: the experience of nature on TV compared to the experience during real visits and the geographical and ecological characteristics of popular nature on TV. The link between management of nature areas and the potential of these areas on TV seems to be largely unexplored .

The experience of nature during real visits of an area is compared with the experience of the same nature area on TV. We will show that there are marked differences. On TV people turn out to be more of a 'nature investigator'. They like to expand their interest to areas normally out of reach, they like being surprised by rare or particular plants or animals and they like to learn something. This 'zoomed-in' way of experiencing nature is made possible by enhanced filming technologies, enabling us to watch an ongoing flood of spectacular shots, and the voice-over or presenter explaining everything (Scott, 2003). With real visits we can use all our senses, including scent and touch, but nature experience is more 'superficial' in a way. Nature provides an attractive scenery for walking or biking, for relaxation, and the enjoyment of nature concerns the whole landscape far more than particular plants or animals. Arcade landscapes seem to be appreciated most while curiosity for wilderness seems fairly absent. Interestingly the ultra modern medium has some potential of bringing people closer to wilderness. The association of wilderness is only mentioned by a small group of TV watchers, but by no visitors. This also holds for nature conservation, suggesting that watching nature on television makes people more aware of the intrinsic value of nature rather than actually visiting the same nature area. The active (visiting) and passive (TV watching) attitudes toward nature are not static, but influence each other. During our research, participants who had both visited a nature area and watched a TV program on the same area stated that TV had changed their perception of the area, and thereby influenced future visits.

The research on the geography of nature on TV (compare Hinchliffe, 2007) focused on two very popular nature programmes, one with a national nature scope and one with a global scope. The research identified the locations filmed and it showed interesting differences. At the national level the topics treated in the nature documentaries hardly required ecological quality of the area filmed. The technical camera and editing possibilities facilitate the making of attractive nature documentaries even in highly urbanized or degraded areas. Showing nature in the neighborhood of people and showing that there's (still) a lot of nature to admire in the area people live, even if it is in the city, seems to be a major focus. Furthermore, close to all documentaries include animals, and mostly birds, the tone is sweet and cuddly.

Analysis of the global level documentaries gives quite a different view. Here a clear correlation can be shown with high nature quality of the area's filmed. Here we can also observe a classical focus on large animals, and filming (huge) areas without any human presence (Bagust, 2008). There is also a clear correlation between the sort of nature filmed. Viewers like to see exotic nature, so no nature they already can see in their own living area. The largest concentrations of people live in areas with mixed forest or with broadleaf forest and in these areas there are less documentaries filmed.

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<sup>1</sup> University of Groningen - Faculty of Economics and Business/Faculty of Spatial Sciences  
P.O.Box 800, 9700 AV Groningen, The Netherlands, [f.j.sijtsma@rug.nl](mailto:f.j.sijtsma@rug.nl)

<sup>2</sup> University of Groningen – Student at Faculty of Spatial Sciences, P.O.Box 800, 9700 AV Groningen, The Netherlands, [michieldaams@gmail.com](mailto:michieldaams@gmail.com); [samanthavandersluis@gmail.com](mailto:samanthavandersluis@gmail.com)

The apparent paradox in the second part is easily understood from the first part of the research. Learning about animals, plants, and areas, out of (daily) reach, or in a way normally out of reach, seems to be the dominant underlying motive for watching TV; this motive is addressed somehow by film makers. The real paradox is how a superficial and increasingly flat screen can trigger such a deep nature interest.

### **References**

- Bagust, P. (2008). 'Screen natures': Special effects and edutainment in 'new' hybrid wildlife documentary. *Continuum: Journal of Media & Cultural Studies* Vol. 22. p 213-226.
- Hinchliffe, S. (2007) *Geographies of Nature*, Sage publications, London
- Scott, K.D. ( 2003). Popularizing Science and Nature Programming: The Role of Spectacle in Contemporary Wildlife Documentary, *Journal of Popular Film & Television*. Vol 31. Nr. 1, p 29-35.
- Daams, M. S. van der Sluis en P. Wind (2009). *Natuur op TV. Wetenschapswinkel voor Economie en Bedrijfskunde*, University of Groningen. Groningen

# **Community-based trail monitoring as a mechanism for capacity and partnership building: Lessons learned from Linmei Village, Ilan County, Taiwan**

**Dau-Jye Lu<sup>1</sup>, Yu-Fai Leung<sup>2</sup>, Hiao-Tien Hsieh<sup>3</sup>**

Keywords: stakeholder, capacity building, ppgis, trail management

While the involvement of local communities is becoming popular in natural resources as well as tourism management, environmental and/or facilities monitoring has become a focal practice for the government to empower and build partnerships with local communities (Folke et al. 2005, Yarnel & Gayton 2003). In this research, we tried to formulate a feasible mechanism to enhance local capacity and to create partnerships between the locals and the forestry agency through a community-based trail monitoring programme in Linmei Village, Ilan County, Taiwan. Our work was informed by the framework developed by the Canadian Community Monitoring Network (2003) and Conrad and Daoust (2008). In doing so, we addressed the following questions: 1. What is the workable community-based trail monitoring model (procedure and essential steps) in the Taiwanese context; 2. What are the different considerations among stakeholders to a community-based trail monitoring mechanism? 3. What is the role of academics throughout the process?

The Linmei trail monitoring programme was initiated in the early 2008 and continued through 2009. The Linmei Trail is highly popular tourist attraction in Ilan County with an average of over 200,000 visitors every year. The trail offers great variety of natural attractions in a short length (approximately 1.7 km). For this reason, and also because of insufficient ecological baseline data, we included only the items relevant to tourism and visitor safety, such as tourism facilities and carrying capacity control, into the monitoring mechanism. Using sheets and public participatory geography information system (PPGIS), we worked with the locals and the forestry agency to test appropriate monitoring formats. Additionally, we relied on the spatial information provided by Google Earth and Global Positioning System (GPS) to discuss and identify monitoring locations and items, and communicate results with both the local people and the forestry agency.

We employed individual interviews, focus groups, participation observation, and a literature review to collect information regarding the attitudes and considerations and comments from the local community and the forestry agency, respectively. We interviewed a total of 25 persons from the local community, 17 forestry officers and 8 relevant experts. Additionally, over 100 records were collected from participant observation and focus groups. It is worth mentioning that the Linmei trail was closed for about 3 months from September 2008 to January 2009 due to severe damage from a typhoon. This accident created a chance for us to further examine the comprehensiveness of government's trail policy and the local dependence on the trail and its visitors in terms of economic, social and political dimensions. We revisited the trail after typhoon and amended the patrolling sheets as well as the monitoring items with the senior community members. A training workshop was held for the local rangers to develop a standardized format for monitoring records in February 2009.

The final community-based trail monitoring scheme contains two parts: a quick screen that is done by roughly sketching the trail conditions on the map with some notes once every few days, and a comprehensive monthly assessment by senior staffs of the community organization. The local community showed their capacity to successfully implement the monitoring scheme and reported to the forestry agency regularly for at least 3 months in the spring of 2009; yet failed to continue it

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<sup>1</sup>School of Forestry & Resource Conservation, National Taiwan University, 1, 4th Section, Roosevelt Road, Taipei 106, Taiwan; dju@ntu.edu.tw

<sup>2</sup>Parks, Recreation and Tourism Management, North Carolina State University, Box 7106, 5107 Jordan Hall, Raleigh, North Carolina 27695-7106, USA; Leung@ncsu.edu

<sup>3</sup>School of Forestry & Resource Conservation, National Taiwan University, 1, 4th Section, Roosevelt Road, Taipei 106, Taiwan, r96625036@ntu.edu.tw

owing to limited man power. Interestingly, we found that the locations of damage caused by typhoon coincided very well with the problem spots already recorded by the local people before the typhoon. This has prompted the forestry agency to recognize the value of community participation in trail and tourism management. In fact, the agency communicated with the local community several times with the hope to restore the monitoring mechanism.

While it remains too early to define the sustainability of the Linmei's trail community-based monitoring scheme, the case has revealed some critical factors that can lead to a more sustainable programme. First, as all stakeholders of the case, especially the forestry agency, are satisfied with the monitoring mechanism, further effort should focus on ensuring a persistent input of qualified personnel from the community to execute the monitoring activities. Second, it appears that the local community tended to consider the feasibility of the mechanism, whereas the forestry agency emphasized its legitimacy and the integration of monitoring data into the official reporting system. Third, in relation to the second point, we as the academic team could be a good mediator to bridge communications between the local community and the forestry agency, and we were able to coordinate both sides to develop a monitoring scheme that is both feasible for local implementation and directly related to agency's trail management practice.

## References

- Canadian Community Monitoring Network. (2003). Linking Community Based Ecosystem Monitoring to Local Decision Making and Policy Development on Sustainability. Report prepared by EMAN Coordinating Office, Burlington, Ontario, Canada and the Canadian Nature Federation, Ottawa, Ontario, Canada.  
<http://www.ccmn.ca/english/library/vsi/intro.html>.
- Conrad, C. T. and Daoust, T. (2008). Community-based monitoring frameworks: Increasing the effectiveness of environmental stewardship. *Environmental Management* 41: 358-366.
- Folke, C., Fabricius, C., Cundhill, G. and Schulze, L. (2005). Communities, ecosystems and livelihoods. In: Capistrano D, Samper C, Lee M, Raudsepp-Hearne C (eds.), *Ecosystems and human well-being: Multi-scale assessments*. Volume 4. Island Press, Washington, DC, pp 261–277.
- Yarnell, P. and Gayton, D. V. (2003). Community-based ecosystem monitoring in British Columbia. *Forest Research Extension Partnership (FORREX Series)* 13: 1–37.

## **An emerging paradigm for sustainably managing conservation areas: examples from Europe and the US.**

**Carsten Mann<sup>1</sup> and James Absher<sup>2</sup>**

Keywords: conservation areas, planning and management, paradigm shift, participative methods, institutional fit

Parks, protected areas and other conserved lands are important for societal well-being in many western countries. Continuous urbanization, detachment from nature and demographic changes are among the main reasons fostering political discussions about strengthening the social and cultural processes embedded in sustainable and multifunctional land use planning and management. However, planning and management schemes differ in their ability to cope with the complexities and subtleties of incorporating new conservation objectives, like outdoor recreation, into existing governmental contexts. This is especially true when focused at a regional or local level. In this paper, planning and management problems in conservation areas are explored and a set of governance principles are presented in a comparison of ways to deal with them.

One promising idea in conservation area planning is to incorporate decision-making that is closer to its point of application and emphasize partnerships, strategic alliances and broader consultation with those who are likely to be responsible for, or experience impacts from, policy decisions. Coordinated, community-based approaches may be useful in addressing challenges according to potential problems of conservation area planning and management. Analytically, these may be gauged against a set of governance principles like (a) the type of institutional structure, (b) political embedding, (c) area-related conflict and (d) sustainability. This offers flexibility to resource management through adaptive governance, and may provide a dynamic, tailored result that is specific to place and institutional context (cf. Borrini-Feyerabend 2003, Folke et al. 2005). However, planning and management of conserved areas stays a complex task. These areas are often characterized by large-scale diverse ecosystems, multiple levels of policy implementation, different perceptions of problems or policy objectives, and different preferences for strategies and instruments.

Two case studies illustrate this sort of analysis for outdoor recreation and present two distinct governance approaches that incorporate user demands and management solutions into their institutional contexts. One case study is from the Black Forest Nature Park, Germany and the other from a national forest in California. Both case studies focus on the analysis of recreation conflict but differ in their conceptual approaches. In the Black Forest, 800 organized recreationists have been quantitatively asked about their conflict perceptions, which have been qualitatively evaluated by representatives of different organizations within the park. By means of a future workshop, recreation management principles were developed jointly at local or user group level, which in turn led to, suggested shifts in conflict management objectives, permanent participative planning approaches, communication strategies and an assessment of institutional fit for policy decisions. In the Californian case, recreational uses are addressed as one of many resource issues within a broad forest plan, which has been approved by professional staff who followed the many, varied federal laws that reflect the public demand for resource benefits. Users are engaged through public comment on, and reactions to, proposed directions prepared by forest staff. A focused literature review and qualitative content analysis of the USFS forest plan revealed the ways that recreation demands were incorporated in area planning and management. Here, specific recreation conflict potentials are left to emerge in later, more specific programmatic plans. The examples show how the suggested governance principles for conservation areas are addressed in

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<sup>1</sup> Center for Technology and Society, Berlin Institute of Technology, Hardenbergstr. 36A D-10623 Berlin, Germany, [mann@ztg.tu-berlin.de](mailto:mann@ztg.tu-berlin.de)

<sup>2</sup> US Forest Service – PSW Research Station, 4955 Canyon Crest Drive, Riverside, CA 92507 [jabsher@fs.fed](mailto:jabsher@fs.fed)

practice and how they might contribute to a better scientific understanding of the social functions of conserved areas.

There is no single blueprint and set of fixed rules for conservation area planning and management. The examples presented are like bookends that address institutional and governance issues quite differently. The key finding is that interventions must be adapted to the institutional context in which they will be implemented. Generally, participatory capacity cannot be built quickly and must be developed. Therefore, permanent communication platforms could be established by local authorities to create partnerships between individuals and between individuals and authorities. These would allow local actors interested in the quality of the living environment to participate in a common visioning and consensus building in their region with shared interests (Masschelein & Quaghebeur 2006).

There are various reasons to foster new forms of governance like coordinated, community-based approaches for recreation planning and management. Besides questions of natural resource allocation, people should have opportunities to experience environmental quality in times of growing urbanization and health problems. Knowing more about use preferences and conflict perceptions, together with the provision of a platform for mutual exchange and participatory decision making, helps to facilitate the design and management of sustainable future conservation areas (Sievänen et al. 2008).

The two case studies suggest a sociologically robust paradigm that balances between bottom-up approaches and more traditional top-down planning and management systems, so that conserved areas might achieve greater success through attention to values at local, regional and national levels.

## **References**

- Borrini-Feyerabend, G. 2003. Governance of protected areas – innovation in the air. *Policy Matters* 12: 92-115.
- Folke, C., Hahn, T., Olsson, P.; & Norberg, J. 2005. Adaptive governance of socio-ecological Systems. *Annual Review of Environment and Resources* 30: 441–473.
- Masschelein, J., & Quaghebeur, K. 2006. Participation making a difference? Critical analysis of the participatory claims of change, reversal, and empowerment. *Interchange* 37(4): 309–331.
- Sievänen, T., Arnberger, A., Dehez, J., Grant, N., Jensen, F. S., & Skov-Petersen, H. (Eds.) 2008. Forest recreation monitoring—A European perspective (pp. 14–33). Helsinki: Working Papers of the Finnish Forest Research Institute.



# Using visitors' reactions to landscape processes to manage a dynamic dune landscape

Ondrej Mitas<sup>1</sup>, Helena Mitasova<sup>2</sup>, Harry Zinn<sup>3</sup>, Gene Brothers<sup>4</sup>

Keywords: dunes, landscape, visitor perceptions, visitor management

## Introduction

The unique topography, flora, and fauna of dunes attract visitors looking for hiking, mounted, or motorized recreational experiences. However, the processes that create dunes are dynamic and easily disrupted by natural events and human interference (Van der Meulen & Salman 1996). Therefore, managing dunes for recreation presents a unique challenge. Existing research on managing dunes for public use (e.g., Kuitel et al. 1999, Priskin 2003) focuses on detrimental visitor impacts and mitigating these impacts by limiting access. This research leaves a significant gap in knowledge about managing dunes for recreation. Some dune settings change dramatically, not because of visitor impacts, but because of natural processes that cause dunes to migrate across the landscape. These processes may complicate management for recreation. According to Van der Meulen and Salman, "the mobility of sand dunes has often been considered as a threat to human interests," (p. 187, 1996) even when considering such factors as property assets. Existing research does not bear on the question of managing dune mobility to protect recreation opportunities. In the present study, we close this gap in knowledge in the context of the largest dune system on the U.S. Atlantic coast, Jockey's Ridge. This heavily visited site is located in a North Carolina State Park and protected for the purpose of recreation (Fig. 1).



Figure. 1: a photo of visitors on top of Jockey's Ridge.

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<sup>1</sup> The Pennsylvania State University, 811 Ford, University Park, PA 16802, oxm110@psu.edu

<sup>2</sup> North Carolina State University, Box 8004 Biltmore Hall, Raleigh, NC 27695, gene\_brothers@ncsu.edu

<sup>3</sup> The Pennsylvania State University, 701D Ford, University Park, PA 16802, hzinn@psu.edu

<sup>4</sup> North Carolina State University, Box 8208 NCSU Campus, Raleigh, NC 27695, hmitaso@ncsu.edu

The Jockey's Ridge dune has changed dramatically over the past 50 years, losing over half of its elevation (Fig 2.). Recent studies show that the elevation loss is natural and primarily associated with the landforms and changes in vegetation, rather than visitation (Mitasova et al., 2009; Pelletier et al., 2009).

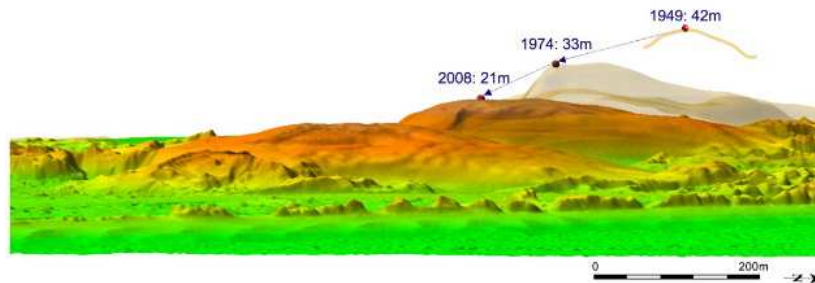


Figure 2: a computer model of 20th and 21st century deflation of Jockey's Ridge.

To help park management evaluate management options, including possible interventions to reverse elevation loss under an integrated management framework (Van der Meulen & Salman 1996), we moved beyond the existing emphasis on visitor impacts in dune research to focus on visitors' experiences. We asked the following questions: 1) What dimensions of the Jockey's Ridge dune landscape are unique and valuable to visitors?; 2) How do visitors react to the changes they see in the Jockey's Ridge landscape?

## Methods

We obtained data by surveying visitors to Jockey's Ridge in the summer and autumn of 2005. We sampled on three occasions across summer and autumn, including weekdays, weekends, mornings, and evenings on each occasion, and selecting visitors systematically. Visitors took surveys (86 % response rate) upon entering the park and returned them upon exiting (99% completion rate).

The present study concerns responses to three open-ended items: "What about Jockey's Ridge makes it unique or different from the other attractions you've visited in the area?"; "How do you think time has changed Jockey's Ridge? How do you feel about these changes?"; and "Please take the opportunity to comment on other issues regarding Jockey's Ridge, which may not have been discussed above." Seventy-five percent of respondents (n=170 of 227) responded to these questions, producing over 3500 words of data. We coded the open-ended responses using iterative thematic coding (Strauss and Corbin, 1998). We read the responses several times to identify potential themes of interest. Contextual clues revealed categories of meaningful responses to our research questions, which we coded over repeated readings of the data until no new themes emerged.

## Results

Visitors valued the height of the Jockey's Ridge dune, which is decreasing. However, visitors also valued features such as the peaceful natural setting, spectacular view, and the large volume of sand. We found strong emotional reactions to changes in the dune's elevation. Visitors who believed that the elevation loss was natural generally felt positive about the changes. Visitors who blamed the elevation loss on encroaching real estate development felt negative about the changes. Emotional reactions to the dynamic dune landscape, therefore, were contingent on understanding that changes to the dune were natural. A number of visitors expressed the sentiment that changes to a dune landscape over time were inevitable.

## Implications

According to Van der Meulen and Salman (1996), "sand dunes are a natural and dynamic system in which there needs to be a certain mobility in an equilibrium situation" (p. 186). Our findings indicate that in such a system, visitors appreciate this mobility if it is perceived to be natural. Based on this

finding, we offered two recommendations to the Jockey's Ridge State Park management. First, we suggested that they inform visitors about the natural processes that cause the dune to change shape and decrease in height. Second, we suggested that they refrain from interfering with these processes to merely increase the dune's height.

Our findings suggest that natural changes in a dune landscape must be managed differently from human impacts. Although it is appropriate to protect dunes from visitor impacts, we conclude that changes perceived as natural contribute to dunes' recreational value and need not be restrained by management.

## **References**

- Kuitel, P., Zhevelev, H., & Harrison, R. (1999). The effect of recreational impacts on soil and vegetation of stabilised Coastal Dunes in the Sharon Park, Israel. *Ocean & Coastal Management*, 42, 1041-1060.
- Mitasova, H., Overton, M., Harmon, R.S. (2005). Geospatial analysis of a coastal sand dune field evolution: Jockey's Ridge, North Carolina. *Geomorphology*, 72, 204-221.
- Pelletier, J., Mitasova, H., Harmon, R.S., and Overton M. (2009). The effects of interdune vegetation changes on eolian dune field evolution: a numerical-modeling case study at Jockey's Ridge, North Carolina, USA. *Earth Surface Processes and Landforms* 34(9), pp 1245-1254.
- Priskin, J. (2003). Tourist perceptions of degradation caused by coastal nature-based recreation. *Environmental Management*, 32(2), 189-204.
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage.
- Van der Meulen, F., & Salman, H.P.M. (1996). Management of Mediterranean coastal dunes. *Ocean & Coastal Zone Management*, 30(2-3), 177-195.

## Uncertainties and new management strategies: solving the recreation-biodiversity conflict with local stakeholders

Rogier Pouwels<sup>1</sup>, Paul Opdam<sup>1</sup>

Keywords: adaptive management, boundary management, incomplete knowledge, unpredictability

In the European landscape, conflicts between the conservation of biodiversity and recreation activities are intensifying. Managers of large nature areas are confronted with increasing numbers of visitors and decreasing biodiversity values. To accommodate the visitors and protect biodiversity values at the same time, they need to make changes in the landscape. Current laws, a lack of knowledge on the recreation-biodiversity relationship and the involvement of stakeholders complicate finding agreed upon solutions. Scientists can contribute to conflict management by providing objective information (Young et al. 2005) and help to justify management plans and actions (McCool et al. 2007). However, in the context of the emerging knowledge society (Nowotny et al. 2001) science is questioned as the credible provider of irrefutable knowledge (Hanssen et al. 2009). Especially because of high levels of uncertainty and low consensus on how to combine the conflicting functions in nature areas (Young et al. 2005). To solve this type of conflict, (Hanssen et al. 2009) propose two strategies. In the pacification strategy, research is started to decrease uncertainties with the aim of enhancing consensus building about solutions. In the facilitation strategy, first consensus about beliefs, ambitions and directions of solutions is built before research is started to decrease the uncertainties. Managers can choose to follow the pacification strategy by following an adaptive management approach and the facilitation strategy by following a boundary management approach (Fig. 1).

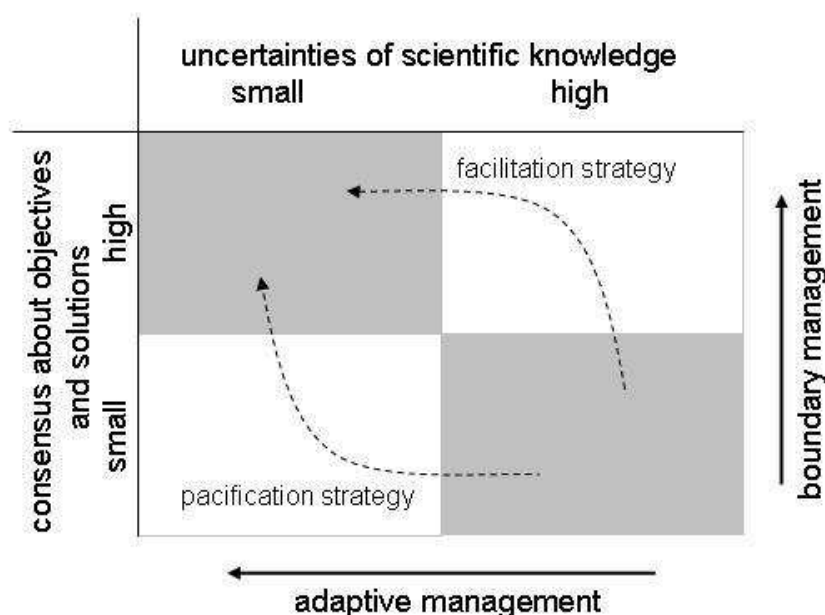


Figure 1: Managing the recreation-biodiversity conflict with the strategy of pacification and facilitation that includes the frameworks of adaptive management and boundary management. Figure modified from Hanssen et al. (2009).

Adaptive management is considered as the appropriate approach if the manager can strongly influence the system but uncertainty levels about the impact of management measures are high (Peterson et al. 2003). Because recreation patterns can be managed in many ways with highly uncertain outcomes (Cole 2006), we conclude that adaptive management is a proper framework to

<sup>1</sup> Alterra, Wageningen UR, P.O.Box. 47, 6700 AA, Wageningen, [Rogier.Pouwels@wur.nl](mailto:Rogier.Pouwels@wur.nl), [Paul.Opdam@wur.nl](mailto:Paul.Opdam@wur.nl)

deal with uncertainties in the biodiversity-recreation conflict. However, it is ineffective in dealing with the conflict itself (Williams et al. 2007).

Boundary management is considered as the appropriate approach if the manager can influence the system in many ways but consensus on the impact is low. In a conflict with a high degree of uncertainty and many solutions, the boundary between knowledge and action needs a management focusing at 'communication', 'translocation' and 'mediation' (Cash et al. 2003). This so called boundary management is most effective if the credibility, saliency and legitimacy of information is enhanced simultaneously.

The current recreation management approaches include a sequence of steps similar to adaptive management (McCool et al. 2007). In these steps scientific knowledge is mostly used in a one-way direction to inform stakeholders (Fig. 2). However, adaptive management and boundary management imply the involvement of stakeholders in the development and use of scientific knowledge and tools. Knowledge of stakeholders has to be regarded as part of the common knowledge basis and it should be used to decrease uncertainty (Fig. 2).

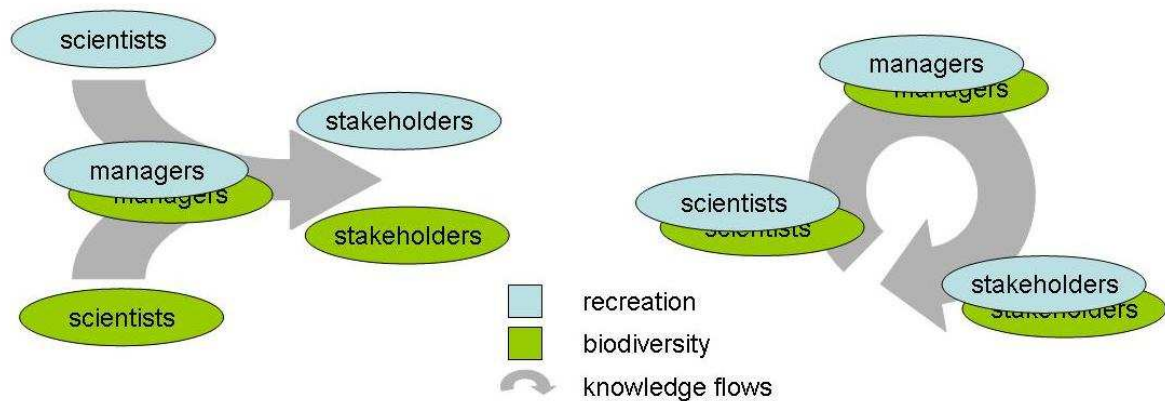


Figure 2: Left figure represents the use and evolution of scientific knowledge in current recreation management frameworks and right figure in adaptive and boundary management.

Both management strategies deal with different types of uncertainties (Brugnach et al. 2008, Opdam et al. 2009). A first type of uncertainty, related to imperfect knowledge, may lead to a loss in credibility of scientific knowledge and tools. This uncertainty can probably be reduced by using local data and expertise. A second type, uncertainties related to ambiguity, may cause a loss in legitimacy. Efforts to clarify goals and values and make hidden agendas visible could help in reducing the impact of this type of uncertainty, and scientific concepts and tools can facilitate communication by visualizing relationships between recreation and biodiversity. The third type of uncertainty is related to the unpredictability of ecological systems and human behaviour. Neglecting this type of uncertainty might lead to a loss in transparency, but too much focus might offer an easy way out to do nothing.

As a topic of future research, we suggest investigating how the three types of uncertainties can be managed in adaptive management or boundary management, and find out how the way uncertainties are clarified affect the learning process. As a hypothesis, we propose that boundary management deals better with uncertainties related to ambiguity, and adaptive management with uncertainties related to incomplete knowledge (Fig. 3). Therefore we amend that managing the recreation-biodiversity conflict should alternate between a pacification strategy and a facilitation strategy (Fig. 1) as a stepwise learning strategy of adaptive management and boundary management.



Figure 3: Schematic representation which types of uncertainties are addressed more in boundary management and which types are addressed more in adaptive management.

## References

- Brugnach, M., A. Dewulf, C. Pahl-Wostl & T. Taillieu. 2008. Toward a relational concept of uncertainty: about knowing too little, knowing too differently and accepting not to know. In: *Ecology and Society* (13), art. 30.
- Cash, D.W., W.C. Clark, F. Alcock, N.M. Dickson, N. Eckley, D.H. Guston, J. Jager & R.B. Mitchell. 2003. Knowledge systems for sustainable development. In: *Proceedings of the National Academy of Sciences of the United States of America* (100), p 8086-8091.
- Cole, D.N. 2006. Visitor and recreation impact monitoring: is it lost in the gulf between science and management? In: *The George Wright Society Forum* (23), p. 11-16.
- Hanssen, L., E. Rouwette & M.M. van Katwijk. 2009. The Role of Ecological Science in Environmental Policy Making: from a Pacification toward a Facilitation Strategy. In: *Ecology and Society* (14).
- McCool, S.F., R.N. Clark & G.H. Stankey. 2007. An assessment of frameworks useful for public land recreation planning. Gen. Tech. Rep. PNW-GTR-705, U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, OR.
- Nowotny, H., P. Scott & M. Gibbons. 2001. *Re-Thinking Science: Knowledge and the Public in an Age of Uncertainty*. Polity Press, London.
- Opdam, P., M. Broekmeyer & F. Kistekast. 2009. Identifying uncertainty in judging the significance of human impacts on Natura 2000 sites. In: *Environmental Science & Policy* (12). p. 912-921.
- Peterson, G.D., G.S. Cumming & S.R. Carpenter. 2003. Scenario planning: a tool for conservation in an uncertain world. In: *Conservation Biology* (17), p 358-366.
- Young, J., A. Watt, P. Nowicki, D. Alard, J. Clitherow, K. Henle, R. Johnson, E. Laczko, D. McCracken, S. Matouch, J. Niemela & C. Richards. 2005. Towards sustainable land use: identifying and managing the conflicts between human activities and biodiversity conservation in Europe. In: *Biodiversity and Conservation* (14), p 1641-1661.

## Nation-wide outdoor recreation demand monitoring

Tuija Sievänen T.<sup>1</sup>, Marjo Neuvonen<sup>1</sup> and Eija Pouta<sup>2</sup>

Keywords: recreation inventory, population survey, trends

### The aim of the study, topics and data collection

The second nation-wide outdoor recreation demand inventory and assessment (LVVI) study started in January 2009. This is a follow-up study for the first LVVI -study made in Finland in 1998-2001 (Sievänen 2001). The aim of the study is to provide data for updating outdoor recreation statistics and for three theme studies. The topics of the theme studies are 1) nature's impact on human health and wellbeing; 2) environmental changes and outdoor recreation; and 3) recreational use of private forests. The study is conducted by the Finnish Forest Research Institute and Statistics Finland. The theme studies are done in co-operation with several partners including MTT Agrifood Research Finland, University of Tampere, National Institute for Health and Welfare, Centre for Health Promotion Research (UKK-institute) and Finnish Environment Institute.

The sample consists of Finnish population aged 15 - 74 years. The size of the random sample is 24 000. The data is collected by a web-questionnaire supported by a mail questionnaire. The survey is conducted in six parts, of which three parts have been collected in 2009 and three more parts are being collected in 2010. The data collection takes place in January - March, April - June and September - November. In 2009, the response rate was 39 %, and 24 % of total responses was received by web-questionnaire. The expected number of responses altogether is about 9000, of which 4677 are already collected.

The trends presented in this study are based on the first LVVI -data collected during 1998-2000 (n=10 651) and the second LVVI data (LVVI2) collected January - March and April - June 2009 (n=3060). Weights calibrated to both datasets have been applied to correct the sample to get adequate representation of the population. In the survey, an initial screening question revealed whether the respondent had participated in a given, broader category of activities (gathering wild berries, mushrooms, plants or flowers in general) during the previous 12 months time. If the respondent had done so, he or she was asked about participation in specific activities (e.g. wild berry picking). If he or she had participated in a specific activity, a question regarding the number of occasions per year was asked.

### The key measurements of LVVI2 study

The main product of LVVI2 study is to produce updated outdoor recreation statistics. Outdoor recreation statistics includes following information:

- Participation in outdoor recreation and different recreational activities in different population groups (87 measured activities).
- Time use patterns and money spent on outdoor recreation participation and nature trips.
- Use of different areas for recreation according to the nature and use characteristics: recreational areas, multiple use forests, protected areas, shore-line areas, archipelago, urban nature, rural areas, areas close to recreation homes.
- Changes and trends in outdoor recreation and nature tourism including trends in recreational behaviour and prognosis based on recreational behaviour models and impacts of environmental changes on recreational behaviour.

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<sup>1</sup> Finnish Forest Research Institute, PL 18, 01301 Vantaa, Finland, tuija.sievanen@metla.fi, marjo.neuvonen@metla.fi

<sup>2</sup> MTT Agrifood Research Finland, Luutnantintie 13, 00410 Helsinki, Finland, eija.pouta@mtt.fi

### Preliminary results of LVVI2: trends for participation in outdoor recreation

Finns highly enjoy the outdoor life; 96 % of population report they have participated in outdoor activities during the past year. The results confirm the participation rate ten years ago (Sievänen 2001). Comparing to information of the previous outdoor recreation statistics ([www.metla.fi/metinfo/lvvi/](http://www.metla.fi/metinfo/lvvi/)) participation in many of the traditional activities such as walking, cycling, berry and mushroom picking, swimming, spending time at vacation home, fishing, boating and cross-country skiing has stayed at a very stable level or lightly increased during the previous ten years (Fig. 1). For some activities participation rate has increased more clearly like in jogging, spending time at the shore/beach (e.g. sunbathing), Nordic skating (new activity) or leisure time forest management (traditional activity). However the frequency of participation in activities like walking, cycling, jogging, hunting, fishing, boating, cross-country skiing and snowmobiling was lower than it was in 1998-2000 (Fig. 2). The declining trend in participation was found in downhill skiing: less participation and occasions compared to ten years ago. Number of close-to-home recreation occasions has stayed almost at the same level; frequency of close-to-home recreation occasions was 161 in 2009 and 167 in 1998-2000. In both studies around 40 % of the Finns aged 15-74 years reported they had done at least one nature trip.

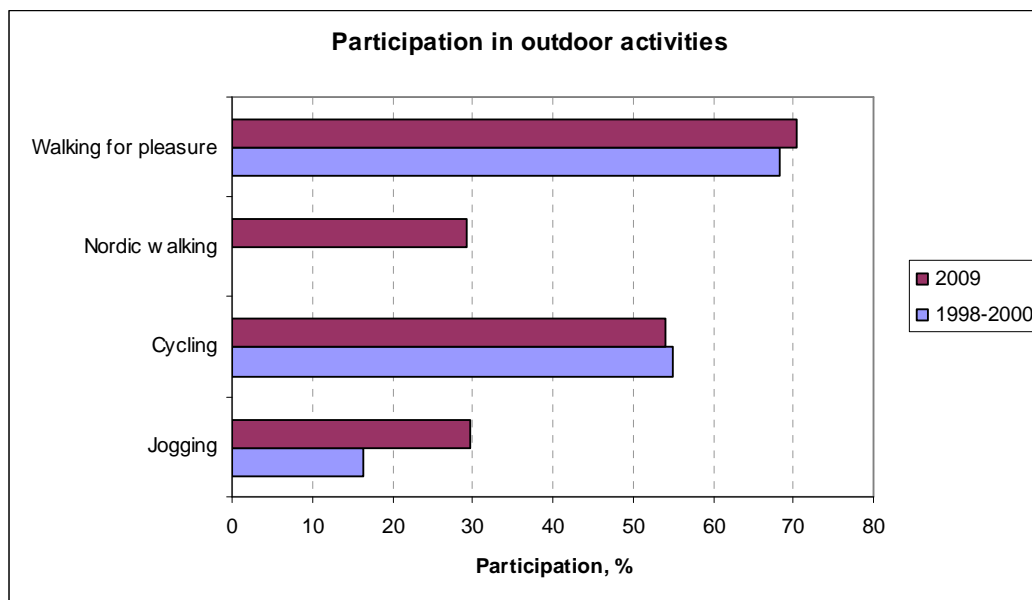


Figure 1. Participation rates in some outdoor activities in 1998-2000 and 2009.



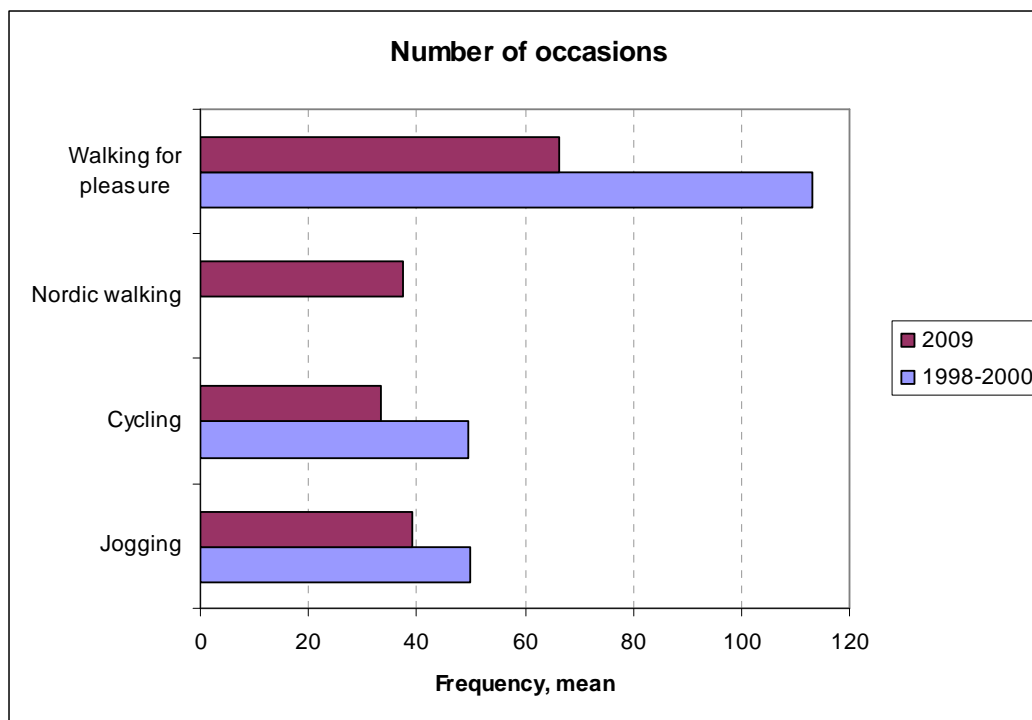


Figure 2. Number of occasions in some outdoor activities in 1998-2000 and 2009.

### References

Sievänen, T. (eds.) (2001). *Luonnon virkistyskäyttö 2000. Luonnon virkistyskäytön valtakunnallinen inventointi LVI -tutkimus, 1997-2000.* (Summary: Outdoor recreation 2000). Final report. Metsäntutkimuslaitoksen tiedonantoja 802. 336 p. [www.metla.fi/metinfo/lvi/](http://www.metla.fi/metinfo/lvi/)

# Leisure activities in Dutch destinations

Desiree H.P. Verbeek<sup>1</sup>, Jos de Haan<sup>1</sup>

Keywords: visitor flows, leisure destinations, policy

## Introduction

The leisure participation among Dutch inhabitants is 98,5% (NBTC-NIPO research, 2009), which indicates that almost everyone undertakes at least one outdoor leisure activity in a year. Besides outdoor recreational activities, such as walking and cycling, this also concerns activities such as shopping, sports, wellness, and visiting monuments, museums, theatres or events.

When leisure activities are concentrated in space and time, visitor flows may negatively affect the destination. The experience quality of the landscape may be reduced (e.g. the countryside becomes 'too touristy') (RPB 2007), the pressure on the biodiversity may be increased when too many people visit a natural park at the same time (Van Marwijk 2009), or the quality of life of people living in city centres may be negatively affected (Van Leeuw 2008, TRN 2002). The challenge is to minimise such negative impacts of leisure activities.

## Research question and method

This paper answers the following research question: "What is the character of visitor flows in different types of leisure destinations in the Netherlands?"

In line with the Knowledge Centre for Recreation and Recron (the Dutch association of recreation entrepreneurs) we define three types of leisure destinations:

- 1) Green destinations: the countryside, rural areas, nature areas, forests;
- 2) Blue destinations: sea, beach, lakes, rivers, wetlands;
- 3) Red destinations: city or village centres, city parks.

Of all leisure activities, 39,1% take place in green destinations, 18,7% in blue, and 19,3% in red destinations. Expectantly, these destinations are visited by different visitors. The distance travelled and the transport mode used to reach the destination (table 21, and the temporal concentration of visitor flows in the destinations (table 2).

Quantitative descriptive analyses have been conducted of the CVTO database (Continuous Leisure Research). With Chi-square tests we explored whether the differences in visitor characteristics between the three types of destinations are significant.

## Results

Green destinations are primarily being visited by people living in non-urbanised areas and red destinations by people living in urbanised areas (Fig. 1). It is more likely that red destinations are visited by people living in non-urbanised areas than that green destinations are visited by people living in urbanised areas (Fig. 1) (also: Steenbekkers et al. 2008). Furthermore, green destinations are visited by slightly older people compared to red or blue destinations (respectively 47, 43 and 44 years old). The gender- and socioeconomic differences are small.

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<sup>1</sup> The Netherlands Institute for Social Research/ISCP, PO Box 16164, 2500 BD, The Hague, The Netherlands, [d.verbeek@scp.nl](mailto:d.verbeek@scp.nl)

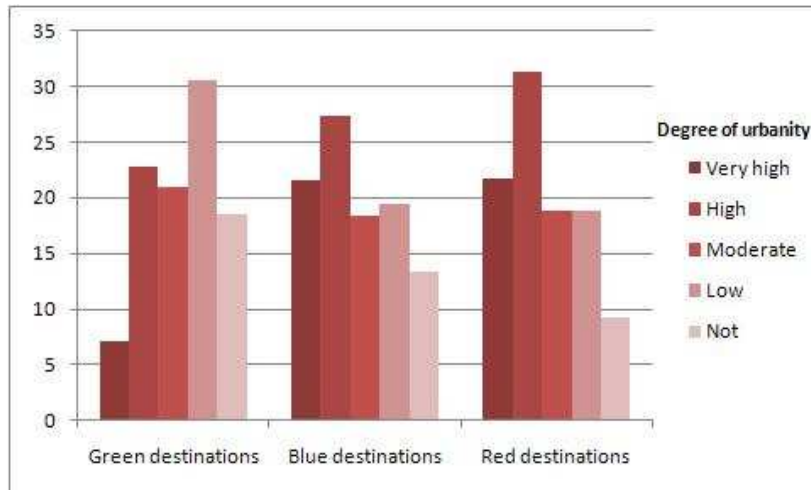


Figure 1: degree of urbanity

Leisure destinations, especially those of the red type, are primarily visited by people in the direct area (0-5 km) (also: Harms 2006). Blue destinations are further away compared to red or green ones (respectively 21, 11 and 12 kilometres), and are arguably typical car destinations. Public transport has a low share in all destinations (Table 1).

Table 1 Leisure mobility

	Green destinations	Blue destinations	Red destinations
Distance travelled (%)			
0-5 km	55,8	46,4	64,7
6-10 km	17,1	17,8	17
11-20 km	13,9	13,9	9,5
21-50 km	9,4	11,6	5,1
> 50 km	3,7	10,3	3,8
Transport mode used (%)			
Car	27,6	41,5	15,2
Public transport	0,7	2,5	3,7
By bike	27,2	19,6	34
On foot	19,7	15,2	24,2
Other	24,8	21,2	22,9

SCP analyses on CVTO 2008/'09

\* All significant

The investigation of the temporal concentration of visitor flows illustrates that all destinations show a peak between 10-11o'clock, 13-14o'clock and 18-20o'clock, and a dip during lunchtime. Red destinations are visited slightly later in the morning and until later in the evening (Fig. 2). In all destinations, the visitor flows are concentrated in the weekends, especially blue destinations are typical weekend-destinations (Table 2). Also with respect to the seasons, the size of visitor flows fluctuates most in blue destinations. Blue destinations are summer destinations, whereas red destinations are year-round destinations (Table 2).

Table 2: When is the destination visited

	Green destinations	Blue destinations	Red destinations
<i>Day of the week (%)</i>			
Monday	11,4	10,8	11,1
Tuesday	11,5	10,5	12,4
Wednesday	12,7	12	12,5
Thursday	11,9	10,9	13
Friday	11,2	11,1	11,9
Saturday	17,2	19,4	17,7
Sunday	24,2	25,2	21,3
<i>Season (%)</i>			
Spring	27,1	25,6	27,8
Summer	25,4	36,6	23,5
Autumn	26,4	17,6	24,5
Winter	21,1	20,2	24,2

SCP analyses on CVTO 2008/09

\* All significant

<sup>i</sup> Leisure activities > 1 hour taking place outside one's home; except social visits to friends and family, except activities undertaken from a holiday address (CVTO definition; NBTC-NIPO Research).

<sup>ii</sup> The rest took place in people's own neighbourhood (unclear whether this is a green, blue or red type of destination), or in 'other' surroundings.

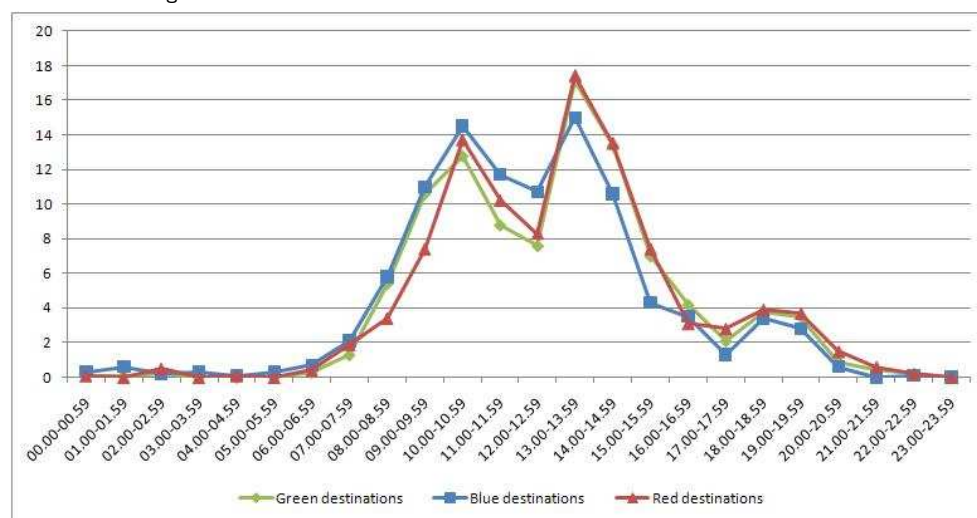


Figure 2: starting time of leisure activities

## Recommendations

Gaining insights in the character of visitor flows in different types of destinations may help to adjust and focus recreational policies, tourism policies, spatial policies and leisure mobility policies to these destination-specific visitor flows.

## References

Harms, L. (2006). Op weg in de vrije tijd. Context, kenmerken en dynamiek van vrijetijds mobiliteit. Sociaal en Cultureel Planbureau: Den Haag, april 2006.

- Van Leeuw, A. (2008). Toerisme: een lust of een last? Onderzoek naar de attitude van lokale bewoners van de Brusselse Vijfhoek ten aanzien van toerisme en toeristische ontwikkeling in de grootstedelijke Brusselse regio. Erasmus Hogeschool Brussel: Brussel.
- Van Marwijk, R. (2009). These routes are made for walking. Understanding the transactions between nature, recreational behaviour and environmental meanings in Dwingelderveld National Park, the Netherlands. Wageningen University: Wageningen.
- NBTC-NIPO research (2009). Continu Vrijetijdsonderzoek 2008/2009. Rapport. December 2009.
- RPB (2007). De staat van de ruimte 2007. Den Haag: Ruimtelijk Planbureau.
- Steenbekkers, A., Simon, C., Vermeij, L., en Spreeuwens, W-J (2008). Het platteland van alle Nederlanders. Hoe Nederlanders het platteland zien en gebruiken. Sociaal en Cultureel Planbureau: Den Haag, oktober 2008.
- Toerisme Recreatie Nederland (2002). Toerisme en Leefbaarheid. Rapportage 2002.

## Recreation or tourism: local recreation opportunities and holiday behaviour

Sjerp de Vries<sup>1</sup>, Frans Sijtsma<sup>2</sup>

Keywords: outdoor recreation, urbanisation, green space, holiday nights

Since 2009 more than half the world population is living in cities. This urbanisation process, with more and more people living and working in higher densities, is still going on world-wide (McCann & Acs, 2009). In the already highly urbanised Netherlands, spatial planning accommodates this agglomerative tendency but attempts to balance it with the demand for outdoor recreation and contact with nature. However, is planning providing enough green areas for the urban inhabitants? This paper will explore this issue quantitatively.

In the Netherlands planning tools for basic recreational activities, such as walking and cycling in a natural environment, have been developed (see e.g. De Vries & Goossen, 2002). These tools assess whether the local supply of such green recreation opportunities is large enough to accommodate the local demand for these activities, and if not, how much additional supply is needed to correct the situation. The tools include several normative choices: the number of people that can recreate on one hectare of land (with a specific type of use) without disturbing each other; the distance within which enough recreation opportunities should be available; and the day on which local supply should still be able to accommodate local demand (how busy). The outcome of the analysis strongly depends on these normative choices. This makes it important to evaluate the resulting shortages. Are the shortages as calculated by the tool meaningful, i.e. can they be associated with real (negative) effects?

In this paper we will focus on one type of effect, namely compensation behaviour in the form of going away on holiday more often and/or for longer periods of time. Other types of effects, e.g. on experiencing peace and quiet, have been studied earlier by De Vries (2005) and Van der Aa & Berkers (2008). The dependent variable is the number of nights one spends away from home for holiday purposes per year. The independent variable is the percentage of the required supply of opportunities for recreational walks in a green environment that is actually available locally. The main dataset that is used is the 2003 edition of the Continuous Holiday Survey (CVO), containing the holiday behaviour of more than 6500 Dutch people. By means of the individual's postcode this dataset is enriched with the percentage of the locally required supply for walking in a green environment that is actually available. This percentage is calculated by the AVANAR tool (De Vries et al, 2004), that is also used by the Netherlands Environmental Assessment Agency (PBL) for monitoring purposes. The data was analysed at an individual level. The available supply percentage was categorised into five classes and used as a factor in the analysis, because its relationship with the number of nights might not be linear. Several background characteristics, such as income, were used as covariates.

The analysis of covariance shows that the category with the lowest level of available supply spends over four nights more on holidays than the category with the highest level of available supply. Given a national average of about 20 holiday nights a year, this is a considerable difference. Therefore the preliminary conclusion is that people with too few green recreation opportunities nearby compensate for this by spending more nights elsewhere. Further research will have to show whether they spend these extra nights in relatively natural surroundings, something that it to be expected if contact with nature is the driving force behind these extra nights. In the meantime the shortages as calculated by the AVANAR tool appear to become increasingly meaningful, suggesting that planning should considering greener and less dense forms of urbanisation.

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<sup>1</sup> Alterra, Wageningen UR, P.O. Box 47, 6700 AA Wageningen, The Netherlands, [Sjerp.deVries@wur.nl](mailto:Sjerp.deVries@wur.nl)

<sup>2</sup> University of Groningen/NEAA P.O. Box 800, 9700 AV Groningen, he Netherlands, [F.J.Sijtsma@rug.nl](mailto:F.J.Sijtsma@rug.nl)

However, it remains to be seen whether also in the bigger picture the overall benefits of providing extra green space outweigh the overall social costs (Sijtsma, 2006).

## References

- De Vries, S. (2005). Green recreation opportunities and urban liveability. In: Gallis, Ch.Th. (Ed.). Forests, trees and human health and well-being; proceedings of the 1st European COST E39 Conference, October 2005, Thessaloniki. Greece: Siokis. Pp. 191-201.
- De Vries, S. & Goossen, C.M. (2002). Predicting transgressions of the social capacity of natural areas. In: Arnberger, A., Brandenburg, C. & Muhar, A. (eds.) Proceedings of the Conference on the Monitoring and Management of Visitor Flows in Recreational and Protected Areas. Vienna, January 30 – February 2, 2002.
- De Vries, S., Hoogerwerf, M. & Regt, W.J. de (2004). AVANAR: een ruimtelijk model voor het berekenen van vraag-aanbodverhoudingen voor recreatieve activiteiten; basisdocumentatie en gevoeligheidsanalyses [AVANAR: a spatial model for calculating demand and supply ratios for recreational activities; technical documentation and sensitivity analyses]. Alterra-rapport 1094. Wageningen: Alterra.
- Mc Cann, Ph & Acs, Z.L. (2009). Globalisation: Countries, Cities and Multinationals, Jena Economic Research Papers. Jena, Friedrich Schiller University and the Max Planck Institute of Economics.
- Sijtsma, F.J. (2006). Project evaluation, sustainability and accountability - Combining cost-benefit analysis and multi-criteria analysis. Groningen, Stichting REG (PhD Thesis).
- Van der Aa, B. & Berkers, R. (2008). Tekorten aan recreatiemogelijkheden: model of werkelijkheid? [Shortages of recreational opportunities: model or reality?] Den Haag: Kenniscentrum Recreatie.

# Monitoring of visitor flows and safety in recreational areas around Amsterdam

Jasper Beekhoven<sup>1</sup>, M.J. Brouwer

Keywords: recreation, safety, monitoring, recreational area

The western part of the Netherlands, concentrated around the conglomeration of the four largest cities known as the Randstad, is one of the urban areas with the highest population density in Europe, comparable to London, Paris and the German Ruhr area. This creates a much greater need for recreation opportunities than the surrounding countryside can provide (Gijsbertse, 2008). In the 1970's several recreational areas were created around these cities for the dual purpose of providing a space for recreation and for acting as a buffer insulating cities from each other. At the present day these areas have fully matured and are facing several problems associated with park-like areas in the vicinity of big cities. For example the uses of the areas by people from the big cities bring big-city safety issues. Furthermore, the areas are showing signs of age which also leads to unwanted use such as vandalism, petty crime and conflicts between different groups of visitors.

The focus of this paper will be on the areas of Spaarnwoude and Groengebied Amstelland, Spaarnwoude between Amsterdam and Haarlem and Groengebied Amstelland along the southern edge of the Amsterdam conurbation (see Fig. 1). Both areas consist of several intensive recreational areas connected by larger areas for extensive use. The latter are commonly formed by agricultural land, while the former are usually park-like in their design, albeit larger than the average city park. Each of these areas is managed by means of a 'recreatieschap' (or recreation board), a public body in which several separate governing bodies delegate part of their responsibilities to achieve a common goal. In the case of the recreational areas, the board consists of civil servants and politicians from the surrounding municipalities and the province of North Holland. To defend the costs of maintenance and to emphasize the societal benefit of the recreational areas, the politicians on the boards want insight into the use, appreciation and perception of these areas by visitors. This is the main reason we started monitoring visitor flows and polling the visitors in 2005, by means of our 'recreation monitor'. The monitor consists of two parts: Firstly counting the number of visitors in the different area's that make up Spaarnwoude and Groengebied Amstelland; and secondly by means of questionnaires for visitors in the areas themselves and of visitors and non-visitors via online-polling.

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<sup>1</sup> Recreatie Noord Holland NV, Postbus 2571, 2002 RB Haarlem, the Netherlands. jbeekhoven@recreatienoordholland.nl



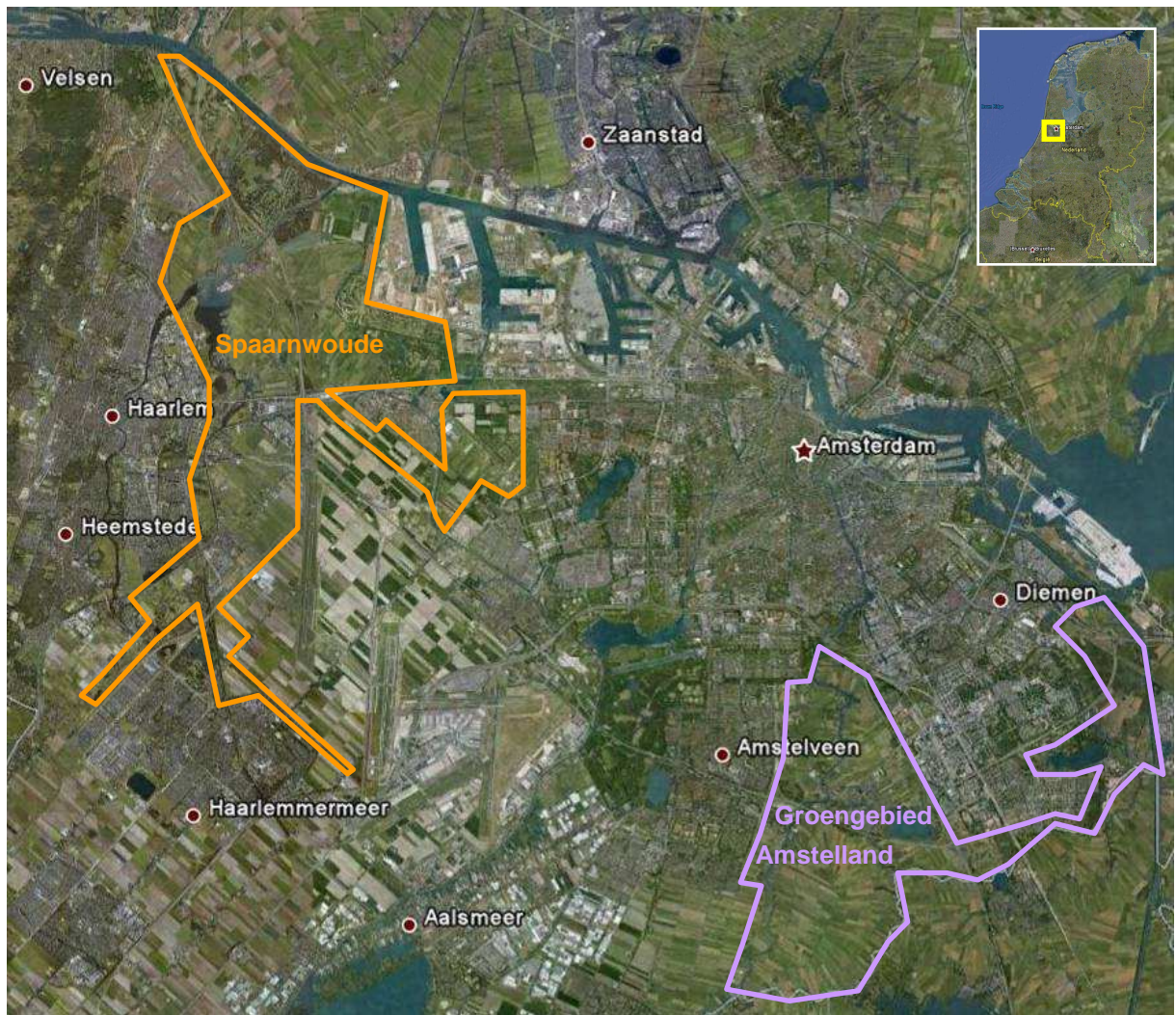


Figure. 1. Spaarnwoude and Groengebied Amstelland

The counting of visitors is conducted by means of mechanical counters positioned on the main entrances to the areas on roads and cycling paths. The use of mechanical counters makes it possible to determine the pattern in which visitors enter an area during a given day. This information is critical to assessing visitor safety and lends insight into the use of the areas during day- and nighttime. For example in some area's it was revealed that a lot of cars enter after 12 o'clock (midnight), which may indicate unwanted activities.

The second part of the monitoring is executed every other year when both in Spaarnwoude and Groengebied Amstelland 700 questionnaires are filled out by visitors of the different areas. Moreover 2500 questionnaires are collected via the Internet and filled out by visitors and non-visitors alike. Subjects of the questionnaire are use, visitor background, appreciation and safety.

The members of the recreation boards are very interested in key figures such as general appreciation and the perception of safety, which are important to communicate the success (or failure) of their policies to their constituents. Moreover, the safety of a recreational area is one of the aspects that can indicate the quality of a recreational area (Bruls, 2001). The insight into the perception of safety in the recreational areas, combined with information available through other channels such as complaints and police records, resulted in a safety plan. This plan has been heavily based on information from the recreation monitor and moreover, its implementation is monitored by it (Beers and van der Laan, 2008). This paper will elucidate what the safety issues were and expound on which aspects of the recreation monitor were used and how the information was implemented. Furthermore the safety situation in the areas will be assessed and the proposed

solutions offered by the safety plan will be discussed. The discussion will be embedded in a wider context of safety in recreational areas on a national level and the experiences with similar issues in other parts of the country. Also the difference in the perception of safety by different groups of visitors will be considered as safety is viewed differently depending on sex, ethnicity and age (Shores et al. 2007).

### **References**

- Gijsbertse, H., (2008) Recreatiecijfers bij de hand. Kenniscentrum recreatie, Den Haag.
- Beers, P. van, and F. van der Laan (2008) Succesvol samenwerken aan een veiliger Spaarnwoude. Recreatieschap Spaarnwoude, Velsen-Zuid.
- Bruls, E. (2001) Veiligheid in het landelijk gebied: samenwerken aan kwaliteitsverbetering, Kenniscentrum recreatie, Den Haag.
- Shores, K.A., D. Scott and M.F. Floyd (2007) Constraints to Outdoor Recreation: A Multiple Hierarchy Stratification Perspective; In: Leisure Sciences (29: 3) p 227 – 246.

# Urban park as well as Nature 2000 area: monitoring and managing visitors and dogs

Rinus Jaarsma<sup>1</sup>, Henk-Jan Kooij<sup>2</sup>

Keywords: visit volume, sampling, nature reserve, Bosjes van Poot, The Netherlands

## Introduction

Visitor management of nature reserves and parks is normally aimed at people. However, some nature reserves in an urban environment actually act as urban parks where many people walk their dogs. When an urban park is also designated as a Natura 2000 area, a management plan has to be designed to balance conservation objectives with social and economic interests (Beunen, 2010). Visit volume (people and dogs) and its spatial dispersion are corner stones in this process. We aim to show how this information was collected for "Bosjes van Poot", a 30-hectare dune area with 'multiple use' near The Hague (Jaarsma et al., 2008). The area is designated as a leash-free area for dogs, and owners are obligated to clean up after their dogs (City of The Hague, 2006).

## Research methods

Four visual counts (on a Sunday and a Tuesday in the spring and fall) and a user survey in the fall form the core of the research. The visual counts provide insight into the number of visitors and the number of dogs, differentiated by size. The survey answers the motives and origin of the visitors with and without dogs, the nature and the frequency of their visit, as well as their spatial dispersal pattern.

## Visits 2007 (Fig. 1)

On both Sundays, between 1,700 and 1,800 visitors came with around 950 dogs. The number of visitors on Tuesdays is considerably lower: roughly 1,350 in May (with 1,200 dogs) and 730 in October (with 700 dogs). From these small random samples, the annual number of visits has been indicatively calculated, assuming that Saturday takes the average position between workdays and Sunday. The annual total is estimated by multiplying the number of workdays, Saturdays and Sundays by the observed average for the type of day in question. This results in 439,000 visitors with 344,000 dogs. The theoretical amount of excrement has been calculated from the visual observation of dog size. It totals 56,000 kg, of which 21,000 kg is dry material. Because of the random sample's uncertainty, a "bandwidth" for the visit has also been determined; this amounts to about 20%. These values have been calculated by applying the lowest and the highest workday count to all workdays.

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<sup>1</sup> Wageningen University, Land Use Planning Group, P.O. Box 47, 6700 AA Wageningen, The Netherlands, [Rinus.Jaarsma@wur.nl](mailto:Rinus.Jaarsma@wur.nl)

<sup>2</sup> Radboud University, Human Geography, P.O. Box 9108, 6500 HK Nijmegen, The Netherlands, [h.kooij@fm.ru.nl](mailto:h.kooij@fm.ru.nl)

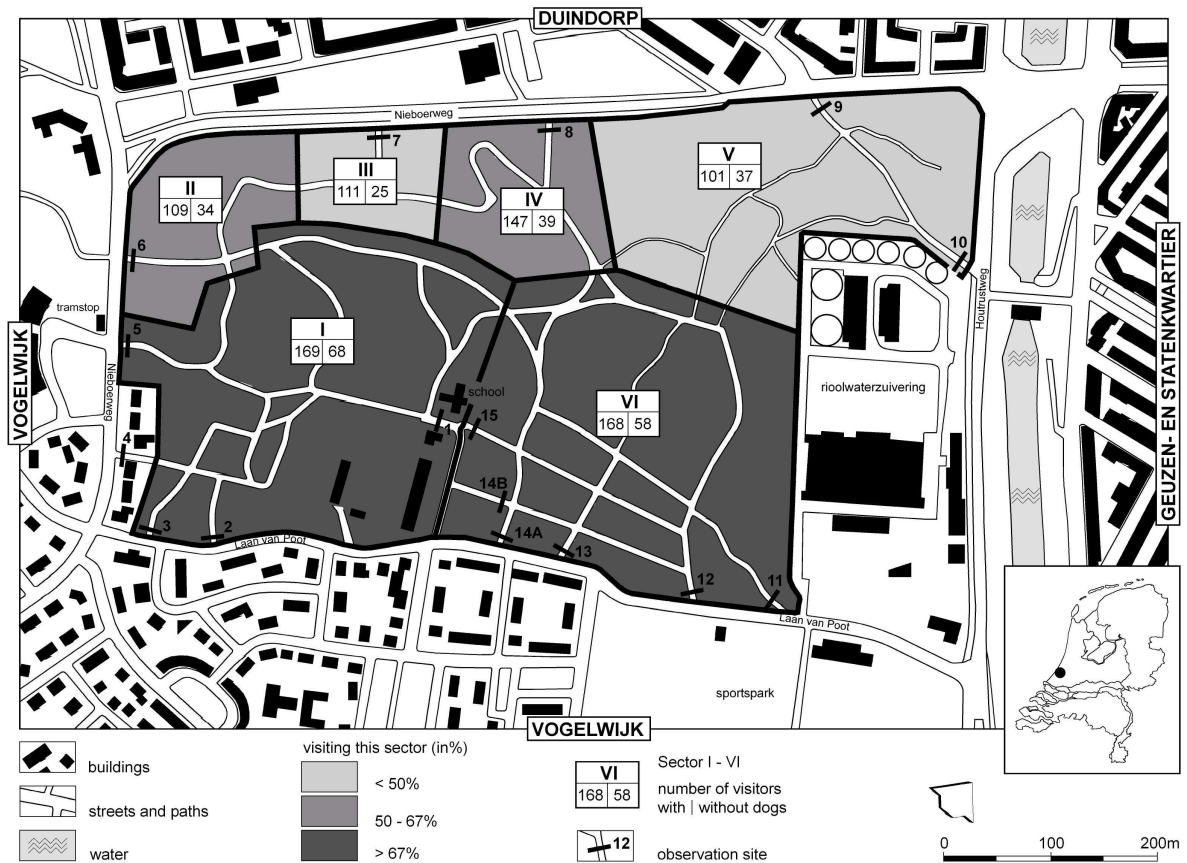


Figure 1. Natura 2000 area "Bosjes van Poot" in the urban environment of the city of The Hague (between the wards: Vogelwijk, Duindorp and Geuzenkwartier & Statenkwartier), with 15 entrances (location of the visual counts). Indicative spatial dispersal of total visit (grey-shaded area, in per cents of N=277) and volume of visits with a dog (absolute number, N=192) and without a dog (idem, N=85), per sector (I-VI).

By combining the visual counts and the survey data, a spatial dispersion of the visits has been made for the area's six sectors. The south-eastern sector is clearly the most visited, followed immediately by the north-eastern. In 88% of the cases, respondents with a dog indicate that they visit both sectors. The three sectors on the Duindorp-side are visited by approximately half of the people and dogs that visit the Bosjes van Poot area.

The survey further shows that respondents with a dog visit the area throughout the year several times a day (48%) or several times a week (46%). From this group, 61% come alone; mostly one dog is being walked (79%). Respondents without a dog visit the area less frequently in somewhat larger groups. The motives "nature, landscape, woods/birds, quiet and opportunity to take a walk" are by far the most important reasons for respondents without a dog (44%) to visit the area, while this is 20% for dog-walkers. Strikingly, when asked for suggestions to "improve your visit", "dog-related" (nuisance) points are often mentioned, even by respondents with a dog (Table 1). Because of the random sample's uncertainty, a "bandwidth" for the visit has also been determined; This amounts to about 20%. These values have been calculated by applying the lowest and the highest workday count to all workdays.

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this is 20% for dog-walkers. Strikingly, when asked for suggestions to "improve your visit", "dog-related" (nuisance) points are often mentioned, even by respondents with a dog (Table 1).

Table 1. Ordered overview of 'dog-related' and other complaints and suggestions for improving their visit made by all 232 respondents, with separate scores for respondents with and without dog\*)

Complaint or suggestion for improvement	All respondents		Respondents with dog		Respondents without dog	
	abs.	%	abs.	%	abs.	%
<i>Related to dogs</i>						
- Compliance with mandatory clean up of dog faeces	34	14.7	26	16.7	8	11.1
- Nuisance of dog faeces	17	7.3	5	3.2	12	16.7
- Presence of dogs	11	4.7	2	1.3	9	12.5
- Odour and smell of dog faeces	8	3.4	2	1.3	5	6.9
<i>Other suggestions</i>						
- Condition of path is bad	34	14.7	22	14.1	11	15.3
- Too few rubbish bins	24	10.3	21	13.5	2	2.8
- More monitoring of vandalism, youth presence, etc.	24	10.3	22	14.1	2	2.8
- Better maintenance of overgrowth	23	9.9	17	10.9	5	6.9
- Presence of cyclists	13	5.6	12	7.7	1	1.4
- Empty rubbish bins more often	12	5.2	8	5.1	4	5.6
- Other suggestions (10 categories)	32	13.8	19	12.2	13	18.1
TOTAL	232	100.0	156	100.0	72	100.0

\*) The survey study had an 'open' question on 'points of improvement for your visit to "Bosjes van Poot"'. The respondents' answers were classified afterwards, distinguishing between 'dog-related' and other suggestions and complaints.

## Conclusion

Visit volume (people and dogs) and its spatial dispersal could be objectively estimated with visual counts and a user survey, although the small random sample produces a bandwidth of about 20%. This information in combination with other data, such as groundwater quality (Lucas et al., 2008), the state of brooding birds (Evers, 2008), vegetation development (Bakker & Ten Haaf, 2008), and oak clusters (Den Ouden et al., 2008), enables the area manager to design a management plan for this Nature 2000 area. This plan has to ensure that Bosjes van Poot continues as an internationally-valuable and protected habitat and as a highly-valued and frequently-visited urban park.

## References

- Bakker, T. & ten Haaf, C. (2008). Bosjes van Poot. Vegetation Development, Evaluation and Proposals for Development. Groet (NI). (25 pp, in Dutch).
- Beunen, R. (2010). The Governance of Nature. How Nature Conservation Ambitions Have Been Dashed in Planning Practices. PhD thesis Wageningen University, Wageningen (NI).
- City of The Hague (2006). Dog Map 2006 (in Dutch).
- Evers, E. (2008). Bosjes van Poot. Study on the State of Brooding Birds 2007. Haagse Vogelbescherming, The Hague (NI). (18 pp, in Dutch).
- Jaarsma, C.F., Kooij, H.J. & Webster, M.J. (2008). Bosjes van Poot. Study of Visitors and Dogs. Nota vakgroep Ruimtelijke Planvorming 104, Wageningen University. (108 pp, in Dutch).
- Lucas, J.J.J.M., van der Mark, E.J. & Baartman, B. (2008). Bosjes van Poot and Westduin Park. Hydrological Study 2007. Duinwaterbedrijf Zuid-Holland, The Hague (NI). (39 pp, in Dutch).

# The surplus-value of a long-standing monitoring program for visitor management in the Meijndel Dunes, a recreation and protected nature area

Rinus Jaarsma<sup>1</sup>, Jasper de Vries<sup>1</sup>, Raoul Beunen<sup>1</sup>

Keywords: Traffic management; Long-term visitation; Leisure; Parking; Cycling;

We show the value of a long-standing baseline visitor monitoring program in The Meijndel Dunes (Fig. 1), an area with large day-by-day fluctuations (Beunen et al., 2004). The area is situated directly north of The Hague (450.000 inhabitants) and covers roughly 2000 ha. It is important for nature conservation, leisure activities, drinking water production and sea defence. The Valley in its centre (180 ha) has great nature values. With 25 km of footpaths and 6 km of bicycle paths this is also the most important place for leisure activities.



Figure 1. The Meijndel Dune Area with the Meijndel Valley in its centre (Beunen et al., 2004). Left panel: Location and surroundings near the city of The Hague, The Netherlands. Right panel: Counting locations; site 6 was added in the south-east of the Valley after the opening of a new bicycle path in 2007.

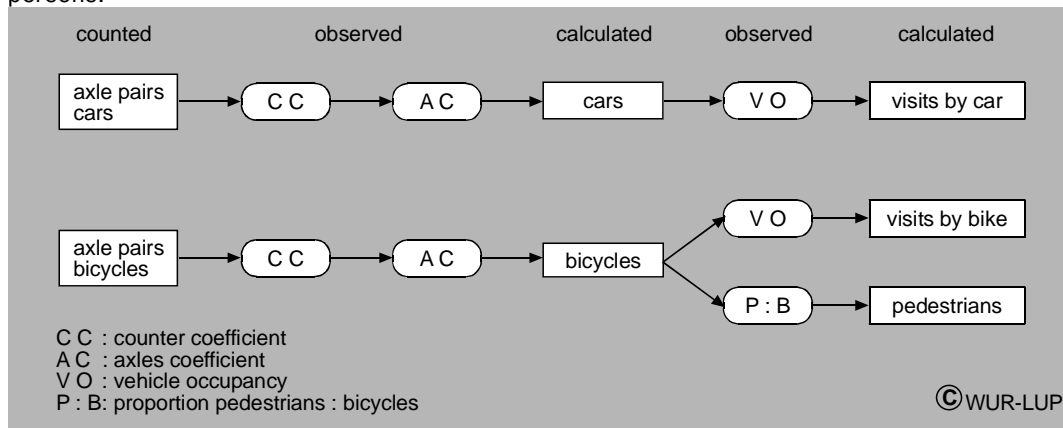
The main entrance can be used by cars as well as bicycles (location 1). Cyclists can also enter the Dunes from the north and the south (locations 2 and 4) and the Valley from the west (location 3). There are two car-parks: in the centre of the valley and close to the entrance (between location 1 and 5).

## Methods applied

Daily counts on all entrances of the number of cars and bicycles with automatic devices and a pressure-sensitive tube across the road were the basis of the visitor monitoring. Visual sampling is used to calibrate these daily data and to estimate the number of pedestrians.

<sup>1</sup> Wageningen University, Land Use Planning group, P.O. Box 47, 6700 AA Wageningen, the Netherlands, [Rinus.Jaarsma@wur.nl](mailto:Rinus.Jaarsma@wur.nl), [Jasper.devries@wur.nl](mailto:Jasper.devries@wur.nl), [Raoul.Beunen@wur.nl](mailto:Raoul.Beunen@wur.nl)

The scheme shows how the number of vehicle-axles was re-calculated into the number of visiting persons:



applying a counter-coefficient (to correct for inaccuracies made by the detector), an axles-coefficient (to correct for multiple axes), and, last but not least, the vehicle occupancy.

According to de Bruin et al. (1988), 12 types of days have been distinguished (4 seasons; weekdays, Saturday and Sunday). Visual counts were executed during 1992-1996 in each season and in total on 2 weekdays, 3 Saturdays and 3 Sundays. The classification into 12 could then be reviewed into 8 types, based on small differences in the averages for similar days of the week in some sequential seasons. In 2002 an update of the visual counts on location 1 was made, followed by an integral update in 2009/2010.

## Results (Fig. 2)

The annual number of visitors varies between 960,000 (1994) and 807,400 (1998), with an average of 893,500. The average modal split is 53% by bicycle (range 50-57%), 44% by car (40-48%) and 3% on foot.

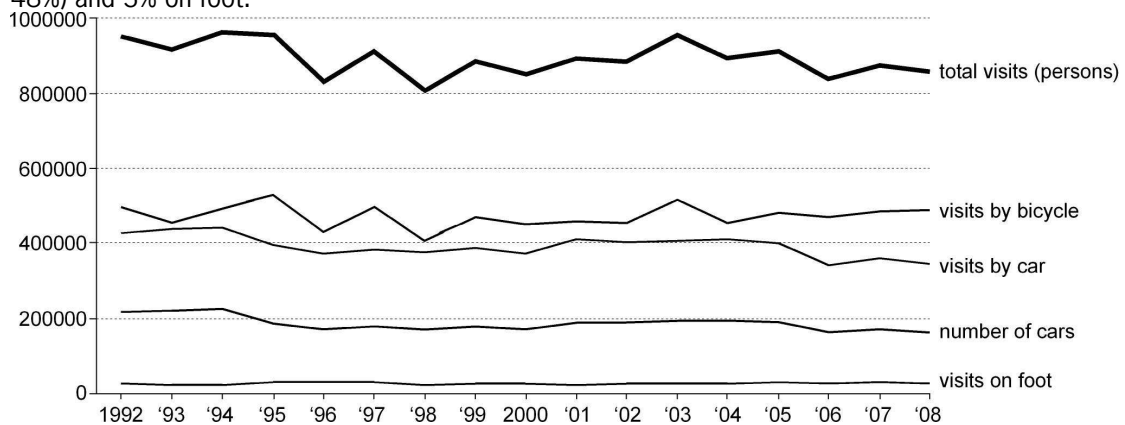


Figure 2. Overview of annual visits (total and separated by mode: car, bicycle and on foot) and annual number of cars in the Meijendel Dunes; 1992 - 2008.

The relationship between these counting results and parking policy measures is interesting. A capacity reduction in the Valley in 1995 resulted in a decrease of 40,000 cars per year. A smaller extension of the parking at the entrance in 2000 was followed by an increase of about 20,000 cars. The shift in parking places has led to less cars driving into the Valley (Beunen et al., 2006).

The monitoring program also proved to be useful for evaluation of several other management measures, such as regulations in 1995 that made compulsory the use of leashes for dogs and the closure in 1997 of a jumping-off place for horses in the Valley (Jaarsma et al., 2003).

## Discussion

Our experiences with long-standing monitoring confirm the statement “Better data collection is an important step to better funding, management and allocation of natural resources to recreation” (Loomis, 2000: 95). And even more so: our data also enabled us to evaluate the impacts of specific management measures in a multi-functional area and so to render account of disputed measures.

“Relevant, practice oriented and reproducible data is required to enable leisure and recreational planning. This data must: be easily interpretable, permit simple further digital processing, be principally quantitative and result from continuous and simple data collection” (Brandenburg & Ploner, 2002: 171). Our results show how simple automatic axle counters can provide the backbone of such data, to be transformed into vehicles and visitors with a deliberated sample of visual counts. After an analysis of relationships between site-observations during a number of years, a continuation with a reduced number of sites and types of day proved to be possible.

From the long-term observations we conclude that there is a decrease of visits by car, and, ‘hidden’ within considerable year-to-year fluctuations, a slight increase for visits on bicycle. Because no specific management measures for bicycles were taken, weather conditions are thought to be an explaining factor (Hendriks, 2002; Thomas et al., 2009). This needs further research, however.

## References

- Beunen, R., Jaarsma, C.F. & Kramer, R.N.A. (2004). Counting of visitors in the Meijendel dunes, The Netherlands. In: *Journal of Coastal Conservation* (10), p 109-118.
- Beunen, R., Jaarsma, C.F. & Regnerus, H.D. (2006) Evaluating the effects of parking policy measures in nature areas. In: *Journal of Transport Geography* (14/5), p 376 – 383.
- Brandenburg, C. & Ploner, A. (2002). Models to predict visitor attendance levels and the presence of specific user groups. In: A. Arnberger, C. Brandenburg & A. Muhar (eds.). *Monitoring and management of visitor flows in recreational and protected areas. Conference proceedings, Bodenkultur University Vienna, Austria*, p 166-172.
- de Bruin, A.H., van Hoorn, A. & Jaarsma, C.F. (1988). *Methode bepaling gebruik openluchtrecreatie projecten. [A method to calculate visitor-use of recreation facilities] ICW rapport 24, ISSN 0921 089X, Wageningen. (in Dutch).*
- Hendriks, A. (2002). *After raining, the sun will shine again. MSc-thesis Wageningen University, the Netherlands. (98 pp. in Dutch).*
- Jaarsma, C.F., Webster, M.J., Beunen, R. & Bakker, J.G. (2003). *Monitoringsonderzoek recreatie duingebied Meijendel - deel XIII. Ontwikkelingen van het recreatiebezoek en het recreatieverkeer in de periode maart 1992 - februari 2002. [Visitor and traffic monitoring 1992-2002 in the Meijendel Dunes] Nota vakgroep Ruimtelijke Planvorming 94. (70 pp in Dutch).*
- Loomis, J.B. (2000). Counting on recreation use data: a call for long-term monitoring. In: *Journal of Leisure Research* (32/1):, p 93-96.
- Thomas, T., Jaarsma, C.F. & Tutert, S.I.A. (2009). *Temporal variations of bicycle demand in the Netherlands: the influence of weather on cycling. Paper presented at the 88th Transportation Research Board annual meeting, January 11-15, Washington, D.C., USA, 2009.*



## Monitoring and modelling of visitor use on access land across Rombalds Moor, Ilkley, England

Rob J. Keane<sup>1</sup>

Keywords: visitor, monitoring, modelling, access, assessment, landscape

The Countryside and Rights of Way (CROW) Act 2000 created a new right of open access to mountain, moor, heath and down, in 2004/05. Over half of mapped access land in England is nationally designated as a site of special scientific interest (SSSI) or as a Natura 2000 site. An access assessment was carried out in line with Habitat Regulations (1994) on Rombalds Moor in 2004 (Natural England, 2009) using the Predictive Site Use Model (Thurston & Taylor 2002) to understand changes in access use to pre-empt and manage potential impacts on biodiversity from the new rights, using statutory restrictions and positive access management (PAM) techniques.

The aim is to test the predictive power of the model by ground truthing with spatial visitor data from the Open Access National Visitor Survey (OANVS) collected across Rombalds Moor between 2005 and 2007 (Johnson *et al.* 2009a). The main objectives were to determine the model accuracy, assess its ability to accept visitor data, understand if this improves accuracy and test the potential in assessing the relationship between upland bird trends and changes in access use, in conjunction with the annual Upland Breeding Bird Survey (UBBS) (Noble *et al.* 2007 & 2008).

The method was designed to compare dataset 1: predictive, and dataset 2: actual, gathered on the levels and patterns of access use across Rombalds Moor. Dataset 1 was gathered using the spatial access assessment method (Natural England, 2009) to assess the change in use on access land pre-CROW, in 2004. Dataset 2 was collected via interview and observation methods to monitor visitor usage post-CROW between 2005 and 2007, through the OANVS survey. Dataset 1 and 2 were modelled producing a predictive and actual model, using the Predictive Site Use Model.

The model produces a GIS output that identifies high, medium, low change in use across a site (Fig: 21) producing a simplified picture of change in access use to aid decision making in developing the appropriate management. The distribution of visitors on foot are influenced by points of entry, relative landscape attractiveness of different areas, topography, variations in the distance (a distance decay mechanism was developed) and patterns people will travel from their point of entry (Thurston *et al.* 2002).

Additional site factors or predictors of change was also gathered: location and capacity of entry points onto the site, unmarked routes/desire lines, unusual features of interest (e.g. crashed aircraft, archaeological sites), and site-specific factors that are likely to influence visitor behaviour such as attractive landscape features, e.g. waterfalls, reservoirs and detractors e.g. blanket bog (Thurston *et al.* 2002, Keane *et al.* 2008).

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<sup>1</sup> Natural England, North West Regional Office, Bridgewater House, Whitworth St, Manchester, England. M1 6LT.  
[rob.keane@naturalengland.org.uk](mailto:rob.keane@naturalengland.org.uk)

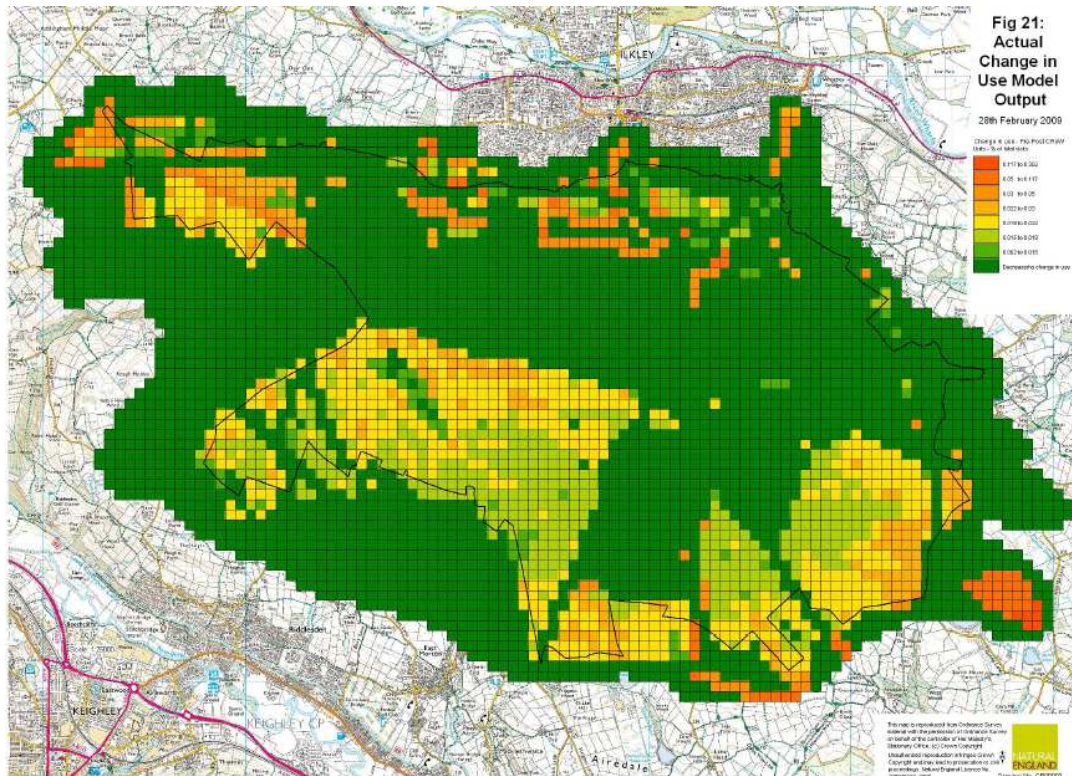
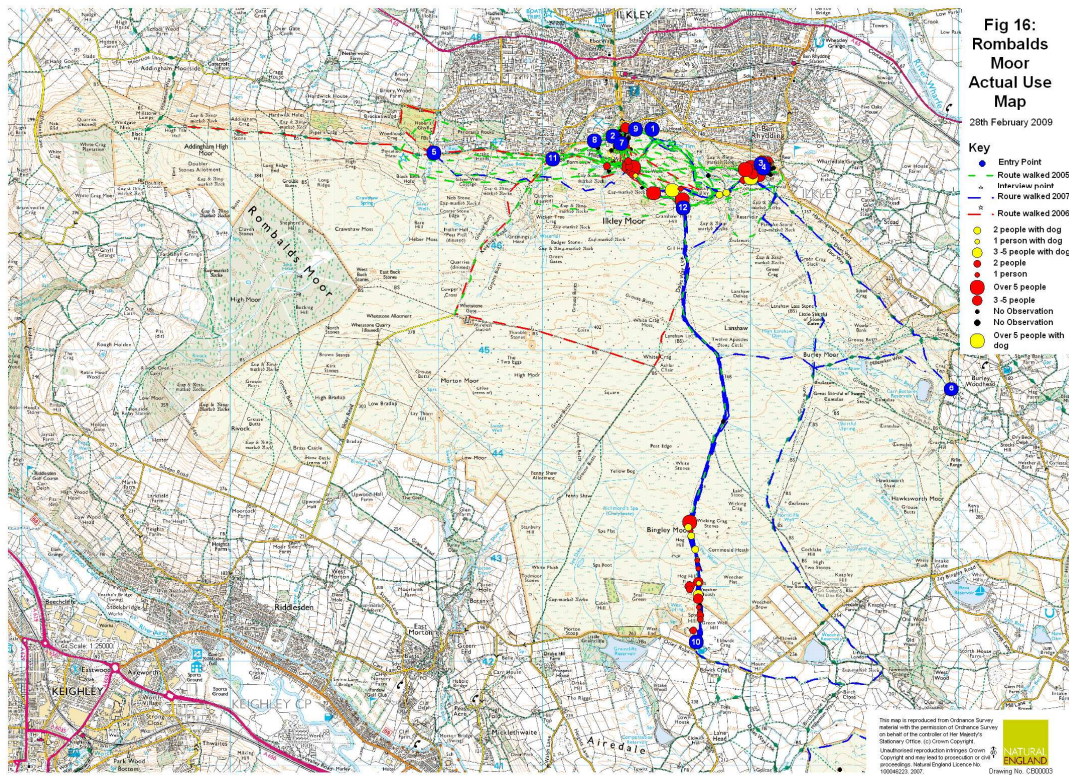


Fig: 16 & 21 show a spatial map of actual use and actual change model output, respectively.

The predictive model output (dataset 1) was directly compared through statistical analysis using paired t-test and Pearsons correlations to the actual model output (dataset 2) to identify the level of closeness in relationship of predicted visitor use compared to actual visitor use. Analysis of variance (ANOVA) using the General Linear Model (GLM) procedure was used to identify potential

predictors of change and test whether landscape features, existing entry points, routes and access management measures had a significant influence or relationship, with actual changes in levels and patterns of use.

The test results indicate that the predictive power and accuracy of the model is good for uplands. Combining visitor data with predictive data into the model improved the models predictive power. It was proved there is a highly significant correlation between the predictive and actual models, proving the model has good power to predict change in access use.

The results suggest that the management approach applied was appropriate and effective to protect the biodiversity sensitive areas as positive access management had the greatest influence on visitor use. The results confirmed the access assessment mapping and model approach worked well in predicting change to understand the spatial interaction between people and biodiversity sensitive areas across a landscape. It can also be packaged with the monitoring approach as a set of access management tools for integrating access, biodiversity and land management objectives on an area wide basis.

The findings indicate that 3-4 years after the implementation of CROW there has not been a significant change in visitor use across Rombalds Moor. Therefore, it can be reasonably stated that there has been no significant impact on the integrity of the Natura 2000 designated site a Special Protection Area (SPA) across Rombalds Moor, as there has not been a significant change in access use.

This approach could potentially be used to understand the impact of CROW at the landscape scale on upland bird trends for the whole of England by correlating bird trends with high, medium and low access change areas over the longterm. The model could potentially be used to extrapolate long term national visitor survey data across all the uplands in England to compare to longterm bird data gathered by the Upland Breeding Bird Survey (UBBS) developed by BTO, RSPB and Natural England.

## References

- Johnson, C., Taylor, K., Houldin, C., Race, H. & Birtles, J. (2009a). Three year Monitoring; Countryside and Rights of Way Act 2000, Access Management Report (2006 – 2008). Faber Maunsell, Altrincham, Cheshire.
- Johnson, C., Taylor, K., Houldin, C., Race, H. & Birtles, J. (2009b). Three year Monitoring; Countryside and Rights of Way Act 2000, South Pennines – Rombalds Moor (Ilkley) Report (2006 – 2008). Faber Maunsell, Altrincham, Cheshire.
- Liley, D. (2009). Natural England's approach to monitoring access on sites; A review. Footprint Ecology & Natural England, Socio Economic Team, Evidence, Leeds, England.
- Natural England, (2009). Access Assessment Procedure. Natural England, Access and Rights of Way Team, Cheltenham. (Unpublished).
- Noble, D. Davis, S. & Joys, A. (2007). Assessment of the Impacts of the Countryside Rights of Way (CROW) Act on Bird Populations: Results from the Pilot Study, 2006. BTO, Thetford.
- Noble, D. Davis, S. Ockendon, N. Eglington, S. & Eaton, M. (2008). Report on the second season of the Upland Breeding Bird Survey: assessing change between 2006 and 2007. BTO, Thetford.
- Thurston, N. & Taylor, K. (2002a). Methods of Predicting the Levels and Patterns of Recreational Use of Open Countryside. Entec UK Ltd, Shropshire.
- Thurston, N. & Taylor, K. (2002b). Methods of Predicting the Levels and Patterns of Recreational Use of Open Countryside: National Model Update. Entec UK Ltd, Shropshire.
- Thurston, N. & Taylor, K. (2002c). Predicting Levels and Patterns of Recreational Use: Site Prediction User Manual. Entec UK Ltd, Shropshire.

# Visitor monitoring in the Protected Area Aletsch Forest

Roland Kernen<sup>1</sup>, Matthias Furrer<sup>1</sup>, Reto Rupf<sup>1</sup>, Michael Wernli<sup>1</sup>

Keywords: visitor monitoring, visitor counting, Aletsch Forest, social carrying capacity

## Introduction

The Aletsch Forest is one of the oldest larch-Swiss stone pine forests in Switzerland. The forest, with an area of about 0.4 km<sup>2</sup>, is under protection since 1933 managed by an NGO named Pro Natura. The Aletsch Forest is located besides the ending of the longest glacier in the Alps, the Great Aletsch Glacier, the gateway to the UNESCO World Heritage site Swiss Alps Jungfrau-Aletsch. A trail network of 18km crosses the protected area. In July 2008 a new connection with the neighbouring village Belalp was built. Pellet and K upfer made visitor monitoring surveys in the years 1978 and 1994 in the Aletsch Forest.

Social carrying capacity is often used as a concept to describe how much recreational use can be accommodated in a protected area. Indicators and quality standards provide information about carrying capacity and help the management in planning and taking required action (Manning 2002, 2007).

In this study the visitor monitoring was continued; Spatial and temporal visitor use was analysed, such as the influence of the newly opened trail. Furthermore, a social carrying capacity for the Aletsch Forest was worked out.

## Method

During the hiking season in 2008 a survey was implemented. 415 questionnaires could be used for analysis. Content of the questionnaire was the visitor's characteristic, spatial behaviour and impression of the protected area. Questions from previous monitoring studies were picked up and compared; new questions of spatial behaviour and crowding were faced.

Four automatic counting devices, acoustic slab sensors from eco-compteur<sup>TM</sup>, were installed on the main trails. They were calibrated according to Wernli et al. (2009). In the survey visitors were asked to map their passage. To estimate the visitor number, the automatic counting had to be combined with these data eliminating multiple counted visitors.

According to Needham et al. (2003), social norm curves were analysed based on the people at one time method (Manning 1999). Two user groups were examined, differentiating the importance of meeting a minimum of tourists. The one sided Mann-Whitney test was performed to analyse the connection between special use patterns and reported encounters.

## Results

The accuracy of the automatic counting devices was more than 90%. In 2008 a total of about 55,000 visits were estimated. K upfer (1994) estimated about 60,000 visits for 1994. She detected a strong decline of visits between 1978 and 1994. Pellet (1978) estimated about 90,000 visits for 1978. Looking at the spatial distribution before and after the opening of the bridge confirms a big change in distribution (Fig. 1). The lower trail showed a strong increase in use when the new trail opened in week 28 (July 2008). While the middle trail lost visitors only in the beginning, the moraine trail was less used until the end of season.

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<sup>1</sup> Institute of Natural Resource Sciences, ZHAW - Zurich University of Applied Sciences, Gruental, CH-8820 Waedenswil, Switzerland, [michael.wernli@zhaw.ch](mailto:michael.wernli@zhaw.ch), [reto.rupf@zhaw.ch](mailto:reto.rupf@zhaw.ch), [mafu0001@students.zhaw.ch](mailto:mafu0001@students.zhaw.ch), [roke0001@students.zhaw.ch](mailto:roke0001@students.zhaw.ch)

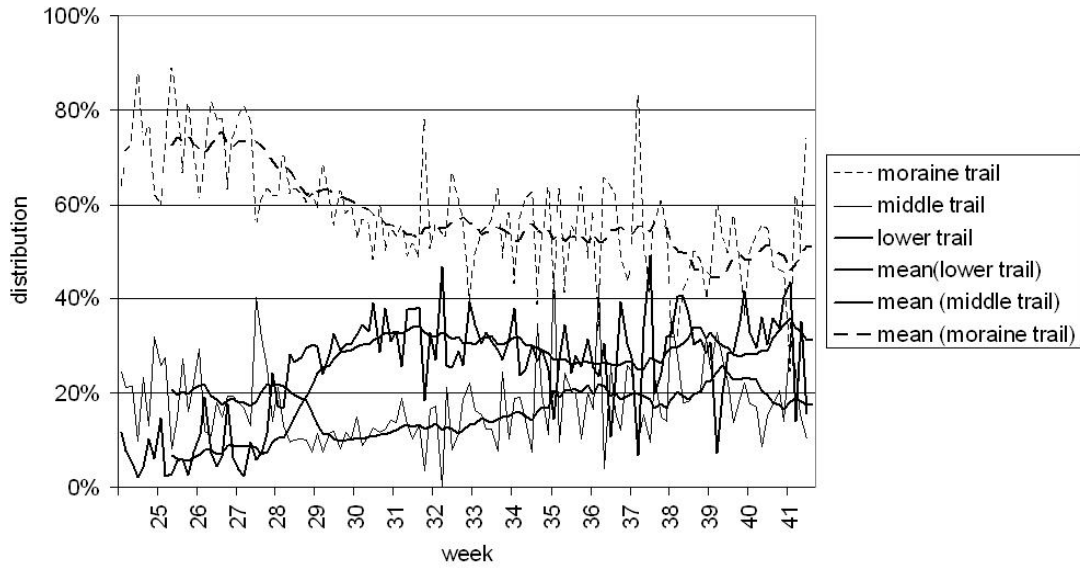


Fig. 1: Relative distribution of visitors on the three main trails in the Aletsch Forest.

Visitors were significantly less satisfied concerning crowding questions when there were more people in the park. Differences between the two groups expecting to meet a minimum of tourists could be worked out with the people at one place method (Manning 1999) (Fig.2). Visitors who want to meet a minimum of tourists are less tolerant if there are a lot of people visible on the picture.

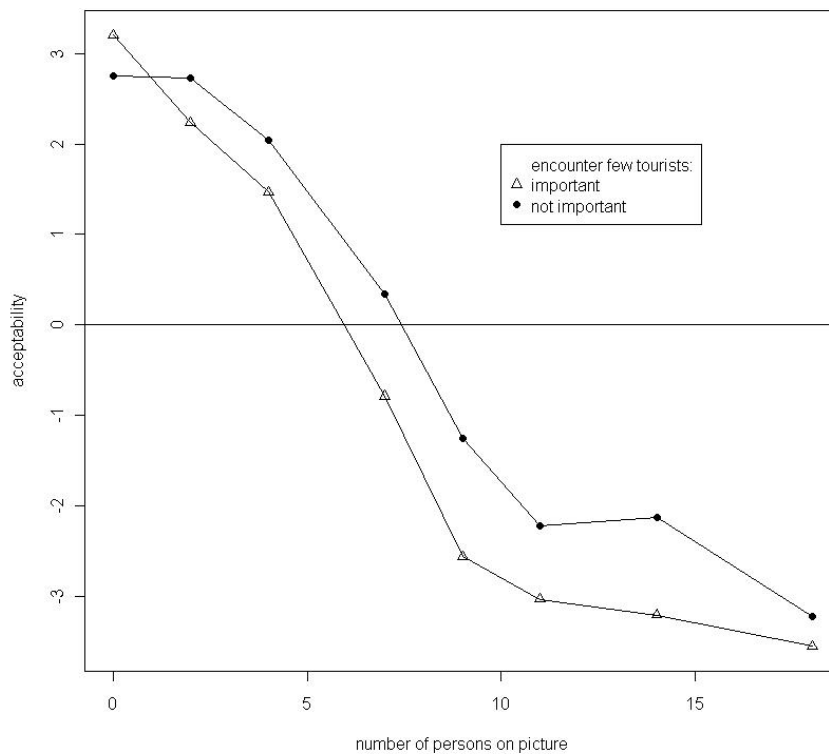


Fig. 2: Social norm curve using the people at one time method.

### Conclusion

The total visitor number for 2008 were estimated to be about 55,000 which is comparable with 1994 (Küpfer 1994), but much less than 1978 (Pellet 1978). The tendency of declining visitor numbers could be expected to continue until now, though summer overnight stay in the hotels

declined about 25% in the same period. But the accessibility of the region changed as there was a new railway tunnel built. In July of 2008 (week 28) an impressive rope bridge was opened allowing an attractive one day hike from Belalp to Aletsch Forest, changing visitor's distribution (fig. 1). Methodological differences of the three studies could also be a possibility of the decrease in visitor number. It would be interesting to repeat the survey in the next years to observe the tendency of visitors behaviour.

## References

- Küpfer, I. (1994). Die Erholungsnutzung im Naturschutzreservat. Situationsanalyse für die Sommersaison 1994 und Vergleich mit 1978, Geographisches Institut, Zürich.
- Manning, R. E. (2007). Parks and Carrying Capacity – Commons Without Tragedy. Island Press, Washington, Covelo, London.
- Manning, R. E. (2002). How much is too much? Carrying Capacity of National Parks and Protected Areas. Monitoring and Management of Visitor Flows in Recreational Areas. Conference Proceedings ed. by A. Arnberger, C. Brandenburg, A. Muhar. S. 306-313.
- Manning R. E. (1999). Studies in outdoor recreation: Search and research for satisfaction (2nd ed.), Corvallis: Oregon State University Press.
- Needham M. D., Rollins R. B. (2003). Interest group standards for recreation and tourism impacts at ski areas in the summer, *Tourism Management* 26 (2005), 1-13.
- Pellet, P. (1978). Zur Erholungsnutzung im Naturschutzgebiet Aletschwald – Beitrag zu einer sozialgeographischen Besucheranalyse in einem Naturschutzgebiet, Basel.
- Wernli, M., Haller, D., Campell, S., Mühlethaler, C., Filli, F., Haller, R., Rupf, R. (2009). Besucherzählung Schweizerischer Nationalpark, Arbeitsberichte zur Nationalparkforschung, Swiss National Park Research, Bern.

## **The visitors' perspective of visitor monitoring: results from two recreational areas in Eastern Austria**

**Renate Pröglhöf<sup>1</sup>, Andreas Muhar<sup>1</sup>**

Keywords: visitor monitoring, acceptance, visitor survey

Visitor monitoring in recreational areas enables park administrations to consider the needs and demands of visitors and the effects of the recreational use on the ecosystem in management strategies and day to day practice. However, many of the numerous methods used for visitor monitoring in recreational and protected areas (Hornback, Eagles, 1999, Cessford, Muhar 2003) can also affect the visitors' privacy. So far little systematic research exists on how visitors perceive this aspect.

This paper investigates the acceptance of different monitoring methods and takes under consideration what people think about visitor monitoring in recreational areas and how they feel about privacy issues related to such methods. On-site interviews were held in two recreational areas in Eastern Austria. The Wienerwald is a large forest area adjacent to Austria's capital city Vienna. It is intensively used for short time leisure activities such as hiking, dog walking and biking. The Rax is an Alpine mountain range about 80km south of Vienna, offering a great range of outdoor activities such as rock climbing and hiking.

The survey was conducted using written questionnaire based interviews with mostly closed questions regarding the awareness of visitors for the need of visitor monitoring, their attitude towards individual monitoring methods such as automated counters, video counting and interviews. In addition, demographic data and information about the visitors' leisure profile was also surveyed as well as their perception of use conflicts in the recreation area.

Visitors were intercepted at rest places in the recreation areas. The willingness to participate in this survey was very high (84%) compared to similar studies in hiking areas (e.g. Muhar et al. 2007). As acceptance of being interviewed was a key aspect of this survey, people who refused to participate were also asked for their reasons to do so. Less than half of the deniers were willing to substantiate their refusal. The most prevalent arguments were language problems (non German-speaking visitors), lack of time and missing eyeglasses. Only a few persons explicitly mentioned that they refuse any kind of interview or did not want to be disturbed. With regard to age and gender there was no difference between the deniers and the participants. A total of 313 validly filled in questionnaires were gathered for further analysis.

The results show a considerable awareness of the necessity for visitor monitoring. 79% of the interviewees agreed that visitor monitoring is needed to improve the management of an area and 85% stated that the visitors' needs and expectations should be incorporated into management processes. With regard to observation and counting, human observers and automated devices such as infrared-detectors had a higher acceptance compared to video observation. Video surveillance is meanwhile widely accepted by the public as part of our everyday environment (Hempel, Töpfer, 2004). However, outside the urban areas there still seems to be a demand for more privacy, and visitors are more sceptical about this monitoring technique. There was no correlation between age and gender of the interviewees and their attitude towards visitor monitoring; in general persons with a higher educational level tended to have a more positive view. For all devices, the acceptance of installation near entrance points was slightly higher than inside the recreation area. On-site interviews were strongly preferred against phone interviews. The timing of an interview (during the visit, at the end etc.) was not seen as a significant factor, but interviews should of course be conducted in resting situations (restaurants, picnic spots...).

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<sup>1</sup> Institute of Landscape Development, Recreation and Conservation Planning, BOKU University of Natural Resources and Applied Life Sciences Vienna, Peter Jordan-Straße 82, 1190 Wien, Austria, andreas.muhar@boku.ac.at

Regarding the disclosure of personal data, there was a willingness to communicate age, occupation, educational level and location of residence, while the personal income situation was frequently mentioned as not to be asked about.

The results show that visitors can be motivated to participate in visitor monitoring activities such as surveys if they are aware of the usefulness of such data to provide better visitor management. However, when planning a visitor monitoring scheme, the acceptance of the various methods to be applied need to be studied more carefully in order to avoid obstruction and vandalism.

### **References**

- Cessford, G., Muhar, A. 2003. Monitoring options for visitor numbers in national parks and natural areas. *Journal for Nature Conservation* 11, 240-250
- Hempel, L., Töpfer, E., 2004. CCTV in Europe. Final Report. Urban Eye Working Paper No.15  
[http://www.urbaneye.net/results/ue\\_wp15.pdf](http://www.urbaneye.net/results/ue_wp15.pdf)
- Hornback, K. E., Eagles, P. F. J., 1999. Guidelines for public use measurement and reporting at parks and protected areas. Gland, Switzerland: International Union for Conservation of Nature.
- Muhar, A., Schauppenlehner, T., Brandenburg, Ch., Arnberger, A., 2007. Alpine summer tourism: the mountaineers' perspective and consequences for tourism strategies in Austria. *Forest Snow and Landscape Research*, 81, 7-



## Methodological basis for decision making of administration bodies in the field of tourism

Jiri Husek, Ondrej Vitek<sup>1</sup>

Keywords: protected areas, management, administration

The Agency for Nature Conservation and Landscape Protection of the Czech Republic (ANCLP) is a state organisation controlled directly by the Ministry of Environment. ANCLP is responsible for, among others, is the state administration of 24 protected landscape areas (PLA) in the Czech Republic. Tourism and sports are a common topic, which is represented in practical conservation of areas and species more and more in the last years (e. g. Eagles, McCool & Haynes, 2002). To prevent negative impacts on endangered species, other natural phenomena, and especially on protected areas, principles of sustainable tourism have started to be used (e. g. Stevens, 2002; Höhn, 2004). For the elimination of dissimilarities in decision making of all 24 PLA authorities, the Board of specialists was established at ANCLP in 2005. Such unification should be provided mainly by the publication of methodologies. Separate analysis and methodology is created for each considerable activity, e. g. cycling, climbing, skiing etc., but a common background of this work is given in this paper. Recommendations in using juristic instruments are specific for national laws, therefore mainly specialist issues are discussed. The objective of this article is to share an experience with decision making in tourism issues and encourage discussion about such approach.

One of the most important principles to ensure objective decision making is to get a personal experience with the assessed activity. It is not necessary that the official must experience it directly, a good friend can be helpful, too. Best professionals in nature conservation, but with no experience in for example, mountain climbing, tend to eliminate this activity from all protected areas just because of making noise, enhancing soil and rock erosion and disturbing falcons which would nest somewhere in the rocks. With practical experience, the official knows that climbers are more sensitive to conservation issues than the average population; they can record findings of species and can personally protect the rock where falcon's nest was found. On the other hand, a conservationist who is keen on downhill skiing, could neglect fatal changes in water regime appended to artificial snowing or deforestation in mountain ecosystems.

Preliminary cautiousness is a very helpful but overused instrument. Administrative bodies use it often in cases where no evidence of the negative effect of some activity is recorded, but where they nevertheless want to prevent it. If preliminary cautiousness is the only considerable reason, prevention of an activity should be always temporary and parallel research should be started to make potential effects evident.

Awareness of research outputs is necessary for providing objectivity as well (e. g. Tilders, 2009). Although officials have a lack of time for reading papers when they must make decisions before their deadlines, many research projects give very clear data useful for nature conservation. Sometimes the research conclusions oppose groovy knowledge with evidence, but have limited possibilities to reach officials in state administration. Spreading and sharing information is thus an important topic for head-officers.

For providing public acceptance of restrictions, reasons must be carefully given for each of them. In practise, authorities are empowered by law forbid activities when they can. But without giving clear reasons why it is necessary, public opinion remains unchanged or even gets unfriendly and the restrictions are not observed.

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<sup>1</sup> Agency for Nature Conservation and Landscape Protection of the Czech Republic, Nuselska 39, 140 00 Praha 4, Czech Republic, [ondrej.vitek@nature.cz](mailto:ondrej.vitek@nature.cz)

The provided space is not enough to present all principles and recommendations which are discussed in ANCLP Methodological Papers. The bad news is, that as in internal document it is written in Czech and is not planned to be translated. But it is useful for authorities in the Czech Republic. Such methodological recommendations published provide useful instructions for a decision making process to raise its quality within a wide spectrum of administrative bodies, which could hardly have specialists for all the topics related to tourism. A good result is also in providing contact with specialists for environmental issues in various activities within tourism and encouraging these specialists to obtain better knowledge and experience in their field of work.

### **References**

- Eagles, P. J. F.; McCool, S. F.; Haynes, Ch. D. (2002): Sustainable Tourism in Protected Areas: Guidelines for Planning and Management. UNEP/IUCN (World Commission on Protected Areas)/WTO, Best Practice Protected Area Guidelines Series No. 8, 183 p., 175 p.
- Höhn, S. (2004): Other Networking Initiatives in Europe. Workshop: Presentation of Viabono for Central and Eastern European countries, Vilm.
- Stevens, T. (2002): Sustainable Tourism in National Parks and Protected Areas: an Overview. Case Studies. Scottish Natural Heritage Commissioned Report F01NC04, 49 p.
- Tilders, I. (2009): A European Open Standard for the Practise of Adaptive Site Management. 2nd European Congress on Conservation Biology, Prague.

## **Managing the managers managing people: Lessons for recreation and water management in protected areas.**

**Colin Ingram<sup>1</sup> and Michael Hughes<sup>2</sup>**

Keywords: recreation, water catchments, planning, protected areas, climate change

Many of Australia's critical urban water resources are located within protected areas, originally reserved for their timber production, recreation and aesthetic values. Later, these areas were also recognised for their conservation value and as reliable, potable water supplies.

This paper presents a case study of water source protection planning in urban water catchments and impoundments in the southwest of Western Australia, and the impacts on recreation and tourism access in protected areas. Inland water catchments in the southwest of Western Australia have historically been, and are currently, popular resources for public recreation. Recreation includes a broad range of leisure, pastime and entertainment activities ranging from passive through to active pursuits that vary in their character and potential for environmental impacts.

The pressure on Western Australia's (WA) water resources is severe owing to an increasing population and associated demand for high quality, low cost water coupled with a drying climate. Compounding this, recent urban water supply contamination events in Australia has heightened concerns about the sustainability of urban water supplies and elevated the importance of water protection planning. This has prompted alteration of water management regimes in WA to increase the perceived security and quality of drinking water in the region. This has been at the expense of recreation activities in catchments.

The management of water for water supply alone, is driven by an Australian national policy dominated by volumetric access to water and controlled by entrenched water (property) rights. Consequently, water policies aimed at provision of safe drinking water exclude or severely limit human access to water catchments, and so are in direct conflict with recreation and tourism interests. Exclusion of recreation is based on a precautionary approach without a strong basis of scientific knowledge. Lack of research has also limited understanding of the socio-cultural values of in-stream uses of water. As a result, insufficient attention has been given to such uses in water resource decision-making.

The main WA water agency, the Department of Water (DoW) has extensive powers to proclaim catchment areas and to implement control measures to safeguard water resources. This includes controlling the form and extent of recreation in water catchments through the preparation of Drinking Water Source Protection Plans for public drinking water source areas and the associated gazettal of water catchments to achieve water quality objectives. However, the wider management function of catchment areas is vested with the Department of Environment and Conservation (DEC) for the management of State forest, national park and other reserves lands. Questions have arisen over the primacy of legislative provisions relating to the management of water resources. This is especially when the policy and planning objectives for protecting water quality conflict with social and economic objectives for recreation and tourism in public catchment areas.

The DoW has taken a "risk avoidance" stance based on the precautionary principle where any level and type of recreation is considered a risk to water quality. Thus, the preferred option for DoW is to exclude all recreation to reduce the perceived risk of water contamination from such activities. A significant limitation in this argument is the lack of dedicated research and substantiated evidence regarding how various types of recreation affects water quality generally and how it

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<sup>1</sup> Managing Director, Resolve Global Pty Ltd; Research Associate Murdoch University, Western Australia; Adjunct Lecturer, Edith Cowan University, Western Australia.

<sup>2</sup> Research Fellow, Curtin Business School. Curtin University of Technology, Western Australia.

relates to southwest WA specifically. DEC, on the other hand, takes a “risk management” stance, holding the position that recreation activities can be adequately managed within these areas through research, suitable planning, design and management of recreational activities and sites.

The transition from the current threat-based approach to water catchment planning, to a values based approach, will require a paradigm shift in water catchment policy. New forms of governance are required for an increasingly complex, uncertain and rapidly changing world, where adaptation and flexibility are paramount to problem solving. Climate change, global health epidemics and the rapidly changing world economy are just a few examples of the need to develop flexibility in decision-making systems including strengthening mechanisms such as adaptive management and social learning principles. Unless there is a systematic process whereby the policies of each agency (park management and water agencies respectively) and associated organs of the State concerned with water and land-use management can be integrated, implementation measures undertaken may be ineffective, duplicating or conflicting, resulting in a loss of social and economic opportunity. Building the capacity and skills necessary to achieve more effective agency-agency relationships and agency-community relationships will be a crucial factor in the development of collaboration, and are critical for co-management arrangements where a balance between social and environmental outcomes can be achieved.

## **References**

- Hughes, M., Zulfa, M. and Carlsen, J. (2008) A review of recreation in public drinking water catchment areas in the Southwest Region of Western Australia. Curtin Sustainable Tourism Centre: Curtin University of Technology.
- Ingram, C.B. and Hughes, M. (2009) Where People Play: Recreation in the Southern Darling Range, South Western Australia. Resolve Global Pty Ltd, Perth
- Ingram, C. B. (2009) Governance options for managing sport and recreation access to water sources and their catchments of the southern Darling Range, Western Australia. Resolve Global Pty Ltd, Perth

## The gap between science and forest management

Patrick Jansen<sup>1</sup>

Keywords: forest management, research, tools, effective communication

Good forest management is based upon three pillars: a long-term vision, terrain knowledge and professional knowledge. It is the obligation for every forest manager to have a solid long-term vision and constantly work on his/her terrain and professional knowledge. In this paper I focus on the professional knowledge on recreation issues. The aim is to stress the need for more research on recreational issues in forest management, the effective communication of existing expertise and the development of practical tools, methods, concepts, etc. in this field.

The professional knowledge of forest managers covers a broad range of subjects from wood production to biodiversity, and from cultural heritage to recreation. It is impossible for forest managers to have an expert-level professional knowledge on all these aspects of forest management. In practise, some forest managers, especially those of large nature conservation organisations, are supported by experts, but most forest managers have to depend on their own expertise. How good is the professional knowledge of Dutch forest managers concerning recreational issues?

Recreation has been a mayor forest functions in the Netherlands since the 1950's when people had more free time and money to spend and mobility increased. Since then many scientific studies have been conducted and you would think that by now recreation policies and management in forest areas would be based upon thorough scientific facts. However, teh reality is different. There are forest managers, sometimes supported by experts from their organisation, who have a profound knowledge on recreational issues, but in general the professional knowledge of forest managers in The Netherlands is rather poor. In those cases recreation policies and management measures focusing on recreation often lack a scientific basis and are based on the personal perception of forest managers. This does not necessarily mean that things go badly wrong, but there is certainly room for improvement.

For example, forest managers are responsible for biodiversity. If they have to decide on a permit for a recreational event, they have to take the possible negative effects of this event on biodiversity into account. However, relatively little research has been done on this subject and the available information is scattered and non-specific. And even this information is not easily available to forest managers. In many cases they decide with the limited professional knowledge they have on the impacts of recreation on biodiversity. Several managers of community forests on the Veluwe have recently decided to develop a decision making tool for recreational events in their forests that does take environmental, social and ecological factors into account. Many recreational policies for forest areas are discriminating to some user groups, such as mountain bikers and equestrians. There can be good reasons for such a policy, but often these decisions are not supported by scientific facts. The chosen measurements are therefore not necessarily most effective and efficient.

There are three possible reasons for the lack of (scientifically based) expertise of forest managers on recreational issues:

- There is no scientific information available.
- There is scientific information available, but this is not easily accessible to forest managers. Scientific information is often available in a large number of detailed research reports. It is very time consuming to read these reports and therefore not pursued very often by forest

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<sup>1</sup> Stichting Probos, Director, PO box 253, 6700 AG Wageningen, The Netherlands, [patrick.jansen@probos.nl](mailto:patrick.jansen@probos.nl), [www.probos.nl](http://www.probos.nl)

managers. Furthermore, the results are often not 'translated' into practical implications for forest management. The scientific information does not reach forest managers.

- The information is available, but forest managers do not know about it.

In the first case more scientific research is needed. In the second case 'translation' of scientific results to the practise of forest management is necessary and the communication of this information to forest managers. The translation of scientific results can be in the form of recommendations for forest management but also as methods, concepts, decision tools, systems etc. The main criterion is whether it is directly useful for forest managers. More effective communication is needed in the last case.

### **References**

Jansen, P.A.G. (to be published). Bosbeheer en recreatie. Wageningen Natuurmonumenten (1999). Genieten van de natuur. 's Graveland.

## Docile bodies in the park? A post-Foucauldian perspective on effective visitor management in natural parks.

Arjaan Pellis<sup>1</sup>, Raoul Beunen<sup>1</sup>, Martijn Duineveld<sup>1</sup>

Keywords: power, time-space behaviour, Foucault, materialized morality, discipline, planning

In this paper we will introduce a post-Foucauldian approach to questions concerning the management of visitor behaviour in natural parks. We aim to make explicit the more covert power mechanisms that influence people's behaviour in time and space. Inspired by Hägerstrand's (1970) theory of time space behaviour and based on Foucault's (and his successors') theories on discipline, control and regulation, we will provide a conceptual framework that takes into account both material and non-material (social / symbolic) types of powers that constrain and enable behaviour of people. We will use the results of five visitor-monitoring studies conducted between 2003 and 2009 to underpin our argumentation with concrete examples that illustrate the mechanisms of power we aim to make explicit. The methods used in these studies include quantitative and qualitative visitor surveys, spatial analyses of various areas, and semi-structured interviews with the responsible site managers.

Our argumentation starts with the premise that the central question behind every attempt to manage visitors is: What is it that governs the behaviour of people? Attempts to answer this question emphasise various factors, including the motives and intentions of people, their experiences and expectations, and the opportunity to engage in certain activities (Marwijk 2009, Beunen, Regnerus and Jaarsma 2008). Other authors, especially from the field of geography, have scrutinized factors that enable and constrain certain behaviour (Yu and Shaw 2007). For instance, the time-space model of Hägerstrand (1970) has been quite influential. According to this model, human spatial activity is affected by constraints that are outside of the realm of 'autonomous' choices and decisions. Hägerstrand distinguished between three types of such constraints that can provide insight to the actual and possible time-space behaviour of people: 1. Capability constraints: embodied and spatial capabilities, 2. Authority constraints, and 3. Coupling constraints.

Although Hägerstrand's model is compelling, it does not sufficiently take into account the more covert material and social power mechanisms that affect, regulate and control people's behaviour. Foucault's influential book 'Discipline and Punish' (1979) as well as post-Foucauldian literature may contain inspiring contributions to understanding covert power mechanisms that are rarely made explicit within conventional visitor management research. In line with Foucault's conceptualisation of power, insights from cultural geography and science and technology studies, we elaborate on the following interwoven power mechanisms:

- *Panopticism and the mutual gaze*: people's behaviour is affected by the real or perceived mechanisms of control exercised through observation by others, as well as cameras and other monitoring equipment (Koskela 2000, Maoz 2006).
- *Normalization and internalization*: commonly shared expectations and socially dominant definitions of 'normal' and 'abnormal' or deviant behaviour in a park (unconsciously) govern the way people behave. Normality is internalized and reinforces normalized behaviour, while at the same time, abnormality is externalized as an institutionalized phenomenon within the normalized space (i.e. gay meeting places within a natural park in a hereto normative society (Bulkens 2009)).
- *Performative materiality*: Implicit and explicit definitions of how to behave 'normally' in a park are embedded in many instruments, objects, places and spaces to ensure certain behaviour. People's behaviour is governed or disciplined by means of material configurations that enable and constrain; for example the presence of a concrete wall, a 'STOP' sign, or a tree blocking

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<sup>1</sup> Wageningen University, P.O. Box 47, 6700 AA Wageningen, The Netherlands, [martijn.duineveld@wur.nl](mailto:martijn.duineveld@wur.nl)  
[raoul.beunen@wur.nl](mailto:raoul.beunen@wur.nl), [arjaan.pellis@wur.nl](mailto:arjaan.pellis@wur.nl)

the road. Though many of the disciplining material powers are not real capability constraints (often they can easily be trespassed) they do form scripts that govern peoples' behaviour (Winner 1980, Latour 1992, Law and Mol 1995).

Many of the power mechanisms we elaborate on in this paper can be interpreted as a 'moralization of objects, which means that norms or morality or politics are intentionally or unintentionally incorporated in material configurations (i.e. the design of a park, the kind of road, the layout of routes and the locations of various facilities). Though these material configurations do not guarantee a certain behaviour, they often govern visitors in the absence of human authority (Adam 2008, Verbeek 2006).

While previous scientific investigations in the field of visitor management mainly show that specific measures show effects on visitor behaviour (e.g. Beunen et al., 2006, 2008), our analysis of more covert power mechanisms offers the possibility to explain why these effects come about. Hence, our analysis provides additional insights to the relationships between park management and visitor behaviour. By making covert mechanisms of power explicit in concrete cases, lessons can be learned about the management of visitors through park or landscape design that intentionally incorporates morality. Furthermore, our analysis contributes to questioning the limits and possibilities of steering visitor behaviour. Lastly, our argument can stimulate park managers to critically consider the often non-intentional forces that may enable or constrain certain behaviour.

## References

- Adam, A. 2008. 'Ethics for things', *Ethics and Information Technology*, Volume(2): 149-54.
- Beunen, R., Regnerus, H. D. and Jaarsma, C. F. 2008. 'Gateways as a means of visitor management in national parks and protected areas', *Tourism Management*, Volume(1): 138-45.
- Bulkens, M. 2009. 'A Delicious Leisure Activity - Spatial Resistance to Heteronormativity in Public Spaces', *Leisure Tourism and Environment*, Wageningen: Wageningen University.
- Hägerstrand, T. 1970. 'What about people in Regional Science?', *Papers in Regional Science*, Volume(1): 6-21.
- Koskela, H. 2000. 'The gaze without eyes': video-surveillance and the changing nature of urban space', *Progress in Human Geography*, Volume(2): 243-65.
- Latour, B. 1992. 'Where are the Missing Masses? - The Sociology of a Few Mundane Artifacts', in W. E. Bijker and J. Law (eds.), *Shaping Technology / Building Society*. Cambridge: MIT Press, Cambridge: MIT Press.
- Law, J. and Mol, A. 1995. 'Notes on materiality and sociality', *The Sociological Review*, Volume(2): 274-94.
- Maoz, D. 2006. 'The mutual gaze', *Annals of Tourism Research*, Volume(1): 221-39.
- Marwijk, R. v. 2009. *These routes are made for walking; Understanding the transactions between nature, recreational behaviour and environmental meanings in Dwingelderveld national Park, The Netherlands* Wageningen: Wageningen University.
- Verbeek, P.-P. 2006. 'Materializing Morality: Design Ethics and Technological Mediation', *Science Technology Human Values*, Volume(3): 361-80.
- Winner, L. 1980. 'Do Artifacts Have Politics?', *Daedalus*, Volume(1): 121-36.



# **Social networks and visitor management: A review of land an agenda for future research**

**Patricia Stokowski<sup>1</sup>**

Keywords: social networks, social relationships, visitor management

The concept of “social networks” has received increasing attention in contemporary thinking about society and natural resources. The general concept of a network has been broadly used to describe actual or potential interconnections of people, ideas, environmental settings, physical linkages (such as transportation networks) or functions (such as exchange or helping behaviors). This paper focuses specifically on social networks, and offers an overview and analysis of social networks research related to people and agencies in natural resources contexts. Examples will be provided to illustrate the interactional and structural criteria of social networks, network analysis methods, and applications of social networks theorising in outdoor recreation and tourism. The intent is to provide a broad overview of historic and contemporary theorising and research about social networks, and to ask how social networks research might inform research related to visitor monitoring and management in natural resource-related contexts, especially in parks, outdoor recreation, and tourism settings.

In conducting research about social networks, scholars typically study three components of social systems: (a) the interactions of a set of social actors (individuals, collectives); (b) the linkages or relationships connecting actors, through which information, resources, affection, social support, and power, flow; and (c) the emergent structures of linked social roles and positions that result from social interactions, which can be visualised as webs or relationships. The analysis of social network patterns can help answer questions about how social actors (individuals and groups) strategically use social relationships and linkages to enact behaviors that accomplish desired goals.

Early applications of social networks research in outdoor recreation and tourism were described by Stokowski (1994), but other topics and applications for social networks study have emerged over time. Though much of the recent social networks research in natural resources-related disciplines seems specifically oriented to environmental governance questions (Bodin & Crona 2009; Prell, Hubacek & Reed 2009), studies of social networks have broad relevance for many kinds of social systems and many levels of analysis. For example, Bodin and Crona (2009: 367) note that social networks contribute to all kinds of collaborative social behavior “by facilitating, (i) the generation, acquisition and diffusion of different types of knowledge and information about the systems under management..., (ii) mobilisation (but maybe the spelling stands if it is a quote?) and allocation of key resources..., (iii) commitment to common rules among actors fostering willingness to engage in monitoring and sanctioning programs..., and (iv) resolution of conflicts....”

It is the contention of this paper that decisions about visitor management and monitoring in outdoor recreation and tourism could be more fully informed, justified, and implemented with an understanding of the social networks in which visitors, managers, businesses, agencies, and communities are enmeshed. Contrary to some traditional approaches to visitor management and monitoring (which have tended to focus primarily on the qualities of individuals – their numbers, motives, preferences, attitudes, behaviors), social networks research represents a perspective that focuses on the qualities of social interactions and relationships that foster recreation and tourism participation and support managerial decision-making. Social networks research can help turn attention away from individualistic, cognitive models and towards more complex, interdependent models of both visitor participation and behavior, and managerial action. Additionally, while social networks may appear to be fixed in time and space, they are always

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<sup>1</sup> PhD, Rubenstein School of Environment and Natural Resources, 305 Aiken Center, 81 Carrigan Drive, University of Vermont, Burlington, VT 05405, USA, [Patricia.Stokowski@uvm.edu](mailto:Patricia.Stokowski@uvm.edu)

emergent and malleable, and thus they can help illustrate various stages and levels of social process related to group formation and dissolution, managerial approach, trans-boundary relations, on-site interactions, and discourses of power, among other topics.

Social networks are relevant to our research precisely because social behavior is relational. Individual and collective social actors, linked across social networks, come to think about the world in certain ways, share ideas and information and influence, make decisions for recreation and tourism participation, and initiate behaviors, based on their roles and positions in social networks. Some research questions associated with social networks in outdoor recreation and tourism contexts include analysis of collaboration and conflict in resource-based agency networks, stakeholder roles and power in natural resource controversies, discourse networks in community tourism planning and tourism development, information and education exchange in manager and visitor communication networks, and business and non-profit network relations for natural resource advocacy and protection. Ultimately, the aim of research about social networks is to help us raise questions about the forms and functions of social behavior and social process in outdoor recreation and tourism contexts, and to derive lessons for more effective visitor management and monitoring in recreation and tourism places.

## **References**

- Bodin, O. & B.I. Crona. (2009). The role of social networks in natural resource governance: what relational patterns make a difference? In: *Global Environmental Change* 19, p 366-374.
- Bodin, O., Crona, B. & Ernstson, H. (2006). Social networks in natural resource management: what is there to learn from a structural perspective? In: *Ecology and Society* 11(2): r2. [online] URL: <http://www.ecologyandsociety.org/vol11/iss2/resp2/>
- Larsen, J., Urry, J. & Axhousen, K.W. (2007). Networks and tourism: mobile social life. In: *Annals of Tourism Research* 34(1), p 244-262.
- Lauber, T.B., Decker, D.J. & Knuth, B.A. (2008). Social networks and community-based natural resource management. In: *Environmental Management* 42(4), p 677-687.
- Prell, C., Hubacek, K. & Reed, M. (2009). Stakeholder analysis and social network analysis in natural resource management. In: *Society and Natural Resources* 22(6), p 501-518.
- Stokowski, P.A. (1994). *Leisure in Society: A Network Structural Approach*. London: Mansell.
- van der Duim, E. (2007). Tourismscapes: an actor-network perspective. In: *Annals of Tourism Research* 34(4), p 961-976.

## **Invasiveness: the construction of a category and its impact for conservation and recreation practices**

**Susan Boonman-Berson<sup>1</sup>**

Keywords: invasiveness, nature conservation, categories, wildlife

The category of invasiveness generally comes with negative connotations, referring to an unwanted subset of biodiversity that threatens the other – benign (or wanted) – subset. Invasive species have been declared as one of the major causes of biodiversity loss together with climate change and habitat destruction (Simberloff 2003; Bremner and Park 2007). According to the International Union for Conservation of Nature (IUCN) Red List, invasive species have caused more than half of the known extinctions of animal species and create billions of management costs (including damages) annually (Clavero and García-Berthou 2005). Consequently, the issue of invasive species is high on political and scientific agendas, also on the global level. For example, the Convention on Biological Diversity has a technical working group dealing especially with this issue and features it on collective meeting agendas. On the other hand, some invasive species are at the same time positively perceived by recreationists. Subsequently, a contradiction seems to appear.

Defining species as invasive has important implications for how they are treated; attributing the label 'invasive' to a species can result in its eradication or denial of access to a certain territory (Bowker and Star 2000, Jones 2009). This will be made clear by the example of the wild boar. The wild boar is nominated as one of the 100 "World's Worst" invaders according to the Global Invasive Species Database (GISD) (2007). This database is developed and managed by the Invasive Species Specialist Group (ISSG) of the IUCN. The IUCN states that the wild boars cause serious impacts on biological diversity and/or human activities. From this perspective, the wild boar is seen as an unwanted species which causes all kinds of negative effects. To prevent these effects, programs have been setup to eradicate or control wild boar populations (National Invasive Species Council 2001; Global Invasive Species Database 2007). Its presence in the GISD implies that the wild boar is considered to be an 'invasive alien species'. This means, according to the IUCN, that it is introduced and (thus) non-native or alien to an area and has a serious impact on, otherwise intact, pre-existing native ecosystems and on human activities (Invasive Species Specialist Group 2008). This definition shows that for a species to be listed in the GISD, both the issue of origin or nativity and the issue of impact or damage are relevant. However, apart from the relative clarity of the IUCN definition, a lot of confusion is involved in classifying species as invasive. For example, the term 'invasive alien species' implies that also 'invasive native species' exist. This is indeed being argued. Recently, scientists have started to speak about native species becoming invasive and even call them pest species (Valéry et al. 2008), (Farquharson et al. 2009). This is part of a lively discussion in scientific literature about what is actually meant by the category 'invasive'. As said, in leisure practices some invasive species are positively perceived. For example the invasive wild boar in the U.S.A. is positively perceived for hunting practices. But also wild boar spotting is one of those positive identified activities.

This makes clear that invasiveness is a contested category. However, as the example of the wild boar makes clear, classifying a species as invasive can have serious consequences for how it is treated in different practices. How invasiveness is interpreted by an actor, like a scientist, policymaker, wildlife-manager, journalist or recreationist, has a direct or indirect impact on the management of the species involved. Because of these implications, it is crucial to understand how a species gets classified as invasive, who is doing the classifying, and what kinds of knowledge and considerations are used to legitimise this classificatory act.

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<sup>1</sup> Forest and Nature Conservation Policy Group/ Environmental Policy Group, Wageningen University, P.O. Box 47, 6700 AA Wageningen, The Netherlands, [Susan.boonman-berson@wur.nl](mailto:Susan.boonman-berson@wur.nl)

For example in the case of the manageability of invasiveness, which categories are used for the management of the wild boar, how are they interpreted and what are the implications for the wild boar? Together with the different meanings and definitions of invasiveness that are currently present in debates about conservation science, policy, management and in society, the different positions and dynamics in the debate of invasiveness are clarified in this research.

At a later stage in this PhD- research, detailed case studies will be performed in the Netherlands and the USA, in which an invasive wildlife species is at the centre of a human-wildlife-conflict situation, to reveal the interpretations of the category invasive and the impact of categorisation on actual wildlife-management. Indeed, in managing the species, categories play an important role: How do wildlife-managers use and interpret them in the local context? And what are the implications for wildlife?

## References

- Bowker, G.C. & Star, S.L., (2000). *Sorting things out: Classifications and its consequences*. Cambridge: The MIT Press.
- Bremner, A. & Park, K., (2007). Public attitudes to the management of invasive non-native species in Scotland. *Biological Conservation*, 139 (3-4), 306-314.
- Clavero, M. & García-Berthou, E., (2005). Invasive species are a leading cause of animal extinctions. *Trends in Ecology & Evolution*, 20 (3), 110-110
- Diamond, J., 1989. Overview of recent extinctions. In Western, D. & Pearl, M.C. eds. *Conservation for the twenty-first century* Oxford: Oxford University Press, 39-41.
- Farquharson, B., Kelly, J., Welsh, P., Mazur, K. & Bennett, J., (2009). Policy responses to invasive native species: Issues of social and private benefits and costs. 53rd Annual Conference of the Australian Agricultural and Resource Economics Society Inc. Cairns.
- Global Invasive Species Database, G., (2007). Wild boar (*sus scrofa*) Available from <http://www.issg.org/database/species/ecology.asp?si=73&fr=1&sts=&lang=EN>. Access Date 10 February 2010.
- Invasive Species Specialist Group, I., (2008). About invasive species. Available from: [http://www.issg.org/about\\_is.htm](http://www.issg.org/about_is.htm). Access Date 10 February 2010.
- Jones, R., (2009). Categories, borders and boundaries. *Progress in Human Geography*, 33 (2), 174-189
- National Invasive Species Council, (2001). *Meeting the invasive species challenge: National invasive species management plan*. 80 pp.
- Simberloff, D., (2003). Confronting introduced species: A form of xenophobia? *Biological Invasions*, 5 (3), 179-192.
- Valéry, L., Fritz, H., Lefeuvre, J.-C. & Simberloff, D., (2008). In search of a real definition of the biological invasion phenomenon itself. *Biological Invasions*, 10 (8), 1345-1351

# Psychological carrying capacity of snorkeling activity at Mo Koh Chang National Park

Dachanee Emphandhu<sup>1</sup>, Mayuree Nasa<sup>2</sup>

Keywords: psychological carrying capacity, snorkeling activity, Mo Koh Chang National Park

In order to manage the quality of visitor experience in snorkeling activity, psychological carrying capacity has been studied at Mo Koh Chang National Park in Thailand. The study followed Shelby and Herberlein's (1986) definition of recreation carrying capacity. Visitor's perceived crowding is employed as an indicator to measure the negative experience caused by the number of visitors. Perceived crowding combines descriptive information of the reported number of encounters with the evaluative information of the value judgement of that number of encounters if they had exceeded their definition of an acceptable standard. Several studies have focused on crowding perception in various natural recreational areas (Manning 1999), but in southeast Asia, especially Thailand, there have been only few studies (Emphandhu et al 2006).

The objectives of this research were to find out the average perceived crowding at three snorkeling sites, to study the relationship between the number of snorkelers and the perceived crowding, and to estimate the acceptable number of snorkelers at perceived crowding level 5.

The target population for this study were snorkelers at reef sites around Koh Thong Lang, Koh Yak Lek, and Koh Yak Yai. A quota sampling technique was employed to select research samples from the sampling population based on the official report (DNP 2005) on annual visitor number of Mo Koh Chang National Park. Data collection was conducted between November 2006 and January 2007 totaling 26 days of weekends and long holidays. All respondents were selected based on their willingness to volunteer their personal information and by accidental sampling on site. The questionnaire survey of 239, 413, 260 Thai and foreigner respondents at Koh Thong Lang, Koh Yak Lek, and Koh Yak Yai was employed. The respondent's background information, recreation pattern and motivation, opinions on perceived crowding and number of snorkelers encountered were collected. The simple regression analysis with a significance level of  $p < 0.05$  was used. The Likert scale developed by Heberlein and Vaske (1977) was adopted in this study to measure crowding perception. In this scale ranging from 0 to 9, the 0-2 labeled situation as slightly crowded, 3-5 is moderately crowded and the remaining 6-9 points as extremely crowded. Snorkelers then were asked if they felt disturbed by the number of other snorkelers and were instructed to rank their perception of crowding on a 0 to 9 point-scale and recorded the number of encounters of other snorkelers.

The average Thai and foreigner snorkeler perceptions towards crowding were relatively low to medium. The perception for Thai and foreigners respectively at Koh Thong Lang were 2.95 and 4.36, Koh Yak Lek 2.72 and 4.26, and Koh Yak Yai 2.26 and 4.12. It is obvious that the perception of crowding for Thai and foreigners are quite different, but neither were exceeded the acceptable limits. The analysis of linear equation between perception level towards crowded snorkelers and a number of snorkelers on site at Koh Thong Lang, pointed out the significant level at 0.004 and  $R^2 = 0.752$  and from the simple regression prediction, it is estimated that 154 persons/time was accepted as the perceived crowding level 5. At Koh Yak Lek, the significant level was 0.026,  $R^2 = 0.389$  and 218 persons/time. At Koh Yak Yai, the significant level was 0.011,  $R^2 = 0.511$  and 118 persons/time (Fig.1).

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<sup>1</sup> Department of Conservation, Faculty of Forestry, Kasetsart University, Jatujak Bangkok, Thailand 10900, [dach\\_1960@yahoo.com](mailto:dach_1960@yahoo.com)

<sup>2</sup> Faculty of Tourism and Hotel Management, Mahasarakham University, Talad sub-district, Muang district, Mahasarakham province, Thailand 44000, [pixx65@hotmail.com](mailto:pixx65@hotmail.com)

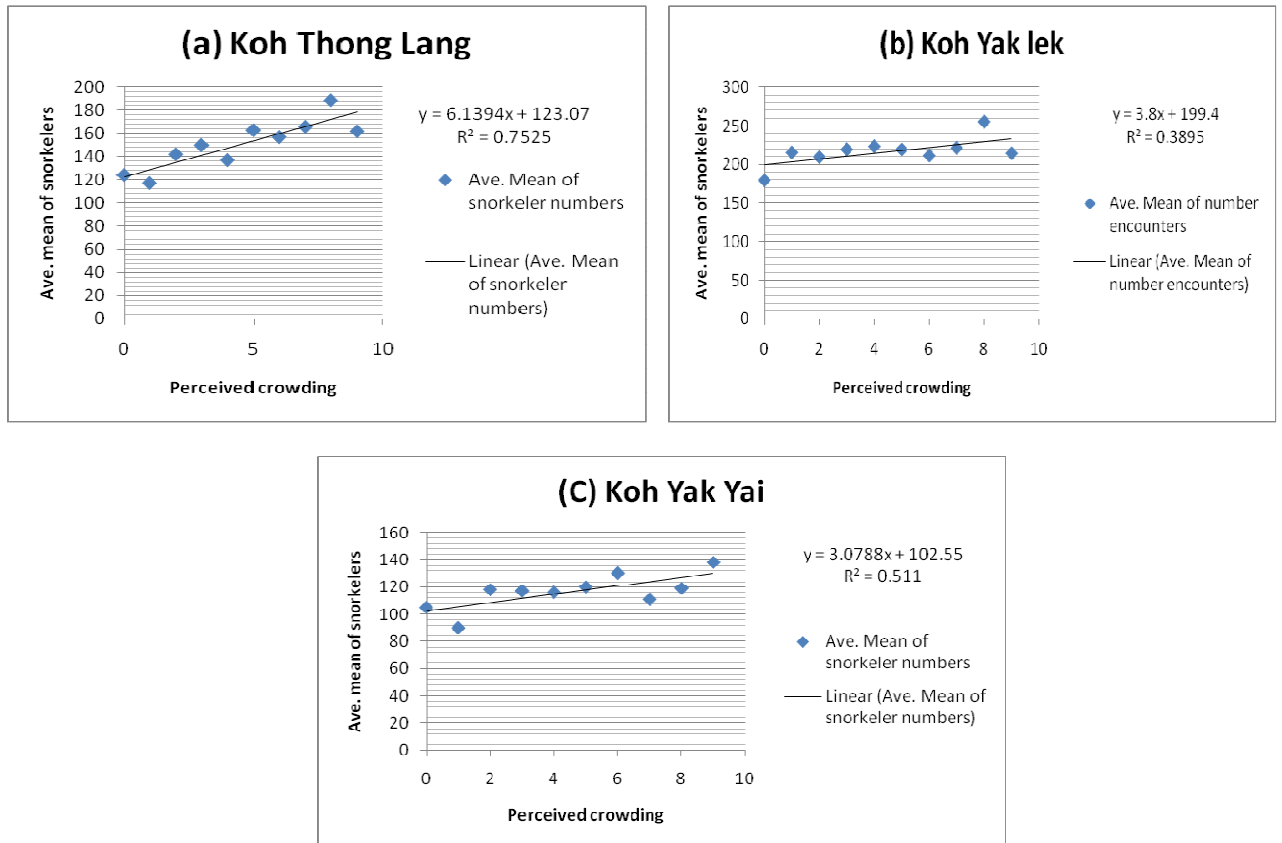


Figure 1: Linear correlation of perceived crowding and number of snorkelers at Koh Thong Lang, Koh Yak Lek, and Koh Yak Yai

Table 1 shows the comparison between the actual number of snorkelers in 2006 – 2007 and the predicted maximum number of snorkelers from linear equations. It indicated that the number of snorkelers at all sites exceeded the psychological carrying capacity in some days (see max. number). However, on average, the number of snorkelers was still in below carrying capacity except Koh Thong Lang which needed immediate measures to solve the crowding impact. Snorkel activity at Koh Yak Lek also needed some attention since there was evidence of high frequency of days showing the number of snorkelers exceeding the limits as well as the exceeding numbers were relatively large.

Table 1: The comparison between the actual number of snorkelers in 2006 – 2007 and the predicted maximum number of snorkelers from linear equations

Snorkel sites	Max. Number of snorkelers	Average Number of snorkelers	Psychological carrying capacity levels		
			Below CC (perceived crowding=0-2) (PAOT)	At or Approach CC (perceived crowding=3-5) (PAOT)	Exceed CC (perceived crowding>5) (PAOT)
1. Koh Thong Lang	253	158	135	154	>154 Max (253) Average (158)
2. Koh Yak Lek	403	194	207 Average (194)	218	>218 Max (403)
3. Koh Yak Yai	192	108	109	118	>118

			Average (108)		Max (192)
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## References

- Department of National Parks, Wildlife and Plant Conservation (2005). Visitor statistics at Mo Koh Chang National Park. Ministry of Natural Resources and Environment, Bangkok.
- Emphandhu Dachanee, Thamasak Yemin, Sura Pattanakiat, ChatchaiTantasirin, Ranuka Ruschano, Surachet Chettamart & Mayuree Nasa (2006). Recreation carrying capacity analysis at Khao Leam Ya –Mu Ko Samed National Park, Thailand. In: Siegrist, D., Clivaz, C., Hunziker, M. & Iten, S. (eds.) Exploring the Nature of Management. Proceedings of the Third International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas. University of Applied Sciences Rapperswil, Switzerland, 13-17 September 2006, p 183-190.
- Heberlein, T.A. & Vaske, J.J. (1977). Crowding and visitor conflict on the Bois Brule River (report WISCWRC 77-04). University of Wisconsin Water Resources Center.
- Manning, R.E. (1999). Studies in outdoor recreation: Search and research for satisfaction. Oregon State University Press.
- Shelby, B and T. A. Heberlein. (1986). Carrying Capacity in recreation Settings. Oregon State University Press. U.S.A.

# Collection of users' needs using Google Maps and mobile-phone for park management

Teppei Ishiuchi<sup>1</sup>, Tatsuhiro Yonekura<sup>1</sup>, Takekazu Koyanagi<sup>1</sup>, Yuji Kuwahara<sup>1</sup>

Keywords: park management, mobile-phone with GPS, word-of-mouth, user needs, utilization of park

## Introduction

In recent years, it seems that functionality requirements of city parks are changing with the background of the environmental problems besetting us, diversification of values among the people and recreational activities. Currently, managing staff of Kairakuen Park have an assignment of collecting and using users' needs of a City Park, and an assignment of using word-of-mouth information based on empirical information for a sightseeing area. Meanwhile, the concept of Web2.0 is gradually becoming popular; there is a structure that enables information gathering in real time and beyond the area. Therefore, in this study, we have created the word-of-mouth information sharing system in Kairakuen Park and considered its effectiveness. Moreover, we have implemented the system capable of being used from Mobile Phone with GPS, focused on real-time information sharing. This study investigates the technique of using a web system over existing the questionnaire survey as a means for collecting users' needs.

## Study area

Kairakuen Park is a Japanese garden located in Mito city of Ibaraki Prefecture and one of the three most famous Japanese gardens across the country.

Now it has a total area of 300 hectare, and it is world's second largest park adjacent to the urban district, following Central Park in New York. Visitors can enjoy this vast area in a relaxed manner, and people of Mito city use it as a recreational place in their daily life without reservation.

## Methods

We created the word-of-mouth information sharing system for collecting many users' needs. At first, we took word-of-mouth information sharing of positional information and the acquisition of photographic imagery of location posted to show the real-time spread of information. Therefore, we used Google Static Maps API and mobile-phone with GPS. This API enables us to get the acquisition of a map image using mobile-phone. Therefore, we created this system to make it possible to get user's comment, photographic imagery and positional information at the same time.

The content of the word-of-mouth information is many complaints and requests and fascination about the park by users' experience using mobile-phone. In this study, we tested the word-of-mouth information sharing system on other people at Kairakuen Park.

## Structure of the system

This system is compounded over computer networks from portable terminal like mobile-phone and GPS service of docomo, Google map server and our own laboratory server with a database and this system.

Figure 1 shows structure of the word-of-mouth information sharing system. Figure 2 shows screen transitions for posting locational information using a mobile-phone.

1. Access to park information posted by park user in the past
2. Acquisition of positional information by GPS docomo service
3. Post comments and photographic imagery
4. Access to photographic imagery posted

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<sup>1</sup> Ibaraki University, Japan, [ishiuchi@mx.ibaraki.ac.jp](mailto:ishiuchi@mx.ibaraki.ac.jp), [yone@mx.ibaraki.ac.jp](mailto:yone@mx.ibaraki.ac.jp), [koyanagi@mx.ibaraki.ac.jp](mailto:koyanagi@mx.ibaraki.ac.jp), [kuwahara@mx.ibaraki.ac.jp](mailto:kuwahara@mx.ibaraki.ac.jp)



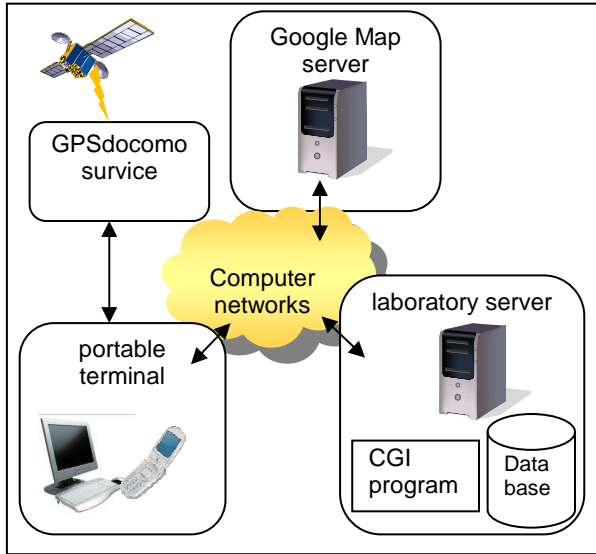


Figure 1 Structure of the system



Figure 2 Screen transitions using mobile-phone

## Result

In the past, we conducted survey on utilization of Kairakuen Park using questionnaire survey in December 2006. The number of respondents was 106 peoples. This questionnaire survey got a lot of users'needs. Figure 3 shows scene of questionnaire survey with interview in Kairakuen Park. Table 1 shows a part of lists of users' needs. The traditional way like a questionnaire survey could only record park user's comments.



Figure 3 Scene of questionnaire survey

Table 1 A part of lists of users' needs using questionnaire survey

Survey in December 2006
Questionnaire method is Interview
Users' needs in Kairakuen Park
keeping things as they are
increase in toilet
increase in rest facilities
increase in trash bin
increase in spaces to play for children
increase in car parking space
increase in night lighting
understandable guideboard
cleaning of dog deposit
progress on the public manners
progress on water quality
device for PR activity
and so on

We tested the word-of-mouth information sharing system on other people at Kairakuen Park in January 2009. The number of respondents is was people. Figure 4 shows scene of survey and Table 2 shows a part of results collected information using this web system with mobile-phones in Kairakuen Park.

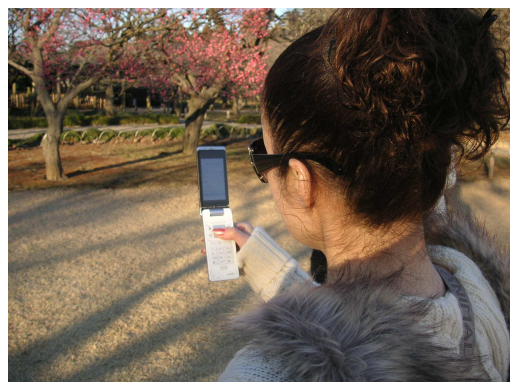








Figure 4 Scene of using this web system with mobile-phone

Table 2 A parts of lists of users' needs using web system with mobile-phone

Dates	Positional information	Photographic imagery	Comments
16-Jan			I want the vending machines here.
16-Jan			I want a door here because toilet can see in full view.
25-Jan			Plum trees aren't now in full bloom.

According to the results of table 2, this word-of-mouth information sharing web system can get user's comments, photographic imagery and positional information at the same time by computer networks and real time. It was just about the opposite to the traditional way of information collecting such as questionnaires according to table 1.

In the future, Mobile Phone with GPS will make various services available to for park management. I think we have to do all kinds of things to make a senior-friendly web system, for example considering, color shade and word size, number of times of clicking and so on.

Moreover, I think we have to cooperate with Kairakuen Park manager, Ibaraki Prefecture, to increase the availability of this web system.

### Acknowledgement

This survey in Kairakuen Park and Garden was supported by Kairakuen office in Ibaraki Prefectural Government, Japan. In addition, this study result was conducted by Mr. Norio Akatsu, Ibaraki Hitachi Information Service Co.,Ltd, Japan. They were also thanked.

### References

Ishiuchi, T. & Koyanagi, T. & Kuwahara, Y. (2008) Study on Establishment of Resting Facility Using the Use Investigation of the Park for Kairakun Park, Journal of Applied Study Technology, 19, pp.71-80. (English abstract)

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ode、 <http://code.google.com/intl/ja/apis/maps/documentation/staticmaps/>

# Heterogeneous preferences for trekking in bear habitat: The use of latent class stated preference choice model

Takahiro Kubo<sup>1</sup> and Yasushi Shoji<sup>1</sup>

Keywords: heterogeneous preferences, bear encounter, choice experiment, risk attitude

The purpose of this study is to examine visitor's heterogeneous preference on risky trekking in brown bear habitat (*Ursus arctos yesoensis*), applying stated choice approach. Numameguri trail, which is our study area, represents the high-density brown bear habitat in Daisetsuzan National Park, Hokkaido, Japan. Also, the trail is a nationally famous scenic trail especially for viewing fall leaves. Bear encounters on the trail may be pleasant experience for some visitors who want primitive recreational opportunities, but unpleasant for some visitors who want secure trekking. Therefore, park managers have to understand visitor's preferences for the trekking, then construct appropriate management plan.

A mail survey was conducted in September 2009. In total 1,536 questionnaires were handed out to visitors at the trailhead, and 970 (63.2%) were returned. There were 924 remaining completed responses. The questionnaire consisted of two components. The first component contained risk-attitudinal questions for visitor segmentation, such as the risk perception for bear encounter. The questions of risk perception were composed of 15 items taken partly from Slovic (1987) and Gore (2007). Responses to each item were measured on a five-point Likert scale. The second part of the survey contained a series of hypothetical choice tasks. Our choice experiment survey elicited visitors' preferences under hypothetical 25 trail scenarios with different attributes and levels: destinations, bear appearances, the number of visitors and patrol systems of the trail. Each respondent evaluated 9 randomly selected profiles out of 25 (hypothetical trail scenarios) with different attributes and levels, organized into three choice sets. In this study, profiles were designed using an orthogonal main effect design, which is frequently used in empirical studies (Louviere et al., 2000). Data obtained from the CE tasks were quantified using a random utility model, and a conditional logit model (McFadden, 1974) and a latent class model (McFadden, 1986; Swait, 1994; Boxall and Adamowicz, 2004) were applied. All attributes (or levels), except for the number of visitors, were coded (Louviere et al., 2000). Arbitrarily omitted level estimate is defined as the negative sum of the other level estimates.

The result of the conditional logit model showed that the positive parameter of bear appearances and the negative parameter of the number of visitors were both statically significant at 1% level, respectively. Significant parameter estimates with a positive sign mean that the attributes (or levels) influence respondents' utility positively, and those with a negative sign mean that the attributes (or levels) influence respondents' utility negatively. These findings suggest that the mean preference of the visitors was a secure trekking without bear appearances and solitude in the trail. More secure patrol systems were also preferred. The parameters of increasing the number of park rangers, introducing a guided-tour with trained guides and introducing park rangers carrying rifles with rubber bullets were statistically significant at 1% level with positive sign. However, the parameter of introducing park rangers carrying rifles with metal bullets was negative and significant at the 1% level. These results indicated that the mean preference of the visitors was the secure trekking in the trail, but they did not want to pursue it in exchange for extirpation of brown bear populations.

A serious problem of the conditional logit model is that the model assumes that the parameters are constant among all respondents. The result of the latent class model, which includes risk-attitudinal factors as membership variables, showed that visitors have heterogeneous preferences,

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<sup>1</sup> Laboratory of Forest Policy, Research Faculty of Agriculture, Hokkaido University, Kita 9 Nishi 9, Kita-ku, Sapporo, 060-8589, Japan, tkubo@for.agr.hokudai.ac.jp, yshoji@for.agr.hokudai.ac.jp

and respondents are segmented into two different groups. One group consisting of 216 (23.4%) respondents contained inexperienced trekkers, and they are sensitive to the risks of bear encounter. They preferred much more secure trekking than mean visitors; furthermore, they tended to quit their trekking under risky situations. On the other hand, the other group consisted of 708 (76.6%) respondents who are experienced trekkers, and they regarded the risks of bear encounter as manageable. Although they did not prefer to have a bear encounter, they persisted in completing the full distance of the trail. Park managers have to consider these two types of visitors: inexperienced risk-averse visitors and experienced risk-taking visitors.

## **References**

- Boxall, P.C. and Adamowicz, W.L. (2002) Understanding heterogeneous preferences in random utility models: A latent class approach. *Environmental and Resources Economics* 23: 421-446.
- Gore, M., Knuth, B. Curtis, P. and Shanahan, J. (2007) Campground manager and user perceptions of risk associated with negative human-black bear interactions. *Human Dimensions of Wildlife* 12: 31-43.
- Louviere, J.J., Hensher, D. and Swait, J. (2000). *Stated choice methods: Analysis and application*. Cambridge University Press.
- McFadden, D. (1974) "Conditional logit analysis of qualitative choice behavior" In P. Zarembka (ed.), *Frontiers in Econometrics*. Academic Press, 105-142.
- McFadden, D. (1986) The choice theory approach to market research. *Marketing Science* 5: 447-70.
- Slovic, P. (1987) Perception of Risk. *Science* 236 (No. 4799): 280-285.
- Swait, J. (1994) A structural equation model of latent segmentation and product choice for cross-sectional revealed preference choice data. *Journal of Retailing and Consumer Services* 1: 77-89.

## Using ecotourism experiences to educate tourists: First results from a research in Figueira da Foz salt works (Portugal)

Pedro Morais<sup>1</sup>, Javier Benayas<sup>2</sup>

Keywords: ecotourism, education, tourist behaviour, salt works, sustainability

Despite the suggestion that education is a key element in ecotourism experiences and is fundamental to give tourists awareness about complex environmental problems, there is a general lack of research about this evidence in almost all activities. Higham y Carr (2002), Marion y Reid (2007), and also Dolnicar et al. (2008) recommend the carrying out of research about the use of ecotourism and educational activities as a way to promote environmental behaviour changes in visitors. Particularly in deeper forms of ecotourism (Acott, et al, 1998), we can realize the enormous potential of educational activities that can be offered aiming simultaneously to enrich the visitor experience and to promote a better understanding of complex environmental systems. These educational components seem to be essential to trigger changes of visitors' behaviour in order to achieve higher levels of sustainability.

This poster presents some early results from a research carrying out in Figueira da Foz salt works (Portugal) focused on the evaluation of some positive impacts from an ecotourism activity based in an interpretive guided trail. The salt works of Figueira da Foz have a large number of particular characteristics to be used as an ecotourism product: the place was an important centre of traditional salt production in the past with cultural and economic importance for local people, and some of them are still running in a traditional manner; it is located and depends on a estuary with a great ecological value and enclosed by an highly complex and sensible ecosystem; these salt places are suffering a high threat to be converted in industrial fish farms; the salt works are also integrated into an eco-museum and a visitors centre and some of them are still producing traditional salt, "salt flower" and some "new" vegetable products such as Salicornia (*Salicornia* spp). This context is a unique place to implement ecotourism activities that integrates important ecological, social, economic and health aspects.

To carry out this preliminary research about the impact of this activity in visitors' behaviour, a questionnaire was administrated to a sample of 29 participants at the end of the interpretative guided trail of Salinas. We aim to measure the understanding of tourists about the overall salt works problems and also their perspectives about future actions related to salt use. On a second moment 7 of these participants were asked about their changes and perspectives of change concerning the traditional salt products consume. The measurement of this positive impact of the activity, concerning the visitors understanding and changes about the traditional salt consumption, gave us a clear tendency about the role of the interpretative trail to promote a greater valorisation of the traditional salt works and so to promote real changes in consumers' behaviours.

Like other current environmental problems, the use of traditional salt products and its benefits to the environment, local community and also visitors' health are integrated in a complex net of relations. We assume that only a real understanding of it can permit a real change of the consumer behaviour to buy traditional salt products and also to assume an active role to contribute to protect these kind of resources.

In the quest for a new educational paradigm it seems that ecotourism activities can assume an important educational role that is generally not recognised. We have to find the most efficient educational strategies that will contribute to reduce negative impacts in visited areas and can also promote positive and long term benefits for some threatened contexts. Despite this, some

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<sup>1</sup> CERNAS, Escola Superior Agrária de Coimbra, Bencanta, 3040-316 Coimbra, Portugal , [pmorais@esac.pt](mailto:pmorais@esac.pt)

<sup>2</sup> Departamento de Ecología, Facultad de Ciencias, Universidad Autónoma de Madrid, 28049 Madrid, Espana [javier.benayas@uam.es](mailto:javier.benayas@uam.es)

important questions are still without answers, such as if the ecotourism activities attract only educated tourists or, on other side, if ecotourism effectively can educate general tourists to increase our level of sustainability.

### **References**

- Acott, T. G., H. L. La Trobe, et al. (1998). "An Evaluation of Deep Ecotourism and Shallow Ecotourism." *Journal of Sustainable Tourism* 6(3): 238 - 253.
- Dolnicar, S., G. I. Crouch, et al. (2008). "Environment-friendly Tourists: What Do We Really Know About Them?" *Journal of Sustainable Tourism* 16(2): 197 - 210.
- Higham, J. and A. Carr (2002). "Ecotourism Visitor Experiences in Aotearoa/New Zealand: Challenging the Environmental Values of Visitors in Pursuit of Pro-environmental Behaviour." *Journal of Sustainable Tourism* 10(4): 277 - 294.
- Littlefair, C. and R. Buckley (2008). "Interpretation reduces ecological impacts of visitors to World Heritage site." *Ambio* 37(5): 338-341.
- Marion, J. L. and S. E. Reid (2007). "Minimising Visitor Impacts to Protected Areas: The Efficacy of Low Impact Education Programmes." *Journal of Sustainable Tourism* 15(1): 5 - 27.

## **Nature sports in natural places: a contribution to the management of protected areas**

**Paulo Rosa<sup>1</sup>, M. Almeida<sup>2</sup>, L. Carvalho<sup>1</sup>**

Keywords: protected areas, nature sports, management models, visitor management

Protected areas are territories that have a great ecological value and are consequently very appealing to the practice of different activities in contact with nature. The genesis of these generally emerges from primary purposes concerning the preservation of nature. However, others like leisure and recreational purposes have been considered, but it is essential to assure the suited framing of the activities in order for them to contribute to the main purposes of conservation and so that the environmental impact is minimised.

The conservation of nature in this aspect is a reality, if the natural areas where the activities are performed have the correct planning and management. The decisions concerning this planning are based mainly on the proper regulation of these activities in order to minimise the possible impacts they cause.

For that purpose, the management models used are frequently based on two guidelines: i) an environmental component, associated to the practice of nature sports, or better to say, associated to the environmental impacts caused by these activities; ii) a social component, related to social factors (in what participants are concerned) that conditions the sports activity. These factors limit the organisation of the territory management plans in protected areas.

In the specific case of Portugal, the elaboration of the Nature Sports Letters was a first attempt to make a sustainable management of the practice places in protected areas. Furthermore the emission of legal documents, for example, the National Strategy for the Conservation of Nature and the Decreto-lei 108/2009 (Portuguese Legal Decree) dated the 15th May, announced a series of goals and obligations that control the usage of the national protected areas. One of the most emphasised aspects in these objectives was the effective control of recreational activities, especially the Nature Sports.

However, the management techniques used in the regulation of visits, specially in the practice of nature sports in the Portuguese protected areas, are insufficient and incomplete. The lack of specific information about the relevant qualities and types of sport activities in a natural environment becomes a serious problem in the investigation and creation of efficient methodologies.

In this sense and according to the existing recreational and sport interests in the Portuguese protected areas, the definition of objectives for the specific usage of each one of them as well as the exponential increase in the demand of leisure activities in natural areas has implications. It becomes necessary to proceed explicitly in the sports practice management of those areas so that the quality of the experience is assured alongside the purposes of conservation.

This work aims at contributing to the territory usage management, in particular of the protected areas and in the ambit of the nature sports activities practice, and at proposing a methodology that involves the state/quality of the visitor's experience as well as the ecological state of the visited place. It is intended that this work may be replicated and implemented in other places besides the study area.

The present study is taking place in the Natural Park of Serras de Aire e Candeeiros (NPSAC) (V category, IUCN). This area was classified as a Natural Park by the Portuguese Decreto-Lei

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<sup>1</sup> Sport Sciences School of Rio Maior – Polytechnic Institute of Santarém, Pavilhão Multiusos, Av. Mário Soares, Rio Maior, Portugal; [prosa@esdrm.pt](mailto:prosa@esdrm.pt), [lcarvalho@esdrm.pt](mailto:lcarvalho@esdrm.pt)

<sup>2</sup> Hotel and Tourism School of Estoril, Av. Condes de Barcelona, Estoril, Portugal; [teixeira.almeida@eshte.pt](mailto:teixeira.almeida@eshte.pt)



118/79. The number of people visiting this area is one of the highest in Portugal with a total of 510.875 visitors during the last 10 years. In the year 2009, the NPSAC has registered the highest amount of visitors, compared to other national protected areas. 206 were guided visits, where 13.304 people participated and this means an average of 1108 visitors a month. This data is based on the number of users/visitors to the nature houses managed by the ICNB, the guided tours in the protected area, the registered information requests and the sales number of pamphlets and publications.

To develop this study, a methodological qualitative approach is considered that is divided according to the following steps: 1) Making a profound revision of the specific literature so that it is possible to establish patterns that enable a critical and comparative analysis of the information about the relation between usage and impact levels, indicators, methods and value patterns related to the social and environmental impacts witnessed in other work studies, with the purpose of establishing an adequate methodological matrix for the reality of the Portuguese protected areas; 2) Making a systematised study of the acts related to the protection of the national territory, specifically what the usage of the space and its limitations are concerned; 3) building up inquiries and making interviews to all main intervenient of the protected areas, namely: The managers of the protected area which is the object of study (NPSAC); local associations; sport federations, and the private sector with the aim of establishing and analyzing their expectations and needs in this problematic; 4) application of the consequent elaborated methodology based on the comparative analysis in order to be tested.

## **References**

- Diário da República (2009). Decreto-Lei 108/2009.
- Diário da República (1979). Decreto-Lei 118/79.
- Haider, W., Payne, R. (2009). Visitor Planning and Management. In P.Dearden, R.Rollins (eds), Parks and Protected Areas In Canada – Planning and Management (pp.169-201).Canada: Oxford University Press.
- The World Conservation Union (2002). Sustainable Tourism in Protected Areas – Guidelines for Planning and Management. World Tourism Organization

## **Education of school children in special nature reserve “Gornje Podunavlje” (Serbia)**

**Radmila Šakić<sup>1</sup>**

Keywords: protected area, school children, education, recreation, learning

Protected areas are an important tool for the conservation of nature. They provide economic benefits to local communities and municipalities as a whole, they are places for education, and they promote recreation and the health of the population.

Recreational opportunities in protected areas include hiking, skiing, swimming and canoeing, which help to improve the physical fitness of the population. This is especially important for school children. Interpretive programs (mixture of education and recreation) in parks teach visitors about nature and history of the environment and provide valuable experiential learning opportunities for children and students.

Special nature reserve "Gornje Podunavlje" is one of finest pearls placed along the course of Danube in Vojvodina and Serbia. This reserve comprises remains of former vast inundated Danube areas. The reserve represents a complex mosaic of water and land ecosystems. The greater part of the reserve is covered by marshy, inundated forest complexes. This type of preserved indigenous biotopes is very rare both in our country and Europe.

The course of Danube, together with its backwaters called 'Dunavci' and inundated areas, left its imprint on the area of Gornje Podunavlje. Its slow and winding course creates backwaters, meanders and stills. Its floods created marshes, ponds and swamps. SNR 'Gornje Podunavlje' is an important center of biodiversity. The wealth of this biodiversity is reflected in a great number of vegetation types comprising 156 different syntaxonomic units in 14 classes, 18 orders, 32 alliances and 51 plant communities with over 1,000 species of plants. This wealth is also shown by the presence of 55 species of fish, 11 species of amphibians, 9 species of reptiles, 230 species of birds and 51 species of mammals as well as numerous invertebrates, especially butterflies with over 60 species of daytime butterflies.

Owing to its exceptional natural values Gornje Podunavlje was designated as an Ramsar Site (2007), Important Bird Area in 1989 (IBA) and it is also an integral part of potential Biosphere Reserve Drava-Mura.

Public enterprise “Vojvodinasume” as a management authority of Special nature reserve “Gornje Podunavlje”, initiated activity of education and recreation of school children in nature and the promotion of nature conservation among them. The initiative is entitled as “Every child should see Gornje Podunavlje” and the basic project idea is to bring nature and its beauties closer to the children and to introduce them with the Reserve. Education of school children is a primary issue in the creation of ecologically aware and responsible citizens. For that reason public enterprise “Vojvodinasume”, as a manager of this protected area, pay a lot of attention to this problemacy. Based on a common agreement, SNR “Gornje Podunavlje” is a destination that is inserted into the spring excursion program of all primary schools of Sombor city and Apatin city.

This activity also has a promotional character, so entrance fees and guiding services in period spring/summer 2010 are free of charge. Depending on the age, children will be guided on educational trail “Karapandza”, with info boards, along which interchange several types of ecosystems (pond, swamp, meadows, forests). Children are getting introduced with flora fauna by photography of Reserve, movies, audio record, touchable introducing (of horns, furs, feathers, marks, etc.). In this way they learn about importance of nature conservation and the beauties of this area.

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<sup>1</sup> srpgp.sgsombor@gmail.com

Beside the educational aspect, visiting the Reserve also includes a recreational one. Namely, in cooperation with local environmental nongovernment organisations, whilst learning, children can experience hiking, cycling, boating, canoeing, etc. For this purpose all necessary facilities are set.

This initiative is also supported by local municipality and communities which will provide a “green bus” that will be painted and exclusively used for children transportation to the Reserve. This initiative is also accompanied by different media.

# Landscape scenarios for the Swiss Alps

Reto Soliva<sup>1</sup>, Marcel Hunziker<sup>1</sup>

Keywords: mountain agriculture, market liberalisation, wilderness development, landscape preferences

## Introduction

The importance of the values underlying different concepts of biodiversity conservation and landscape planning is increasingly recognised, and yet these value judgements of the public and of experts are still poorly understood. Although landscape and conservation management are closely interrelated, and measures in one field are likely to have effects on the other, the relationship between biodiversity and conservation values on the one hand (e.g. Duelli and Obrist 2003; Salomon et al. 2006), and landscape preferences on the other hand (e.g. Bourassa 1991; Aoki 1999; Hunziker et al. 2007) has been hardly explored so far.

The objective of this study (Soliva 2007; Soliva & Hunziker 2009a, b; Soliva et al. in print) was to empirically examine the aforementioned relationship from an integrated perspective, considering philosophical, ecological and economic aspects and using items focused on biodiversity. Thus, the following research questions had to be answered:

How do local stakeholders assess scenarios of agricultural and landscape change?

What are the underlying values that drive the scenario assessments?

Are the scenarios assessed differently if taking place at differing elevation levels (e.g., valley ground vs. summer-farm level)?

How do different socio-demographic groups in the Swiss population assess the scenarios?

## Method

We used qualitative interviews and stakeholder workshops in a mountain region in Switzerland (Surses), as well as a quantitative survey of the general Swiss public (623 households from all over Switzerland), with visualisations of potential landscape developments in the Swiss Alps (3 scenarios: trend, biodiversity enhancement and market liberalisation) and items related to biodiversity- and conservation-values (assessments on a 7-point scale).

## Results and Conclusions

Overall, low-intensity land use is visually preferred over intensive land-use and reforested landscapes. At the same time, spontaneous reforestation is slightly less liked at higher elevations than at lower elevations. Regarding socio-demographic differences, a remarkable result is that older respondents and mountain residents strongly prefer well-tended cultural landscapes over reforested landscapes, younger respondents and lowlands residents less so. In addition, our research shows that respondents who prefer reforested landscapes tend to be more concerned about the conservation of species, landscapes, and natural processes than people preferring cultural landscapes. Respondents who prefer cultural landscapes are more oriented towards utilitarian values and are overrepresented in mountain areas as compared to the lowlands, thus in areas that are more likely to become the target of conservation measures.

Our findings have practical implications for conservation in Switzerland and other mountainous areas, particularly in times of agricultural decline and land abandonment and their associated changes in landscape and biodiversity.

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<sup>1</sup> Social Science in Landscape Research Group, Economics and Social Sciences, Swiss Federal Institute of Forest, Snow and Landscape Research (WSL), Zürcherstr. 111, 8903 Birmensdorf, Switzerland

## References

- Aoki Y (1999) Review article: trends in the study of the psychological evaluation of landscape. *Landsc Res* 24:85–94.
- Bourassa SC (1991) *The aesthetics of landscape*. Belhaven Press, London.
- Duelli P, Obrist MK (2003) Biodiversity indicators: the choice of values and measures. *Agric Ecosyst Environ* 98:87–98.
- Hunziker M, Buchecker M, Hartig T (2007) Space and place—two aspects of the human-landscape relationship. In: Kienast F, Wildi O, Ghosh S (eds) *A changing world. Challenges for landscape research*. Springer landscape series, vol 8. Springer, Dordrecht, pp 47–62.
- Salomon AK, Ruesink JL, DeWreede RE (2006) Population viability, ecological processes and biodiversity: valuing sites for reserve selection. *Biol Conserv* 128:79–92.
- Soliva R (2007) Landscape stories: using ideal type narratives as a heuristic device in rural studies. *J Rural Stud* 23:62–74.
- Soliva R, Hunziker M (2009a) Beyond the visual dimension: using ideal type narratives to analyse people's assessments of landscape scenarios. *Land use policy* 26:284–294.
- Soliva R, Hunziker M (2009b) How do biodiversity and conservation values relate to landscape preferences? A case study from the Swiss Alps. *Biodiversity and Conservation* 18:2483–2507.
- Soliva R, Bolliger J, Hunziker M (in print) Differences in preferences towards potential future landscapes in the Swiss Alps. *Landsc Res*.

## Ecotourism expedition to the Ile-Alatau National Park

Vladimir Vukolov<sup>1</sup>, Dilya Woodward<sup>1</sup>

Keywords: ecotourism, Ile Alatau National Park, Northern Tyan-Shan, protected areas, Kazakhstan, Zailiiskiy Alatau.

Ile Alatau National Park was founded in 1996 and occupies a territory of 202, 292 ha on the northern slope of Zailiiskiy Alatau in the south of Kazakhstan. The park was founded to protect unique mountain landscapes with its flora and fauna, to improve recreation and tourism opportunities and to carry out research on methodologies for protection of natural complexes under recreation pressure.

The park's elevation ranges from 600m to 4,540m above sea level; The highest peak is Constitution Peak. Tens of other peaks within the park's territory exceed 4,000 m above sea level. Flora of the park includes 1,000 species, the majority of them being typical to the forest midmountain zone. Fauna diversity is very rich with 2,000 species of identified invertebrates, 245 vertebrates, including 8 fish species, 4 amphibians, 8 reptiles, 178 bird species and 47 mammals. The attractiveness of the park for tourism is enhanced by the largest glacier of the northern part of Zailiiskiy Alatau – Dmitriyev's glacier (17km sq in area), Bolshoye Almatinskoye Lake of rock dammed and tectonic origin (area of 1km sq and depth of 39.3m), radon and siliceous thermal springs, petroglyphs, Talhiz and Turgen medieval settlements and burial grounds dating back to the early Iron Age (Dzhanyspayev 2006).

The park is located as close as a 30 minute drive from Almaty with a population of almost 1,5 million people. According to Iskanderov, the number of tourists in 2008 reached 190,000 people (2009). Some issues that the administration of the park face include: illegal occupancy of the land, construction and tree cutting, uncontrolled tourism, littering and budget shortages for protection of borders (Iskanderov 2009; [www.greensalvation.org](http://www.greensalvation.org) 2009). From an ecological point of view, the pollution of air and waters lead to glaciers melting, deforestation, decrease in animal populations and ultimately, have an effect on landscape and biological diversity of mountain ecosystems. For the development of tourism the main obstacles are: poorly developed recreation infrastructure, insufficiency of nature oriented ecotourism programmes, limited experience of staff members in ecotourism implementation, carrying capacity limits enforcement, and the lack of highly qualified staff due to low wages (Begembetov and Vinogradova 2006).

The study was conducted in the format of an ecotourism expedition to Ile-Alatau national park. The expedition was organized with the following purposes: collection and systematization of data on tourism potential of the Kazakhstani part of Northern Tyan-Shan; development of ecotourism routes; production of cartographic material; monitoring of the behavior of the snow leopard; identification of Edelweiss's types; collection of medical-biological data and participation in sport competition. Only mountaineers eligible to participate in mountain tracks of the 6th category (the most difficult one on the grading scale 1-6) and those eligible to lead mountain tracks of the 3rd category could participate in this trip. There were 14 participants in the expedition, the total length was 167km, trip duration - 20 days.

The planned route was successfully completed by all the participants, 20 ecotourism routes were tested and recorded with details such as time to the site, length, best time of the day to start the journey, description of relief, optimal traverses, safety issues as rockfalls and avalanches. Two passes were tracked for the first time, descriptions were completed and registered in the Federation of Sport Tourism and Tourist Multiathlon of Republic of Kazakhstan. The diary of the group leader contains such information as presence of other tourist groups on the top (by picking

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<sup>1</sup> Tourism Research Centre, Kazakh Academy of Sports and Tourism, Kazakhstan, 050022 Abay av. 83/85 corner Baitursynov, [vukolov\\_vn@mail.ru](mailto:vukolov_vn@mail.ru), [dilya\\_woodward@mail.ru](mailto:dilya_woodward@mail.ru)

a note at the top and leaving a new one), info on river crossings (time of the day), description of optimal routes thorough the passages and mountain tops.

The main outcomes of the expedition included the following: the guidebook titled "Across Northern Tyan-Shan" that contains the description of 20 ecotourism routes of different degrees of difficulty, assessment of technical difficulties of passes and ascents, tourist maps and illustrations, video film about the expedition, 500 photos, data on the behavior of snow leopard in natural habitat, herbarium of edelweiss etc.

The results of the expedition allowed us to develop and test 20 optimal ecotourism routes for the territory of Ile-Alatau national park. The list of necessary equipment and their weights, as well as best sites for food and equipment depots were prepared.

It was concluded, that the territory of Ile-Alatau national park has a great potential for mountain ecotourism and mountaineering. Since the last expedition during Soviet times, the relief and other physical geographical characteristics have changed and needed to be reflected on the maps. Park's administration can use the developed routes and cartographic materials in their ecotourism programmes and promote ecotourism opportunities for people in different physical condition – from amateurs to professional mountaineers.

## References

- Dzhanyspayev A. (2006). Ile-Alatau National Park. In: A. Ivashenko (ed.), Nature Reserves and National Parks of Kazakhstan, p 216-225. Almaty: Kitap. (Джаныспаев А. (2006). Иле-Алатауский национальный парк. В А. Иващенко (ред.), Заповедники и Национальные Парки Казахстана, с 216-225. Алматы: Китап.)
- Iskanderov, R. (2009). Parks are marching... Where? [www.gazeta.kz](http://www.gazeta.kz) 14, April 2009. (Искандеров, Р. (2009). Парки маршируют... Куда?" [www.gazeta.kz](http://www.gazeta.kz), 14 Апрель 2009)
- "For these are our mountains", [www.greensalvation.org](http://www.greensalvation.org), 22 June 2009. («Ведь это наши горы», [www.greensalvation.org](http://www.greensalvation.org), 22 июня 2009).
- Begembetov, A. A., Vinogradova, V. P. (2006). The role of ecotourism in preservation of biodiversity of ecosystems in Ile-Alatau state national park. In: Preservation of Biodiversity of Mountain Ecosystems of Kazakhstan, p 154-158. Almaty. (Бегембетов, А.А., Виноградова, В.П. (2006). Роль экологического туризма в сохранении биологического разнообразия экосистем Иле-Алатауского государственного национального природного парка. В: Сохранение биоразнообразия экосистем горных территорий Казахстана, с. 154-158. Алматы.)

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