Physical and social aspects of forest recreation – approaches to a comprehensive monitoring

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Forest monitoring normally either focuses on physical aspects such as tree species, stand structure, vegetation cover, etc. or on social aspects, namely forest recreation and the relationship of people with the forest. However, especially regarding forest recreation, both the physical characteristics of the forest in which recreation takes place as well as the social aspects such as visitor preferences and behaviour play an important role. A clearer understanding of the interactions of society and forest and in particular better knowledge of the interrelation of physical forest characteristics and forest recreation would allow better managing of the forest with regard to societal needs. Physical forest characteristics are often assessed by forest inventories, for which data is normally collected from sample plots on a systematic grid across the country (Tomppo et al., 2010). In order to assess the social dimension of forest recreation, nationwide surveys are conducted in several countries on a regular basis to provide valuable information about the relationship of the population with the forest, usage patterns, motivations for forest recreation, etc. (Sievänen et al., 2008). However, there is no spatially explicit link to the physical forest, or forest characteristics are dealt with in a minor way, e.g. by using photographs without underlying physical forest data. The question arises whether National Forest Inventories (NFIs) and socio-cultural forest monitoring (usually nationwide questionnaire surveys) could be combined to explain and possibly even predict forest recreation patterns from forest-related and visitor-related data.

In order to achieve this, two approaches are possible. The first approach is to take (parts of) the questionnaire from a household survey and use them in a forest visitor survey at NFI sample plots. We developed and tested this method combining the Swiss socio-cultural forest monitoring (Hunziker et al., 2012) with field assessments of the Swiss National Forest Inventory (Brändli, 2010) at selected plots at or near forest roads and footpaths. Visitors were asked to rate the visual attractiveness of the NFI-plot and the surrounding forest. They were also questionned about their activities in the forest, visit frequency, forest preferences and their socio-demographic

background. NFI-data were collected from 4 systematically arranged 50x50 m plots, covering the forest area visible to visitors from the footpath. Multi-level modelling combining both plot-related inventory data and visitor-related questionnaire data showed that forest attractiveness is determined by both social and physical factors. Undertaking forest visitor surveys at a subset of NFI sample plots could therefore be a viable way of conducting a comprehensive forest recreation monitoring across larger areas, for example a whole country.

The second approach is to take visualizations, e.g. in form of photographs, of NFI sample plots with underlying forest data and use them in a survey. We used this method in an online survey in the whole of Switzerland. Photos from the Swiss NFI taken in all four cardinal directions from the centre of sample plots were integrated in the questionnaire and respondents were asked to rate the visual attractiveness of the forest depicted. In addition, they were asked about their expectations concerning ecosystem services of urban forests, cultural ecosystem services associated with the forests on the pictures, activities, forest preferences and their socio-demographic background. Because the photos are not congruent with the sample plots, physical forest data were derived from the photos according to NFI-criteria. Regression models and multi-level modelling will be used to combine physical forest data and questionnaire data to predict visual attractiveness and recreational usage of forest. First results of this study will be presented and compared to the results of the field survey. Ultimately, an evaluation of the results of both approaches can provide indications to how a comprehensive forest recreation monitoring including both physical and social aspects could be conducted effectively.

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