



Research paper

# What kind of landscape management can counteract the extinction of experience?



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## HIGHLIGHTS

- A large diversity of natural places was visited, but five types predominated.
- Places that are not valued by ecologists are considered as natural by people.
- Connectedness to nature was negatively linked to specification of environments.
- Results suggest important directions for increasing opportunity and orientation.

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## ABSTRACT

Much research has explored the effects of being in natural areas on human health, well-being and environmental concern. However, the combined effects of urbanization, biodiversity loss and the Western way of life reduce the opportunities to experience nature. Landscape management could play a prominent role in providing opportunities and motivation for people to be in nature. It is important, therefore, to understand which kinds of nature people mostly prefer and use. Based on complementary questionnaire surveys obtained from 4639 French adults, we studied the habits of nature uses, in relation to personal previous experiences and nature connectedness. We explored the type and frequency of natural areas people visit most often, the place where they grew up, and the extent to which they feel interdependent with the natural environment. In an innovative process, we assessed the extent to which respondents mentioned a personal place (e.g., my garden), a specific non-personal place (e.g. a particular forest) or remained general (e.g. forests). Among a wide range of cited natural areas, five types predominated, consistently for all samples surveyed. Interestingly, connectedness with nature was negatively related to mentions of place specificity, but positively related to frequency of visits of natural areas. These results clarify the relationship between past and present experiences of nature and sense of connectedness to nature. They can also guide future landscape management processes, in order to better coordinate the provision and the desirability of natural spaces and promote both sustainable landscapes and reconnection of people to nature.

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## 1. Introduction

One aspect of the biodiversity crisis is the “extinction of [nature] experience” (Miller, 2005; Pyle, 1978). In a recent review, Soga and Gaston (2016) proposed that urbanization and a western way of life induce both a loss of opportunities and a loss of orientation to go

to natural places and experience nature; the disconnection from nature induces in turn health and well-being changes, as well as emotional, attitudinal and behavioral changes, which then affect the importance assigned to nature. Based on this feedback loop, Western modern societies face a vicious cycle regarding nature conservation.

Stopping this deleterious phenomenon requires increasing the opportunities to be in contact with nature, together with the orientation and motivation to visit natural places. First, as reviewed by Soga and Gaston (2016), people who live farther from natural areas interact less frequently with nature (Soga et al., 2015). Providing

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green infrastructures close to where people live or work could allow people to develop emotional attachment to the outdoors, and motivate them to further experience nature (Bixler, Floyd, & Hammitt, 2002). However, in many cases, simply increasing opportunities to be in contact with nature is not sufficient to encourage people to seek out contact with nature. For instance, in a survey comparing park users with non-users, Lin et al. (2014) found that non-park users comprised almost 40% of the surveyed population, and that this significant group of people might not use local green areas even if those areas are available close to their homes. They also found that the willingness to visit parks and experience nature was driven more by nature orientation than by opportunity. Enhancing willingness and orientations to use natural places should therefore be achieved in tandem with increasing opportunities (Soga & Gaston, 2016).

Increasing opportunities to visit natural places can be achieved through landscape planning, in which natural and green spaces are implemented in such conditions that they can be visited and used (Miller and Hobbs, 2002; Soga et al., 2015). This planning should be based on accurate scientific studies, for instance related to the benefits of such places for visitors. And indeed, numerous studies have been already published about benefits of natural environments for people (Bratman, Hamilton, & Daily, 2012; Sandifer, Sutton-Grier, & Ward, 2015). However, in most of them, the studied natural places are pre-defined by the researchers: many authors focus on cities and consider urban greenspaces as the natural areas compared to urban settings (Bratman, Hamilton, Hahn, Daily, & Gross, 2015; Soga et al., 2015). Mitchell and Popham (2008) extended their definition of green spaces to parks, open spaces and agricultural areas and excluded private gardens; Han (2007) presented slides of different ecological biomes to the respondents. Yet, an accurate landscape planning would benefit from assessing which categories of landscapes people actually define as “natural spaces”, as well as which ones they visit and to what extent. This knowledge could help design and plan natural landscapes that would increase real opportunities for people to go to nature.

Beyond providing opportunities to visit natural areas, landscape planning could also help increase individuals' inclination to visit natural places, by taking into account the different motivations to visit these places. According to Kaplan and Kaplan (1989), the psychological, social and physiological benefits natural settings can provide could be the drivers of humans' preference for natural environments. Many studies have explored these human-nature relationships, and explored the respective roles of individual knowledge, attitude, or representation of nature (Buijs et al., 2012; Clayton, Fraser, & Saunders, 2009; Nisbet, Zelenski, & Murphy, 2009; Schultz, 2000). They showed in particular the importance of experiencing nature during childhood. Indeed, limited contacts with nature during childhood are suspected to decrease the prominence of environmental concern in adults (Hinds and Sparks, 2008; Wells & Lekies, 2006). And children nowadays visit nature less often than do adults (Soga & Gaston 2016), resulting in lower curiosity and knowledge about the natural world (Lindemann-Matthies, 2006). Research suggests that an environmental identity, or stable sense of oneself as interdependent with the natural world, develops primarily during childhood (Chawla, 1988). Thus, when children do not have the opportunity to spend time in nature, the result may be a weaker environmental identity when becoming adults. Environmental identity is reflected in a sense of connection to nature, which promotes attention to and concern about the natural environment (Clayton, 2012; Schultz, 2001). Experiencing nature through visits to natural places during adulthood allows people to continue building their relationship with nature through memories of childhood events in natural environments, and thus reinforce their relationship with nature. As such, we could imagine that a prior strong

ffective relationship with nature may lead people to visit natural places more often during adulthood.

For a given individual, the willingness to visit natural places could be a general tendency, not tied to specific areas. However, it could also lead people to visit some specific natural places, in association with the development of an attachment to these particular places. The drivers and components of place attachment have largely been explored in social psychology (Anton & Lawrence, 2014; Gosling & Williams, 2010), but little research effort has focused on the role of attachment to particular natural places in an individual's relationship with nature more generally.

Despite the large amount of research on relationships to nature, little research effort seems to have focused on real behaviors, to ask which kind of natural places people do visit and in what frequency together with their previous experiences of nature and nature connectedness. Our study aimed therefore at characterizing the experience of nature of more than 4000 French adult people. To do so, as Soga and Gaston (2016) did, we first explored the frequency of visit to natural areas. However, we explored also two new specific assessments: first, we asked people to identify the “natural places” they visit; then, from their answers, we built an indicator of “place specificity”, which approaches how a given individual appears to be attached to specific places. We studied how these three proxies of experience of nature are related to the level of nature people have been in contact with during childhood, as well as to their connectedness with nature.

## 2. Methods

### 2.1. Survey instrument

For the aim of this study, we pooled data from five different questionnaire surveys (respectively named “student”, “wow”, “zoo”, “web” and “adopter”), so we had 4639 questionnaires in total. The number of questionnaires, targeted audience, aims of the original surveys, administration method and period of data collection of each questionnaire survey are detailed in Table 1. The targeted audience was French-speaking adult communities. The five questionnaire surveys were part of different research projects, all of which aimed at a better understanding of human-nature relationships (e.g. virtual or particular experiences of nature). The data were pooled to obtain a larger sample size, and explore whether there was an overall pattern in the results or if it differed depending on the context.

In all the surveys, we explored people's connectedness with nature, frequency of visits to natural places, natural places they primarily visit, age, gender, and rural setting during childhood; all these questions were written with the exact same wording in the five surveys.

### 2.2. Questions and associated computed variables

#### 2.2.1. Connectedness with nature

We used an adapted version of the Inclusion of Other in the Self (IOS) scale (Aron, Aron, & Smollan, 1992) to measure individuals' beliefs of how interconnected people feel with the natural world, via a series of five pairs of overlapping circles labeled nature and self (Schultz, 2001): data were coded from 1 for the less overlapping pair of circles, to 5 for the completely overlapping circles.

#### 2.2.2. Frequency of visits of natural places

We used a 5-point scale to measure the frequency of visits to natural places, ranging from 0-“never”, 1-“few times a year”, 2-“once a month”, 3-“once a week”, up to 4-“everyday”.

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