

Public preferences for forests as sites for recreational use: a Pan-European perspective

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This paper presents the findings of a Delphi survey carried out to estimate the recreational value of a range of silvicultural attributes and forest types found across Europe. 'Recreational value' was defined in terms of the preferences of people who regularly use forests as sites for recreation. While preferences can be influenced by several factors, the survey was concerned only with silvicultural attributes. For most visitors, these are important because they affect the visual attractiveness of the forest (Edwards et al. 2010a).

The Delphi survey built upon established methods developed by Linstone & Turoff (1975) and Novakowski & Wellar (2008). A questionnaire was completed anonymously by 46 participants with experience of landscape preference research. One panel each was assembled for four European regions: Great Britain, the Nordic Region, Central Europe and Iberia. After the first round of responses had been returned, the results were redistributed to participants who were then invited to revise their original responses in the light of their panels' anonymised results (Edwards et al. in press).

The questionnaire comprised of two parts. The first part focused on silvicultural attributes, and asked experts to quantify the relative contribution of each of 12 attributes to the overall recreational value of forest in their respective region by assigning a weighting on a scale from 1 (lowest) to 10 (highest). For each attribute, they were also asked to indicate whether its relationship to the recreational value of the forests in their region was best described as 'positive', 'negative', 'bell-shaped', 'U-shaped', or 'even'.

The results suggest that, across Europe, the highest importance was attached to the attribute 'size of trees within stand', which had a positive relationship to recreational value. The remaining attributes were, in descending order of importance: 'size of clear-cuts' (negative); 'residue from thinning and harvesting' (negative); 'visual penetration' (bell-shaped); 'variation between stands' (positive); 'extent of tree cover' (bell-shaped); 'naturalness of forest edges' (positive); 'variation in tree spacing' (positive); 'variation in tree size' (positive); 'number of tree species' (positive); 'amount of natural deadwood' (bell-shaped) and 'density of ground vegetation' (bell-shaped).

The second part of the questionnaire focused on forest types. Participants were asked to provide a score on a ten-point scale for each cell in a matrix of twenty forest types, with each type representing one of five possible forest management alternatives (FMAs) and one of four phases of development (establishment, young, medium and adult). The five FMAs have common definitions across Europe and lie on a continuum from non-intervention to intensive production as follows: 1) forest nature reserves, 2) close-to-nature forests, 3) combined-objective forestry, 4) intensive even-

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aged forestry, 5) wood biomass production. The scores indicated how respondents believed the average visitor would value a forest stand of that type as a location for recreation in their region. Three matrices were completed by each participant according to three different tree species compositions: conifer, broadleaved and mixed. Participants were asked to focus on the commonest conifer species and broadleaved species in their respective region, as follows: Sitka spruce (*Picea sitchensis*) and birch (*Betula* spp.) in Great Britain; Scots pine (*Pinus sylvestris*) and birch in Scandinavia; Norway spruce (*Picea abies*) and beech (*Fagus sylvatica*) in Central Europe; and pine (*Pinus* spp.) and oak (*Quercus* spp.) in Iberia (Edwards et al. 2010b).

The scores were then examined using conjoint analysis (Alriksson & Öberg 2008). The findings suggest that, across Europe, tree species composition was of relatively minor importance in explaining the overall variation in scores (cf. Schraml & Volz 2009, Gundersen & Frivold 2008). In the UK and Central Europe, comparably high importance was attached to FMA and phase of development, while in the Nordic Region and Iberia, phase of development was considered more important than FMA. The relative importance attached to each FMA suggests that most visitors prefer 'close-to-nature' or 'combined objective' forests to unmanaged forest nature reserves (cf. Rametsteiner & Kraxner 2003).

The low importance attached to tree species suggest that criticism directed towards non-native conifers, and perceived preferences for broadleaves across Europe, may not be due to the choice of tree species per se, but the use of conifers in intensive management regimes characterized by dense even-aged monocultures and short rotation lengths (Price 2003). It is acknowledged that such a finding may hide substantial variation in preferences between individuals and social groups, between people pursuing different recreational activities, and between geographical regions with their contrasting cultural landscapes.

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