The role of ecological orientation for forest visitors' visiting motives, environmental preferences and recreation behavior

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Introduction

There is good evidence that people generally prefer natural environments, for example, forests, over urban environments for restorative purposes (e.g., Hartig and Staats, 2006). In Switzerland, forests especially play a major role in the outdoor recreational behavior of Swiss residents and the use of forests for recreational activities is growing (e.g., Brändli, 2010; Hunziker et al., in press). With increasing numbers of outdoor recreationists the demand for a sustainable use and management of the environment also increases. In this context, it is important for managers, practitioners and researchers to not only understand what activities people perform when in the forests, but also what environmental attitudes these people hold. With the 'New Ecological Paradigm Scale' (NEP), Dunlap et al. (2000) presented a measure for the endorsement of an ecological worldview that distinguishes between environmentalists and non-environmentalists. It addresses environmental concern and pro-environmental orientation as general environmental attitudes. The NEP concerns fundamental beliefs about the balance of nature, limits to growth and human domination over nature (Dunlap et al., 2000). In the present study, we analyzed whether forest visitors' ecological worldview impacts their forest visiting motives, environmental preferences and recreational behavior.

Methods

For our analyses we used data from a Swiss nationwide probability sample. A total of 9356 households were randomly drawn from Swiss telephone registers and contacted from October to November 2010. Respondents could decide on participation for a nationwide study concerning the human-forest relationship. The survey comprised of different topics, ranging from socio-demographics, environmental preferences, economical aspects, recreation behavior to visiting motives and general restorative benefits. Measurements used for this analysis included a short 10-item version of the NEP (Schultz and Zelezny, 1999) as well as measures for eight different motives for visiting forests (e.g., 'I want to experience nature'), different forest-related preferences (e.g, familiarity, fascination, infrastructure), perceived disturbances during forest visits, along with an open ended question regarding performed activities while in the forest.

A total of 3022 adults completed the survey, giving a response rate of 32%. Of them, 1792 filled in the online questionnaire and 1260 were interviewed via telephone. The telephone interviews averaged 39.46 minutes (SD = 25.7), while filling in the online questionnaire averaged 32.56 minutes (SD = 11.1). In the present study we were only interested in answers from respondents who actively visit forests for recreational purposes. Thus, we had to exclude 189 individuals, giving us a final sample size of 2833 (mean age in years: 53, SD 15.6; 52.3% female).

First, we analyzed the factorial structure of the NEP items with a principle component analyses (PCA). Next, we focused on the relationship between the resulting NEP components and motives for visiting forests, preferences for different forest attributes, performed activities, rating of restoration, and perceived disturbances while recreating by correlation analysis. Additionally, we divided our sample into an anthropocentric and ecocentric group, whereas people who scored higher on the ecocentrism dimension than on the anthropocentrism dimension were labeled 'ecocentrics' and *vice versa* 'anthropocentrics'. Respondents who scored equally on eco- and anthropocentrism were excluded from the analyses.

Results

The PCA resulted into two distinct factors, representing an anthropocentric and ecocentric worldview (Table 1). Mean score for anthropocentrism was 2.29 (SD = 0.69), for ecocentrism it was 3.26 (SD = 0.56), meaning that the majority of the sample favored an ecocentric worldview.

Further analysis revealed that ecocentrism was positively related to preferences for 'sounds of nature' or 'if it smells like nature'; to motives like 'I want to experience nature' and related activities; to a higher degree of self-reported restoration; and also to more frequently feeling disturbed by others while in the forest. On the other hand, anthropocentrism was associated with higher preferences for infrastructure (e.g. benches); more social- and action-orientated motives for visiting forests; lower self-reported restoration and less perceived disturbances by others.

Splitting the sample into an anthropocentric and ecocentric group resulted in significantly higher agreement for motives (e.g., I want to take a break from everyday life), a significantly higher intensity of forest use and amount of self-reported restoration and preference for diverse forest characteristics for the ecocentric group. These people also reported more frequently 'to take a walk when in the forest' compared to the anthropocentric group.

Discussion and outlook

Our results suggest that having an ecological or anthropocentric worldview is meaningful for recreation research, because these worldviews are associated with (more or less) mutually exclusive preferences, motives and activities. This indicates that people have different demands concerning restorative environments; for example, ecocentric people want to experience nature while anthropocentric ones want

Table 1. Principal component analyses of the short version of the NEP.

	Item	Resulting factor	
		Eco-centrism	Anthropocentrism
1	We are approaching the limit of the number of people the earth can support	**.57**	.07
3	When humans interfere with nature it often produces disastrous consequences	**.68**	-.07
5	Humans are abusing the environment	**.73**	-.09
6	The earth is like a spaceship with very limited room and resources	**.68**	-.00
8	The balance of nature is very delicate and easily upset	**.67**	-.15
10	If things continue on their present course, we will soon experience a major ecological catastrophe	**.68**	.02
2	Humans have the right to modify the natural environment to suit their needs	-.17	**.61**
4	Human ingenuity will insure that we do NOT make the earth unliveable	-.04	**.68**
7	Humans were meant to rule over the rest of nature	-.03	**.77**
9	Humans will eventually learn enough about how nature works to be able to control it	.10	**.76**

Note: n = 2833; Explained variance factor 1: 28%, factor 2: 20%, total: 48%.

to spent time with their family and friends. These results can be an indicator for a different concept of recreation, based on underlying worldviews. This implies a real challenge for visitor management, because management has to satisfy the needs of both ecocentric and anthropocentric people, usually within the same environment.

On the other hand, it is important to note that the NEP is a very general measure for a global worldview. It is neither clear how strongly actual preferences, motives and activities depend on global environmental attitudes, nor if the global environmental attitudes depend on preferences, motives or activities. Additionally, there is some uncertainty about the dimensionality of the NEP, because different studies resulted into one to several different factors when analyzing its factorial structure. Dunlap et al. (2000) suggested that the dimensionality depends on the specific context. Therefore, it is recommended for future studies to not solely rely on one measure for a global environmental attitude, but to also take other measures that focus specifically on management, social aspects of visiting and physical characteristics of the environment into account, like for instance, the purism scale (Fredman & Emmelin, 1999).

Either way, our results contribute to a more integrated understanding of recreationists and may help to solve possible conflicts in visitor and recreation management, through visitor guidance that takes visitors' worldviews into account.

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