Experiencing nature: the recognition of the symbolic environment within research and management of visitor flows

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Abstract
Insight in and understanding of visitor use, including temporal and spatial distributions, is necessary for sustainable recreational use and effective park management. A visitor uses the physical environment of e.g. a National Park, however, his behaviour is not only a result of the objective or measurable physical environmental characteristics, but is also based on the meanings and values he ascribes to the environment. This symbolic environment can be understood by considering four values: use value, perception value, narrative value and appropriation value. Data were collected by means of questionnaires and GPS, and statistical analyses were performed according to environmental values, demographic visitor characteristics and spatial behaviour. This research reveals complex relationships between these variables, and suggests also the importance of research into visitor experiences, because demographics alone do not give complete insight into visitor perception and spatial behaviour.

Keywords: social construction, nature experiences, symbolic landscape, environmental values, human-environment interaction

1 Introduction

Large visitor numbers in protected nature areas can threaten the integrity of the resource and create problems for the management of these areas. A comprehensive understanding of visitor use, including visitors’ temporal and spatial distribution is fundamental for effective park management.

Traditionally, visitor management focuses on activities. Most protected nature areas offer facilities for common recreational activities, such as hiking, cycling and horse riding. These facilities are planned based on user surveys, traffic counts and manager expertise. However, a systematic visitor monitoring is rarely carried out and often the results from improvised one-day countings are used for management decisions MUHAR et al. (2002), that may very well influence user experiences, crowding, and movement patterns. In general, one could argue that there is little understanding of actual tourist behaviour at particular destinations on the micro scale (O’CONOR et al. 2005), which complicates both day-to-day management as well as the development of computer-based modelling as a possible effective tool in visitor management (GIMBLETT 2005).

Visitors use protected nature areas not only as physical setting for recreational activities, but attach meanings and emotions to them as well (DAVENPORT and ANDERSON 2005). Nature experiences are largely determined by the subjective interpretation of the physical environment (WILLIAMS and PATTERSON 1999; ELANDS and LENGKEEK 2000). For
example, a hiker might have travelled a long distance to visit the fen from which her grandfather had 50 years previously excavated peat. Another hiker, from a neighbouring town might be going to the same place to walk on the boardwalk about which he had read in the local newspaper. This example shows that recreationists interpret and value the environment in different ways. Their varying interpretation, which can be conceptualized as the symbolic environment, may result in different patterns of spatial behaviour.

In general, management plans and simulation models represent the physical environment (a system of trails, roads and/or facilities) and model the behaviour of visitors as they interact with trails, roads and facilities. In this paper we want to clarify that the physical environment is endowed with meaning, and that an understanding of the different meanings and values of the environment – the symbolic environment – is crucial for understanding visitor behaviour and consequently for defining visitor groups. The question posed in this paper is:

To what extent is it possible to characterise visitors on the base of their interpretation of the symbolic meanings of a protected nature area, and how does this interpretation relates to visitor behaviour?

First, we conceptualize the symbolic environment by means of four environmental values that form meaning in the interaction between recreational visitors and the physical setting of their behaviour. In section 3, we will introduce our case study area National Park Dwingelderveld, as well as the methods we have used. Our analysis initially focuses on the underlying constructs that constitute environmental values and on the typological classification of different interpretations of the symbolic environment. Secondly, we examine the relationship between types of symbolic environment as construed by visitors having different demographic profiles. Finally, we will explore the extent to which different interpretations of the symbolic environment as well as demographic visitor characteristics can explain visitor behaviour. In the last section we discuss our main research findings and focus on implications for visitor management.

2 Theoretical context

Because places contain meanings and emotions as well as represent settings for behaviour, reality cannot be objectively known and understood (DAVENPORT and ANDERSON 2005). The physical environment assumes meaning as people interact with environment (STOKOLS 1978). This implies than an environment may have different meanings to different persons. Cultural codes and individual characteristics such as expertise and education have a powerful role in the definition of symbolic environment (PENNARTZ 1992; NASSAUER 1995). BERG (1999) adds also other personal characteristics, such as as age, environmental concern and socio-economic status. This means that the physical and social environment, the so-called symbolic environment, are inextricably related and must be studied together (MOOS 1975). The symbolic environment can be relevant to its users in a variety of different ways.

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1 This paper is part of the PhD project of Ramona van Marwijk that aims to theoretically and empirically ground relationships between the values of landscape characteristics and patterns of visitor use, in order to improve a management tool (simulation model) for effective ecosystem management (2005–2009).
According to LENGKEEK et al. (1997) four different values, that are connected to an environment, can be distinguished:

- Use value: instrumental or economic value, this value refers to functions;
- Perception value: this value refers to qualitative schemata or filters people have in their minds when evaluating an environment (e.g. good or bad, beautiful or ugly);
- Narrative value: this value refers to the “knowing” of specific stories and interesting facts about an area; and
- Appropriation value: the intensity of being mentally attached to the environment.

We consider these four values as useful when describing the symbolic environment as they are transactional: they reflect the interplay of human and environmental forces. Based on interpretations of these values, an environment can acquire a number of totally different significances or meanings.

Two of these values go back as far as the book De Architectura, written by the Roman writer Vitruvius some decades B.C. He distinguished between utilitas (use, functionality), venustas (beauty) and firmitas (solidity). The last quality has been interpreted in our times as relating to sustainability and points to the perspectives of maintaining functionality and beauty over a longer period of time. This notion represents a different order of meaning, and we have consequently left firmitas out of this list.

The use value of an area is basically determined by the opportunities it offers for activities. A tourist product consists of core resources and supporting elements (RITCHIE and CROUCH 2005). A National Park can be seen as a core element (attracts visitors because of being a protected nature area), while the paths, parking places and way markers are supportive elements. A second important concept with regard to the use value of nature areas is orientation (LYNCH 1960). The use value of an environment depends upon the interpretative processes of the individual: as a visitor’s cognitive representation of the spatial environment influences his opinion on the appropriate or possible use of it. Recent research shows that landmarks are most distinct anchor points for tourists in nature areas (YOUNG 1999). Paths, signage and marked trails can also serve as anchor points for orientation and way finding in protected nature areas.

Within environmental psychology, the perception value can be explained by the arousal theory of BERLYNE (1974), prospect-refuge theory of APPLETON (1996) and the desire of people to understand and explore their environment (KAPLAN and KAPLAN 1989). The environment has the potential to stimulate a person’s level of arousal. Over-stimulation or under-stimulation creates uneasy feelings. The “right” level of arousal creates a “hedonic value”. BERLYNE gives an evolutionary explanation for this preferred level of stimulation from the environment. APPLETON (1996) suggests that evolution of homo sapiens in the savannah of East Africa created a “hard wired” neurological preference for half-open landscapes in which people could simultaneously gain visual prospect over and refuge from hazards and other impediments to continued evolution. KAPLAN and KAPLAN (1989) expand this theory by claiming that evolution required an ability to simultaneously understand and explore environment. Their concepts of coherence, legibility, complexity, and mystery connote dimensions in the environment that lead to the development of understanding and encourage further exploration in both the two-dimensional pictorial visual array and the three-dimensional spatial array presented by environment. These psychological theories claim the existence of universal mechanisms within all human beings. The underlying assumption of the evolutionary approach is that landscape perception relates directly to physical attributes of the natural landscape. In Dutch research, this approach is theoretically and empirically elaborated by means of eight indicators, i.e. abundance of vegetation, degree of naturalness, degree of variation, abundance of water,
abundance of relief, degree of landscape identity, degree of skyline disturbance, and degree of noise pollution (Buijs and Kralingen 2003). Jacobs (2006) states that, although this theory ignores socio-cultural aspects in landscape appreciation, research suggests that these indicators are able to successfully predict the average perception value of the landscape. Theories on the social and cultural backgrounds of appreciation and preferences underline the differences between individuals according to groups to which they belong. Bourdieu (1979) pointed out that cultural preferences are passed on from generation to generation in the form of capital and embodied in “habitus”. Preferences are linked to lifestyles, which are characteristics of groups or “social fields”. These lifestyles are constructed and reproduced in social and economic processes.

Understanding beauty as the perception of aesthetics is not entirely unproblematic. Our appreciations are not only mobilized by physical appearances, but also by the cognitive dimension of “knowing” what the object is about. MacCannell (1989) introduces the concept of “attraction”, the notion that the narratives related to objects define whether any object (landscape, building, etc.) becomes articulated as an object that is attractive to tourists. The observer who does not know the narratives of an object is able to experience beauty, which is related to general mental schemes of appreciation. The same observer, nevertheless, is not able to discern the object’s touristic attractiveness. This notion made us separate – at least analytically – the perception value from narrative value. The narrative value refers to the construction of specific stories on an environment. It is in many ways embedded in the very concept of landscape itself (see Schama 1995). The physical appearances of natural environments are linked to symbols, meanings, talks and narratives, which are stored in the human mind and form the basis for understanding or even “reading” a landscape. This reading of our natural environment is dynamic, as over time natural settings accrue new layers of symbolic representations (Corner 1999). These layers of symbolic representations of our natural environment become especially relevant for tourism and recreation purposes (MacCannell 1989; Lengkeek et al. 1997). Interpretive facilities such as sheets and brochures, maps, roadside signs, walking trail signs and leaflets, information centres, and guided walks and talks (Ballentyne et al. 1998) are considered to be relevant in the construction and dissemination of collective stories. When the cultural stories or history of an area is recognizable for people (i.e. it can be “read” in the environment), this is part of the narrative value (Buijs et al. 2004; Stichting Natuur en Milieu 2005). Besides those collective stories, people also have personal stories and memories upon which places are valued.

Finally, the appropriation value refers to the fact that people can symbolically “own” the environment (Broower 1999). This mental ownership is not intrinsic to the physical setting itself, but resides in human interpretations of the environment, which are constructed through experience with it. It is an evaluative (based on what you experience …) and responsive (… you develop a special bond with a place) form of transaction (Stokols 1978). Place attachment is a positive emotional bond that develops between people and specific places. Through these bonds, people acquire a sense of belonging and purpose that gives meaning to their lives (Relph 1976; Tuan 1977; Bricker and Kerstetter 2000). However, the plurality of the phenomenon of people’s emotional bonds to places is diversely framed and studied by different researchers2. In this research, we build upon conceptual work by Stedman (2003) who demonstrated in his social psychological study that landscape...

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2 “Geographers have commonly taken a phenomenological approach, examining how spaces become places through personal activities and experiences. … Sociologists have applied a social constructivist perspective, exploring the shared values and symbols that when applied to a landscape creates common meanings. … Psychologists have taken a cognitive approach to sense of place.” (Davenport and Anderson 2005: 627)
characteristics underpin place attachment, which can be measured by asking people the importance of a specific place to them. People are more emotional in their experiences when they consider something their own.

By introducing the symbolic environment in recreation research and management, we assume that the four values can be applied when developing visitor typologies according to their prevailing value(s). For managers it is interesting to know which values – constituting the symbolic environment – are related to spatial behaviour patterns. The symbolic environment is not an independent “invention” of the visitor; it is based on the physical landscape that is managed by government agencies and non-governmental organizations. This suggests that managers can influence visitors’ multiple symbolic landscapes and consequent behaviours in the environment.

A second assumption of our study is that there is a relation between specific meaning of the environmental values and the acquaintance of visitors with the area (first time visitor vs. repeater). The use value is a general value of importance for every visitor, but we expect it to be especially important for first time visitors, since repeaters know about the possibilities in the area and get lost probably less easy. Consequently, they might be more critical about the possibilities that the environment offers to do whatever they wanted to do. The same accounts for perception value. First time visitors are more easy to steer than repeaters (MARWIJK and ELANDS 2006) and more inclined to follow marked trails and visit “hotspots” that might be more busy, which negatively influence their experience. We expect that narrative and attachment values become more important for visitors who are more acquainted with an area.

3 Methods
3.1 Study area

Our theoretical assumptions have been tested in a typical Dutch nature area “National Park Dwingelderveld” (NPD, see http://www.nationaalpark-dwingelderveld.nl). This Dutch nature area – containing 3700 ha and situated in Drenthe, a province in north eastern Netherlands – was chosen because of its recreational attractiveness and ecological quality. The area is ecologically important as it is the largest wet heath land area in Northwest Europe (1550 ha). The heath land area is bordered by forest (2000 ha). The NPD is also a Natura2000 area, which means it is part of a European network of important nature conservation areas. The NPD receives at least 1.6 million visitors yearly. It is a typical Dutch nature recreation area with an extensive recreational network for both short strolls (60 km marked trails that are each less than 7 km in length) and long walks, for cycling (“normal”, racing, mountainbiking) and for horse riding. Visitors can get information in the visitor centre or in two un-staffed information centres. They can watch birds from two bird watch huts. Two sheep herds that contribute to the management of the heath land are very popular tourist attractions. The increased use of the area by recreationists has led to fragmentation of the heath land area and populations of animals have become isolated and threatened with extinction (Provincie Drenthe 2000). At the same time, its National Park status implies that both recreation and ecology are important management goals.

In the Netherlands, it is compulsory for visitors to confine their hikes to only designated paths. A follower of a “marked trail” is one whose visit takes place on a trail that is identified and designated by managers. Connoisseurs tend to construct their journeys by piecing together various parts of the entire path system, whether marked or not.
3.2 Research approach

Our theoretical assumptions concentrate on the interaction between the visitor’s perception of the symbolical environment and their spatial behaviour. Two instruments have been developed to measure these concepts:

- a questionnaire with questions on motivations, environmental values, behaviour (e.g. entry point, destinations, attractions visited, marked/unmarked trails), special places, and socio-demographics;
- a geographical position system (GPS) device carried by the visitors during their visit registered their spatial behaviour. The questionnaire contains some behavioural information as well (spatial goal in visit, places visited, following of marked trails, choice of starting point, place of rest during hike).

The survey population was targeted toward hikers as they form the largest part of visitors to Dutch National Parks. Moreover, – contradictory to bikers – their points of origin and departure are often the same, thus making it easier to return the GPS device to the researcher. Since it is not possible to stay overnight in the park, the study automatically focuses on day visitors. Visitors have been asked to participate in the research at five (of the in total nine) different entrances in the park; two main entrances close to a visitor or information centre, and three smaller ones. The five parking places have been chosen such that they spatially cover the entire area (i.e. visitors can visit the entire park from the five car parks).

The survey was carried out during seven days (weekend and working days) in spring and summer in 2006. The total research population consists of 461 hikers. The response rate of the survey is 63%. When they arrived, visitors were asked to carry a GPS device during their visit. They completed the questionnaire when they returned the GPS device at the conclusion of their visit. The final sample contains responses from 461 hikers. Survey participants are evenly divided between gender and their age ranges from 17 to 85 years. As the number of available GPS devices was limited, only 400 hikers carried a GPS during their visit.

The sampling strategy in this study produces an opportunity sample. Only people who self-selected to spend their leisure time at the time of the research in the research area could be interviewed. Because the sample is not a probability sample, the findings are generalizable to only groups possessing similar characteristics. However, the goal of the study was not generalizability, but the exploration of potentially significant patterns and correlations among key variables; it was assumed that a convenience sampling method is adequate for this study.

3.3 Data analysis

The four values of symbolic environment were measured using a series of 42 semantic differential scales, which each contained five points. A semantic differential measures people’s reactions to stimulus words and concepts in terms of ratings on bipolar scales defined with contrasting adjectives at each end (HEISE 1970). Subjects are less likely to record socially agreeable responses on semantic differential scales than on Likert-scales, because they have to form a discrete opinion on the judgement in question. The semantic differential scales were drawn from literature review and expert advice. As a result, a total of 42 items were defined: 12 items related to use value, 13 items related to perception value, 9 items related to narrative value and 8 items related to appropriation value.
Using factor analysis, we approached the data in a hierarchical fashion. We wanted to see whether we could interpret constellations of items relative to the four environmental values, and whether there are independent dimensions within any of the environmental values. The 42 items were factor analysed using Varimax rotation. This permits the reduction of a large number of variables into a small number of latent dimensions. This analysis produced 12 independent factors having an Eigenvalue exceeding 1.0.

Items loading on a specific factor did indeed bear content relationships with one of the environmental values. Four of the factors describe characteristics relating to use value. Another four of the factors describe perception value. Narrative value is represented by three factors. Appropriation value contains a single factor. From this we inferred the existence of multiple dimensions within the environmental values.

These findings suggested a second set of analyses of the items that loaded on factors related to each environmental value. Thus the 10 items loading on the four factors of use value were analysed using Varimax rotation. The same procedure was applied to the 17 items loading on the four factors of perception value, as well as the eight items loading on three factors of narrative value. Items that resulted in a single factor solution and items with loadings of 0.4 or greater on multiple factors were deleted from the second round of factor analyses (NUNNALLY 1978; HAIR et al. 1995). In total, five items were deleted. As a result of this second round of analyses, three factors were derived to describe use value, four factors were derived to describe perception value, two factors characterised narrative value, and appropriation value was represented by a single factor (see Table 1). Some might argue that we “mined” the initial factor analysis to derive the second set of factors. However, the items loaded onto discrete factors that appeared to describe independent dimensions of the four environmental values. Our procedures were informed by both a priori logic and empirical analysis of the data.

The results of the second round of factor analyses were used to create scales that characterise an individual’s perspective with respect to each factor. Among the items loading on a given factor an unweighted average item score was calculated. These unweighted factor scores provide a basis for describing subjects relative to the 10 derived factors.

Stepwise cluster analysis was used to group visitors based on the unweighted factor scores. First, a hierarchical cluster analysis was applied to determine, based on the dendrogram and the agglomeration schedule, the appropriate number of clusters. Ward’s method was adopted to keep the clusters similar in size. Second, on the basis of the outcome of the hierarchical cluster analysis, a selected number of K-means cluster analyses were performed. The number of clusters that made most sense with respect to the contents was chosen. The result of this cluster analysis was the derivation of a visitor typology based upon their perspectives on the four environmental values.

Next, correlations were calculated between the visitor typology, demographics (age, place of residence, group composition) and behaviour (entry point, weekend/week day, duration of visit, destinations/goals, marked/unmarked trails, attractions visited). Hiked lengths were calculated from the GPS data. Finally, only statistically significant findings are presented (P < 0.05) in Tables 2, 3, 4 and 5.

In addition, the results of the study presented in Chapter 4 have been discussed with two nature managers separately, who are involved in and responsible for nature management in NPD.

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4 Several items loaded on factors that were related to environmental values other than the one to which they were initially hypothesized to relate. For example, two of the items hypothesized to relate to use value, loaded on a factor related to perception value, one of the narrative value items loaded on the appropriation value factor, and finally two appropriation items loaded on a perception value factor.
4 Results

4.1 Constructs of symbolic value

The first analysis was directed towards the analysis of the underlying dimensions of the symbolic environment. We have analysed the four environmental values through factor analysis. Table 1 shows the factors for each environmental value:

- the *use value* of a nature area consists of three factors: orientation (finding your way), facilities (to eat, relax, toilet), and accessibility;
- the *perception value* contains four factors: attractiveness (like variation, beauty), tranquility or busy-ness of the park, naturalness (natural character of the park), and annoyance (by both other people and management actions);
- the *narrative value* combines two factors: stories (general stories, cultural history) and special (prototypical of landscapes in this part of the Netherlands, uniqueness of the park within the country);
- the *appropriation value* reveals a single, highly reliable dimension, which is consistent with previous research (STEDMAN 2002).

All factor analyses explain more than 54% of the total variance, which is considered to be a moderate to good result for field research (HAIR et al. 1995). The KMO (Kaiser-Meyer-Olkin) criteria results were strong (between 0.7 and 0.8) and very strong (>0.8) (ibid.). The items defining each of the ten factors generally have reliability coefficients exceeding 0.6 and in three instances exceed 0.7. For evaluating reliability in cognitive tests (e.g. intelligence tests), a Cronbach’s Alpha reliability coefficient exceeding 0.8 is appropriate. When exploring psychological construct values between 0.6 to 0.7 are acceptable (KLINE 1999). The items on the “non-annoyance” factor have a lower reliability coefficient, but they are exploring diverse themes. The development of these items needs improvement.

4.2 Perception of the symbolic environment

Visitors perceive the environmental qualities of the National Park Dwingelderveld differently. Based on a stepwise cluster analysis, we were able to identify four different groups (Table 2), which we will describe subsequently. The defined names of the four groups are based on attributes which are presented in Table 2 and described below. To vivify our description, we will use quotations of the respondents that were also gathered by means of the questionnaire. The symbols in Table 2 are derived by subtracting the total mean (of all four groups on all 10 factors) from the mean for a specific group on a specific factor, and dividing by the total standard deviation (of all four groups on all 10 factors). This standardisation of standard differentiations enables comparison of symbols between both groups and factors.
Table 1. Environmental value dimensions, statements and statistics.
CA = Cronbach’s Alpha; EV = explained variance; KMO = Kaiser-Meyer-Olkin criterion

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Statements</th>
<th>CA</th>
<th>EV (%)</th>
<th>KMO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use value</td>
<td>Good orientation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Many signs</td>
<td>0.75</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Many recognition points/land marks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Many (marked) routes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Difficult to lose track</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Many recognition points/land marks</td>
<td>0.49</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Many toilets</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Many possibilities to relax</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High accessibility</td>
<td>Many parking places</td>
<td>0.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very accessible</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Attractiveness</td>
<td>Exciting</td>
<td>0.62</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beautiful</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Variation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cosy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tranquillity</td>
<td>Quiet</td>
<td>0.63</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Quiet paths</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Non-touristic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Few people</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naturalness</td>
<td>Natural</td>
<td>0.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unspoiled nature</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-annoyance</td>
<td>The management by the State Forest Service and Nature</td>
<td>0.34</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Monuments does right to the area</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>For me other visitors are not like intruders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>There are many similar persons like me</td>
<td></td>
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<tr>
<td>Familiar with cultural history/stories</td>
<td>I know about the writer who lived in the house on the Benderse Berg</td>
<td>0.71</td>
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<tr>
<td></td>
<td>I know many famous stories on NPD</td>
<td></td>
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<tr>
<td></td>
<td>I know why the Comm. Cramerpad is known for</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>The cultural history of NPD is recognizable for me</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Narrative value</td>
<td>Uniquely prototypical</td>
<td>0.56</td>
<td></td>
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<tr>
<td></td>
<td>The sheep herds are necessarily part of NPD</td>
<td></td>
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<tr>
<td></td>
<td>NPD is typical for Drenthe</td>
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<tr>
<td></td>
<td>NPD is unique; there are no similar areas in the Netherlands</td>
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<tr>
<td></td>
<td>The radio telescope is necessarily part of NPD</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Personal attachment</td>
<td>I feel very attached to NPD</td>
<td>0.86</td>
<td></td>
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<td></td>
<td>I miss it when I haven’t been here for long</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>NPD is my favourite place to be</td>
<td></td>
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<tr>
<td></td>
<td>I live here or want to live here</td>
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<tr>
<td></td>
<td>I come here to reminisce</td>
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<tr>
<td></td>
<td>NPD is like a home to me</td>
<td></td>
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<tr>
<td></td>
<td>I have personal memories to NPD</td>
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<td></td>
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</tr>
</tbody>
</table>
Table 2. Standardized comparison of environmental values between clusters.

\[0 = 0; +/– \text{ difference less than 0.5 SD; ++/– difference between 0.5–1.0 SD; +++/– difference more than 1.0 SD}\]

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Happy hiker</th>
<th>Connoisseur</th>
<th>Demanding hiker</th>
<th>Disturbed hiker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use value</td>
<td>Good orientation</td>
<td>+</td>
<td>+</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Many facilities</td>
<td>+</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>High accessibility</td>
<td>+</td>
<td>0</td>
<td>--</td>
</tr>
<tr>
<td>Perception value</td>
<td>Attractiveness</td>
<td>++</td>
<td>+</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Tranquility</td>
<td>+</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td></td>
<td>Naturalness</td>
<td>+</td>
<td>+</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Non-annoyance</td>
<td>+</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Narrative value</td>
<td>Familiar cultural history/stories</td>
<td>–</td>
<td>+++</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Uniquely prototypical</td>
<td>++</td>
<td>+</td>
<td>--</td>
</tr>
<tr>
<td>Appropriation value</td>
<td>Personal attachment</td>
<td>–</td>
<td>+++</td>
<td>--</td>
</tr>
</tbody>
</table>

**Happy hiker (31%, N = 112)**

The happy hiker is well oriented in the NPD and recognizes the existence of many facilities (to eat, to relax, toilet). The highly accessible park is perceived by the happy hiker as natural and beautiful. The area is also tranquil and the happy hiker is not annoyed by management actions, or by other visitors. Although the happy hiker is not familiar with stories about NPD, nor is he attached to it, he thinks the park is prototypical of landscapes in this part of the Netherlands, but otherwise very unique within the country. The happy hiker points out that he likes to maintain the area as it is (“keep it like this!”) and that the park is well managed. The number of organized activities should not be increased, because that will influence the peace and quietness in the area. However, there is a need for extra benches and garbage bins. As almost all environmental values are sufficiently recognized, the happy hiker seems to have an unproblematic experience of nature.

**Connoisseur (25%, N = 89)**

The connoisseur also finds his way easily in the area, since he can orientate himself easily. The connoisseur believes the area is highly accessible. The connoisseur perceives facilities to be less plentiful than the happy hiker. Interestingly, the connoisseur finds the area less attractive than the happy hiker. Still the NPD is natural and neither busy nor noisy. The connoisseur is annoyed by both management actions and other visitors. The connoisseur possesses a lot of knowledge about and is highly attached to the park. He perceives the NPD as prototypical of landscapes in this part of the Netherlands, but otherwise very unique within the country. The connoisseur points out the importance of the park as a nature area, but that it should not be turned into a “primeval forest”. He can be disturbed by the logging of exotic trees and a rising of groundwater level makes the area less accessible and attract mosquitoes. On the other hand the area should not be too organized and touristy.

**Demanding hiker (25%, N = 92)**

The demanding hiker is much less oriented in the park than are other visitors types. The demanding hiker recognizes fewer facilities and less accessibility compared to the other hiker groups. Although the NPD is very quiet and calm, the demanding hiker rates its attractiveness the lowest of all groups. He sees the park as less natural than the happy hiker and the connoisseur. Like the connoisseur, the demanding hiker is also annoyed by management
actions and other visitors. He has little knowledge of the area, and thinks the park is not very prototypical of landscapes in this part of the Netherlands, or unique within the country. He does not feel attached to the area. The demanding hiker desires more and clearer signage in the area. He is easily irritated by issues such as a closed tourist information office in neighbouring villages on Sundays, the size of the places to eat (too small), the menu (limited offer), bikers on walking tracks, wet paths, and areas that are closed for hikers.

**Disturbed hiker (19 %, N = 68)**

Like the happy hiker, the demanding hiker is well oriented in the highly accessible park and perceives the existence of many facilities. At the same time the park is perceived as very busy and noisy, more artificial than natural and less attractive than is true for the happy hiker, connoisseur or demanding hiker. The disturbed hiker is more annoyed by management actions and other visitors than the other hiker groups. He is not familiar with stories and background of the park and the park is not very prototypical of landscapes in this part of the Netherlands, or unique within the country. He does not feel attached to the NPD. The disturbed hiker would like to see various user groups (e.g. hikers, bikers, dog walkers) separated spatially from one another. He is also annoyed by the noise of an adjacent highway. The disturbed hiker believes that the area is quite accessible; it is easy to follow marked trails, but not very exciting. The disturbed hiker would like to leave nature more to itself.

From the factor analysis we can observe that the National Park Dwingelderveld is valued in different ways. Visitor experiences with nature vary from problematic to uproblematic. An unproblematic experience of nature means that all values are perceived in the landscape in a positive manner. The happy hiker has the most unproblematic experience of nature. Although he feels not very attached to NPD, he perceives the park to be more attractive than any other visitor group. The other groups are more critical. The connoisseur, who is most familiar with and feels most attached to the park, is more critical towards management of the area. The connoisseur’s high familiarity with the park apparently grants him the prerogative of being critical. The demanding hiker is critical towards the availability of services and facilities relating to comfort. Although the area is perceived as tranquil and natural, the demanding hiker rates the park the least attractive compared to other groups. The disturbed hiker is critical towards crowded and noisy places and the naturalness of the park. The views of the demanding and disturbed hiker seem to be a result of high expectations and too little “knowledge/acquaintance” with the area. They may feel having unable to escape places perceived to be too touristic or to find “user friendly” facilities and services.

**4.3 Demographic characteristics of visitor types**

Although the above description of visitor types informs nature managers on how visitors consider the area they visit, it may be difficult for the manager to recognize them from their appearance. Age and group composition are more easily recognized visitor characteristics. Do visitors with children perceive the area differently than for example a person alone? Table 3 shows that indeed they do.

The adults who come alone are mainly connoisseurs, while families with child(ren) tend to be evenly divided among happy, demanding or disturbed hikers. Similar to single adults, elderly can also be marked as connoisseurs. Most of the other couples (under 65 years of age) are happy hikers. Larger groups of adults are mainly either connoisseurs or happy hikers. While all these relationships are statistically significant, they are not one-to-one. More than adults alone and adult couples, the other three visitor groups (elderly couples,
group adults and families with children) tend to be diverse relative to the mix of values they derive from their nature experiences. This interweaving of different experiences within demographic groups makes it difficult to classify visitors based solely on demographic characteristics. It suggests also the importance of research into visitor experiences, because members of a single demographic group may derive a variety of meanings from their nature experiences. PRENTICE et al. (1998) found similar results for visitors to heritage parks.

Table 3. Demographic characteristics of visitor types.
Cramer’s V demographic: 0.208 (P < 0.001)

<table>
<thead>
<tr>
<th>Demographic:</th>
<th>Happy hiker</th>
<th>Connoisseur</th>
<th>Demanding hiker</th>
<th>Disturbed hiker</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult alone (16+) (N = 34)</td>
<td>6%</td>
<td>53%</td>
<td>32%</td>
<td>5%</td>
<td>100%</td>
</tr>
<tr>
<td>Elderly couple (65+) (N = 32)</td>
<td>25%</td>
<td>35%</td>
<td>28%</td>
<td>13%</td>
<td>100%</td>
</tr>
<tr>
<td>Adult couple (&lt; 65 years) (N=164)</td>
<td>40%</td>
<td>22%</td>
<td>21%</td>
<td>17%</td>
<td>100%</td>
</tr>
<tr>
<td>Group adults (&gt; 2 persons) (N = 37)</td>
<td>32%</td>
<td>32%</td>
<td>24%</td>
<td>11%</td>
<td>100%</td>
</tr>
<tr>
<td>Family with child(ren) (N = 92)</td>
<td>26%</td>
<td>12%</td>
<td>32%</td>
<td>30%</td>
<td>100%</td>
</tr>
</tbody>
</table>

4.4 Additional characteristics of visitor types

Other factors that help managers identify visitor groups are the place of residence (in the vicinity of the protected nature area or further away), whether the visitor has been to the area before, and the frequency of visiting a specific park (Table 4). Interestingly, 71% of the connoisseur lives in the region of the NPD compared to less than 29% of each other group. Also, most connoisseurs (95%) are repeated visitors, whereas at least one third of the other groups visited the protected nature area for the first time. Almost half (49%) of the demanding hiker group is a first-time visitor. This might explain why this group focuses on use values of the area.

Table 4. Additional characteristics of visitor types.
Cramer’s V local living: 0.425 (P < 0.001), first time visitor: 0.351(P < 0.001), visit frequency: 0.353 (P < 0.001)

<table>
<thead>
<tr>
<th>Happy hiker</th>
<th>Connoisseur</th>
<th>Demanding hiker</th>
<th>Disturbed hiker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local living (%)</td>
<td>29</td>
<td>71</td>
<td>20</td>
</tr>
<tr>
<td>First time visitor (%)</td>
<td>32</td>
<td>5</td>
<td>49</td>
</tr>
<tr>
<td>Visit frequency (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Seldom (once a year)</td>
<td>50</td>
<td>14</td>
<td>62</td>
</tr>
<tr>
<td>– 2 to 12 times per year</td>
<td>41</td>
<td>35</td>
<td>25</td>
</tr>
<tr>
<td>– Weekly/daily</td>
<td>9</td>
<td>51</td>
<td>13</td>
</tr>
</tbody>
</table>
The connoisseur is a very frequent visitor of the park; more than 50% come at least every week. Although the happy hiker is a less regular visitor than the connoisseur, they visit the park more frequently than the demanding or disturbed hiker. Sixty-two percent of the later groups report themselves as seldom visiting the park. The relation between number of visits, knowledge and familiarity has also been found by Hwang et al. (2006 p. 1060): “The more familiar the tourist is with the location, the more knowledge one has of different kinds of local activities and attractions”. They know not only the best places to visit, but also the places that should be avoided (because of crowding, noise, non-naturalness etc.).

4.5 Visitor behaviour

The starting point of the hike determines to a large extent which type of landscape they will experience, which kind of trails are available, and which kind of attractions are possible to visit.

Two of the five parking areas included in this study can be classified as large (>100 car places), well equipped (information centre, catering), and well advertised from the highway. The other three are relatively small with few facilities (only picnic tables). The data show a strong relation between user types and starting point of the hike (Table 5). As expected, the connoisseur knows his way and consequently tends to use the smaller parking facilities. Surprisingly, a large part of the demanding hikers find their way to the smaller and more poorly served parking places. Visits of the disturbed hiker start at bigger parking places. This might be a reason for the fact that this group is mostly annoyed by disturbance of other people and thinks that the area is very busy and noisy. The happy and the disturbed hiker start also predominantly at the large parking places. When they start at the main visitor centre, it is not because of its accessibility but because of its proximity to a popular attraction relating to the park’s sheep herds. Happy hikers choosing to start at a small parking area are motivated by its high level of accessibility. Except for the connoisseur, most visitors walk marked trails. This is not surprising since the connoisseurs are most acquainted with the area. This reinforces the idea that familiarity increases the possibility of “off the beaten track” behaviour (Hwang et al. 2006).

Significant differences exist in the type of facilities visited by different visitor groups. While the disturbed hiker goes most frequently to the visitor centre, the connoisseur and the demanding hiker visit the visitor centre the least. The tea house, an establishment that has served refreshments to park visitors for many years, is most popular with the happy hiker. It is popular among hikers who want to meet like-minded others. Also the disturbed hikers are attracted to the tea house. This may be due to the fact that the disturbed hikers tend to begin their visit at the largest entry area, which is close to the tea house. The tea house is situated along one of the marked trails. Interestingly, the currant trees are mostly visited by the connoisseur. They are marked on a map, but are probably less an attraction than the sheep farm, which is visited mainly by the happy hiker and the disturbed hiker visitors.

The connoisseur makes the fewest number of stops during the hike. They live close by and visit the area more often than other groups. Connoisseurs spend the least amount of time during their visits (1 hr 36 min.), while disturbed hiker visits are longer in time (2 hr 11 min.). Average hike length is not significantly different among the four groups, ranging from 5.6 km for the connoisseur to 6.5 for the disturbed hiker.

The disturbed hiker comes in larger groups than the other types, and brings more children.
All four groups tend to begin their visits at approximately the same time of day. However, the disturbed hiker visits the park mainly during the weekends, while the other groups come both during weekdays and weekends.

To summarize, in many respects the connoisseur behaves differently compared to the other three groups. He is least likely to follow marked trails, starts at smaller parking places, visits special places, and comes often for relatively short walks that involve few stops. The disturbed hiker and the happy hiker start at large parking areas and they follow marked trails, but they experience the environment quite differently. The park is busier, less attractive and less natural for the disturbed hiker than is true for the happy hiker. The demanding hiker tends to begin his trip at other than obvious parking places. From those places he walks on a marked trail. The question is why this hiker starts elsewhere. Is it that he wants to experience solitude or that he just want to bring his car as “deep” in the nature as possible? What we know is that he is the least positive about the attractiveness of the area. We could argue, based on his focus on comfort factors that this visitor would like to have nature as a convenience product, presented in bite size chunks that can be consumed at any moment.

Table 5. Characteristics hike.

<table>
<thead>
<tr>
<th>Parking place (%)</th>
<th>Happy hiker</th>
<th>Connoisseur</th>
<th>Demanding hiker</th>
<th>Disturbed hiker</th>
</tr>
</thead>
<tbody>
<tr>
<td>– large and equipped</td>
<td>57</td>
<td>39</td>
<td>42</td>
<td>75</td>
</tr>
<tr>
<td>– small and simple</td>
<td>43</td>
<td>61</td>
<td>58</td>
<td>25</td>
</tr>
<tr>
<td>Follow marked trail (%)</td>
<td>73</td>
<td>44</td>
<td>77</td>
<td>69</td>
</tr>
<tr>
<td>Places visited during hike (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– visitor centre</td>
<td>30</td>
<td>19</td>
<td>19</td>
<td>37</td>
</tr>
<tr>
<td>– tea house</td>
<td>20</td>
<td>10</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>– currant</td>
<td>3</td>
<td>12</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>– sheep farm</td>
<td>22</td>
<td>11</td>
<td>8</td>
<td>24</td>
</tr>
<tr>
<td>Make stop during hike (%)</td>
<td>64</td>
<td>40</td>
<td>57</td>
<td>62</td>
</tr>
<tr>
<td>Average time of stay (hrs)</td>
<td>1:56</td>
<td>1:36</td>
<td>1:44</td>
<td>2:11</td>
</tr>
</tbody>
</table>

Day of visit (%)

<table>
<thead>
<tr>
<th>Weekday</th>
<th>Happy hiker</th>
<th>Connoisseur</th>
<th>Demanding hiker</th>
<th>Disturbed hiker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekday</td>
<td>53</td>
<td>56</td>
<td>46</td>
<td>29</td>
</tr>
<tr>
<td>Weekend</td>
<td>47</td>
<td>44</td>
<td>54</td>
<td>71</td>
</tr>
</tbody>
</table>

Group composition (nr)

<table>
<thead>
<tr>
<th>Group size</th>
<th>Happy hiker</th>
<th>Connoisseur</th>
<th>Demanding hiker</th>
<th>Disturbed hiker</th>
</tr>
</thead>
<tbody>
<tr>
<td>– group size</td>
<td>2.6</td>
<td>2.3</td>
<td>3.0</td>
<td>3.4</td>
</tr>
<tr>
<td>– number of children</td>
<td>0.4</td>
<td>0.2</td>
<td>0.8</td>
<td>1.0</td>
</tr>
</tbody>
</table>

5 Discussion and conclusion

Our study suggests that subsets of symbolic meanings of an environment do exist among visitors to a nature area. The types of meaning may be conceptualized around use, perception, narrative, and appropriation value. Furthermore, different types of visitors appear to construct varying symbolic meanings based on these four dimensions. Differences among
visitor groups in their use of these dimensions in constructing symbolic meaning are not necessarily explained by visitor demographics. Variation in construction of symbolic meaning among visitor groups is able to explain some but not all inter-group differences in visitor behaviour.

Interestingly, the use value is not evenly recognized by visitors to protected nature areas where paths, marked trails, signage, visitor centres etc. are present. The interpretation of the different dimensions of the use value (orientation, facilities, and accessibility) differs between visitors. Especially new visitors proved to rate orientation lower than repeated visitors. This is similar to Pearce’s (1981) findings that repeated visitors gained a significantly higher correct orientation score than first time visitors.

The perception value consists of visitor’s views on the attractiveness, tranquillity, naturalness and annoyance (with other visitors and management actions). Perception value is not monolithic. Rather its construction involves varying combinations of these dimensions by different user groups.

These findings are linked to the difficulty of defining parameters for recreational quality, since the naturalness of a national park and its quietness for example are rated differently by different groups of visitors. This finding is similar to Hull’s and Stewart’s finding (1995) that the quality of one’s experience while viewing a landscape seemed to depend on more than just biophysical attributes of the views one encountered. They suggest that “site-independent qualities of the recreation experience (i.e. expectations, fatigue, social dynamics) may influence the overall subjective experience” (p. 422–423). Or as Prentice et al. (1998 p. 14) state, “the same product can be experienced in different ways”.

The different interpretations on the narrative value show that it is not necessary to be familiar with cultural history or stories about an environment to be able to value its uniqueness or its prototypicality for certain landscapes. However – and here narrative value is very much related to appropriation value – it seems that it takes time and personal involvement to develop an understanding of narrative value in the sense of being able to recognize cultural history in an area (Vervloet et al. 2005). It also takes time and personal involvement to develop a sense of place (Hammit et al. 2004; Hammit et al. 2006).

Based on the environmental values, we were able to define four groups of hikers. The happy hiker and the connoisseur experience nature in an unproblematic way, meaning that all values are more or less recognized in the landscape. The difference between these two groups is that the happy hiker has little knowledge of the park (cultural history, stories) and feels less attached compared to the connoisseur. Although those groups show similarities in their symbolic meanings of the environment, they differ in visitor characteristics and spatial behaviour. The connoisseur lives locally (71 %), is a frequent visitor and – therefore – very attached to the park. The happy hiker comes less often, and starts more frequently at large and equipped parking places. They are more likely to walk on marked trails and make more visits to attractions such as the visitor centre, sheep farm and tea house.

The experience of nature is more problematic for the demanding and the disturbed hikers. While the demanding hiker is critical towards supply and comfort of services and facilities, the disturbed hiker is more critical towards crowding, noise and naturalness. Both groups have little knowledge of the area and do not feel attached to the park. The behaviour of these last two groups differs in that the disturbed hiker – just like the happy hiker – more often starts at larger (easier to find) parking places and is more likely to visit popular attractions.

With regard to our first assumption regarding the relationship between symbolic meaning and spatial behaviour, we found that this relationship is not straightforward. Both the happy hiker and connoisseur show resemblances in their views on the symbolic environment, while their spatial behaviour is quite different. We have also seen that small parking
places attract both connoisseurs and demanding hikers (similar behaviours), but the two
groups construct very different patterns of symbolic meanings of NPD. Based on this
research it is not possible to give a well-founded reply to this statement. In other words:
insight into symbolic meaning is not enough to predict spatial behaviour. Therefore, we will
conduct a follow up study to research (inter)relationships between behaviour and environ-
mental features, visitor’s motivations and demographics.

With regard to our second assumption on the relation between symbolic meaning and the
acquaintance of visitors with the area (first time visitor vs. repeater) this research shows that
first time visitors seem to have more troubles orientating themselves. The demanding hiker
group, which tends to consist of first time visitors, rates the area as the least attractive. It
might be possible that their expectations on the provision of facilities and services is not met
by NPD.

We found no one-to-one relationships between symbolic meaning and demographic
characteristics of visitors (see also PRENTICE et al. 1998). This implies that a visitor segmen-
tation based on demographic characteristics does not accurately portray the range of visitor
eriences within NPD (see also FROCHOT 2005). We realize the difficulty for managers to
recognize a “happy hiker” or a “disturbed hiker”. However, when discussing our findings
with two responsible nature managers, they recognized the different groups. They
mentioned a trend: “The number of hikers for whom facilities and easy way-finding is most
important, the ones without special interest or attachment, is growing”. And moreover:
“policy is focussing too much in this type of visitor”. The growing number of demanding
hikers is generally defined as a “market development” in the Netherlands (COENEN 2007).
These individuals seem to have a limited amount of free time, and seem to expect an
efficient presentation by park managers of high quality services and experiences. However,
the existence of the happy hiker in this research suggests that not all recreationists are
critical and demanding.

This study has several implications for natural area planners and managers concerned
with respecting and encouraging a meaningful experience of visitors to protected nature
areas. First, this study found that visitors construct multiple meanings of the natural environ-
ment they visit. While their main activity is similar (hiking), perceptions of their experiences
range e.g. from busy to quiet, from natural to maintained and from not unique to unique. If
the planners and managers of protected nature areas are concerned with offering possibilities
for multiple experiences, they should maintain diversity in management intensity. This study
found visitors favouring easy and clear physical access and orientation (demanding hiker),
while others prefer more natural and less “maintained” places (connoisseur). Furthermore,
management of visitor experience typologies requires more than only knowledge of visitor
demographics or behaviour patterns.

Second, the study shows that visitors do not infinitely adapt to changing conditions, as is
stated by COLE and HALL (2006). Visitors do adapt, but there are limits. The disturbed hiker
appears to have limited tolerance to crowding. The connoisseur is not always accepting of
resource management strategies. The demanding hiker seems especially sensitive to the
provision of adequate and sufficient facilities and services. Consideration of multiple and
conflicting demands of different visitor groups requires a carefully formulated management
policy. For example, some conflicts between visitor group constructions of meaning (e.g. the
desire of demanding hikers for an “entertaining” experience versus the connoisseur’s desire
for a “hands-off management”) suggest the application of a strategy of spatial separation of
conflicting groups. Managers would then need to device strategies that direct visitors to
settings wherein specific sets of visitor experiences are provided. To implement such a strat-
ey, managers will need to devise a “rapid assessment” protocol to identify visitor types
using their parks.
5 References


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