Exploring environment-experience relations in Oulanka National Park using participatory mapping

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Managing recreational use in conservation areas targets the outcomes of outdoor recreation.A worldwide aim of conservation area managersis to enhance the benefits of outdoor recreation while preventing or mitigatingitsnegative impacts (Driver, 2008). Managers are, however, not able to create these outcomes on behalf of visitors. They can only provide opportunities –environments and activities–that will encourage desired outcomes and improve visitors' experiences. Therefore, we need to understand how conservation area visitorsperceive and interact withthe settingsthey encounter. Geographically accurate information on recreational outcomes aids this understanding and helps managers focus on specific areas of concern.

This study uses novelspatialtechniques to more accurately measure and analyze visitor experiences.Field research was conducted in Oulanka National Park (NP) and its surrounding areas. Oulanka NP is located in northeastern Finland near the Russian border and the Arctic Circle. It is the fourth most visited national park in Finland with approximately 200,000 annual visits. The park allows numerous outdoor activities, including: hiking, canoeing, skiing, fishing and wildlife viewing. Despite the park's pristine landscape, recreation infrastructure in Oulanka NP is well developed.

The connections between environmentand recreational outcomes are examined based on the geographic locations of different types of beneficial experiences and visitors' place-based evaluations of the impacts of recreation. The first stage of the study analyzesthe extent to whichdifferent types of recreation settings facilitate different kinds of positive experiences, because for example, settingsthat are categorized as remote are traditionally hypothesized tosupport visitors' feeling of independence (Clark & Stankey, 1979).The second stage of the study mapslocations where visitors find the impacts of recreation to beunacceptable in terms of the quality of theirexperiences. This is surveyed because visitors' toleranceoftourismimpacts are considered to be dependenton where the negative impacts are perceived (Hammitt & Cole, 1998; Vaske, Donnelly & Lehto, 2002).

Method of mapping visitor experiences

Two types of surveys were used to collect data on visitors' experiences. A self-administrated on-site visitor survey was conducted according to Parks & Wildlife Finland's standardized visitor survey methodologyfrom February to October 2014. In addition, visitor survey participants who volunteered their email address participated in a web-based Public Participation Geographic Information Systems (PPGIS) survey.170 of the 257 volunteerscompleted the PPGIS survey.

Respondents to the PPGIS survey were asked to drag and drop predefined point- or line-shaped spatial markers on a mapof the study area. To measure beneficial experiences, visitors were asked to drop a point marker labelled 'I visited this place' on the map. After dropping the marker, a pop-up window askedthem to identify one or

more experiences they encountered in that particular location from a predefined list. Options included *physical wellbeing, relaxation, learning about nature, nostalgia, excitement, social bonding, independence, escaping daily routine,* and *other.* To map visitors' perceptions of recreational impacts, participants were asked to place a predefined marker on the map at the specific location where they encountered an impact (*erosion, littering, treatment of the natural environment, too many visitors, behavior of other visitors* or *other*) that disturbedtheir visit. The mapped information was then analyzed using spatial statistics.

Beneficial experiences

To compare the mapped experiences against the setting type in which the experience took place, the study area was classified into different settingtypes based on their level of development and remoteness. Chi-square statistics wereused to determine if any of the mapped experience typesweredisproportionately represented in a given setting type.As Figure 1 shows, visitors most commonly experienced relaxation, physical wellbeing and social bonding during their visit to Oulanka NP. As expected, beneficialexperiences were concentrated around the most visited places along the park's designated trails. However, visitors' experiential outcomesdid not differ based on the typeof settingin which theyoccurred.

Perceived negative impacts

The composition and configuration of the perceived negativeimpacts of recreationwere analyzed using social landscape metrics (see Brown & Reed, 2012).The impacts of recreation were particularly visible around Juuma, butthe number of negatively evaluated impacts was notably smaller in the other frequently visited areas of the

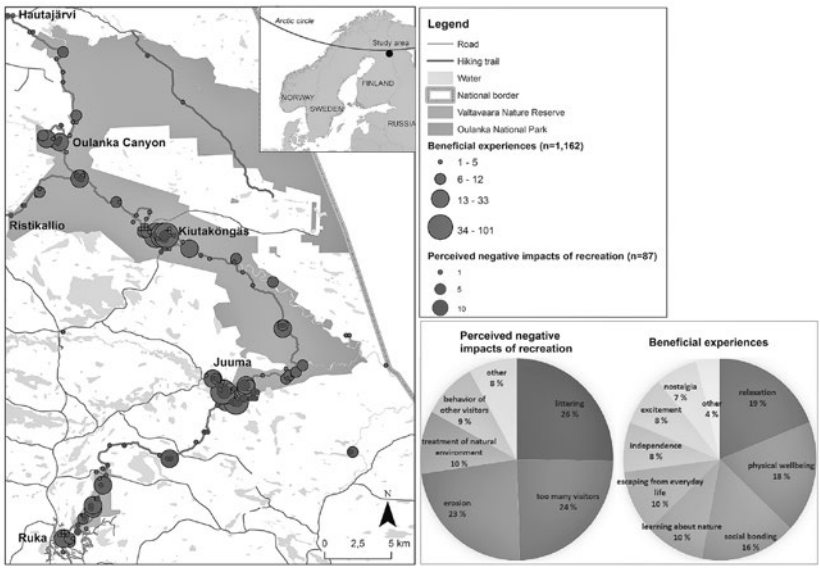

Figure 1. *Number of mapped visitor experiences (per 250*250 grid cells) in Oulanka NP*

park (Figure 1). In general, visitors identified littering, too many visitors and erosion as the main issues disturbing their visit to Oulanka NP. The impact most often assessed as unacceptable varied across the study area.

Conclusion

The study shows that the level of development and the remoteness of the recreation setting does not clearly distinguish visitors' beneficial experiences of the place. As the experience can be similar regardless of the setting type, facilitating particular types of experiences is complicated. Opposite to beneficial experiences, negative impacts of recreation varied across the study area, emphasizing the importance of place-based monitoring of these kinds of outcomes. For managers, the utilized PPGIS methods provide a spatially explicit way to ascertainwhere management practices should be implemented to best prevent negative perceptions of the effects ofrecreation.

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