Profiling recreational users of national parks, national hiking areas and wilderness areas in Finland

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Abstract: Finland's national parks, wilderness areas and national hiking areas play an important role in tourism and recreation, in addition to their primary purpose of nature conservation. Very little attention has been paid by research to the factors that influence the use of these state-owned areas by different segments of the population. The results of logistic and negative binomial regression models based on population-survey data indicate that the users of these state-owned recreation areas have a higher than average level of education and are more likely to be white-collar employees. The users were typically enthusiasts of particular forms of outdoor recreation, above all skiing and camping. The availability of state-owned recreation areas in the home municipality increased the likelihood of using them. The number of user days spent in these areas tended to be larger among those whose permanent residence was in eastern Finland or in a city of more than 100,000 inhabitants. Small-sized household and abundance of leisure time also increased the amount of use.

Introduction

Nature tourism and recreation use of state-owned nature conservation areas in Finland, especially national parks, has typically been studied from the point of view of the reconciliation of apparently incompatible use forms. The general perception has been that nature conservation and tourism and recreation can be done side-by-side in the same areas (Ohjelma luonnon... 2002). However, several studies have brought out the conflictual nature of these uses and have suggested some possible remedies (e.g. in Muhonen & Sulonen 1998, Saarinen et al. 2000). It is generally thought that nature conservation sets restrictions on the development of recreation and tourism on the same location. On the other hand, protection tends to support tourism when the attraction of these areas lies particularly in its special, natural characteristics. The national parks are experienced as a common heritage, the preservation of which can justify restricted access and the payment of a use permit (Naskali 2000). In the planning and management of each individual area, attention is also paid to the goals of recreation and environmental education, as well as to the ability of the area in question to serve different population groups (Natura 2000 -alueiden... 2002). However, no research has yet been conducted to find out how individual population groups use state areas in general.

The use of recreation areas can be approached proactively, focusing on objectives which are set on the areas and the needs of different population groups, or reactively by studying current use (cf. More 2000). Although it is important to identify the present customers and serve them as well as possible, it is also essential to discover for whom the areas are intended and whether the present clientele corresponds to the expected profile of visitors. In order to ensure an adequate supply of state-owned areas and to balance the emphasis on recreation use among them, it is useful to obtain a comprehensive picture of the whole group of users and to be able to compare this profile with that of the whole population and with the potential target users.

Categorising users of the state conservation and recreation areas and analysing the amount of use in the separate population groups is also useful for the sake of ensuring that all Finnish citizen can benefit from them equally. As the management of nature in state-owned areas is financed mainly by public funding, it is important to find out who ultimately benefit from these areas, which are intended to serve "a common interest". Although, all citizens participate in the financing of recreation services equally through taxation, some may have very few possibilities to use them. On the other hand, the mere existence of these state-owned areas can benefit all citizens by virtue of their nature conservation amenities even if some never use the areas themselves.

Equality questions related the fairness of use payments and effect of payments on users of public recreation areas and national parks have been discussed

in the international literature (e.g. Walsh et al. 1989, More & Stevens 2000). User fees have been supported for the reasons of equality. When the costs of the management of these areas are covered by user fees, the costs are borne by those who actually use the areas. On the other hand, use payments have been seen as an obstacle to the equality of use when they have excluded low-income population groups from using them. The reduction of opportunities of some ethnic groups and minorities has received a lot of attention, especially in the United States, where nature conservation and recreation areas seem to serve middle-aged, white, male users (Taylor 2000).

Information about the national parks and national hiking areas that is produced on the basis of visitor studies of individual areas gives some idea of who uses these recreation opportunities. In this study, state protected and recreation areas (SPRA) – national parks, national hiking areas and wilderness areas – are treated as a single entity. The concepts of this study will follow this more general focus. According to an established practice, the term 'visitor' or 'customer' is used to refer to an individual who is visiting a particular nature conservation or recreation area. In this study it is natural to use the word 'user' to refer to all those who generally use the state areas, and to measure time spent there in terms of 'user days'.

About one fifth of adult Finns use state areas for the recreation every year (Pouta & Sievänen 2001). About one fourth of the nature trips lasting overnight take place on state-owned areas. About 4.7% of the outdoor recreation which takes place near the primary residence is on state-owned areas. Recent outdoor recreation statistics (Pouta & Sievänen 2001) give a general picture of the users of state-owned areas. These statistics indicate that high education, male gender and white collar socio-economic status characterize a relatively higher proportion of users. However, there are benefits to be had from presenting a clearer and more detailed picture of these who use state protected and recreation areas.

The objective of this study is to analyse those who use national parks, hiking and wilderness areas and what factors affect how often these areas are visited for recreational purposes. For this purpose we have created participation models using population-based data on outdoor recreation behaviour.

Prior research and current policy objectives concerning the use of state protected and recreation areas

In Finland the recreational use of state protected and recreation areas was actively studied in the 1990's. Most of this research has been done in the terms of visitor studies that describe the recreation users and visitor profile of a certain specific area or location. Nowadays, visitor studies are conducted routinely with standardised research methods in the national parks and national hiking areas (Erkkonen & Sievänen 2001) for planning and management purposes. The published visitor studies justify the picture of the typical users of these areas as educated males aged 25–44 years who are employed as workers or white collar employees (e.g. Peura & Inkinen 1994, Ovaskainen et al. 1999a, b, Erkkonen 2000, Eisto 2003). Because visitor studies always target the visitors of a particular area, they do not produce a comprehensive general view of those who use national hiking areas or national parks as a whole.

According to Koskela et al. (2002) the possibility of participating in such activities as hunting, fishing, skiing and studying nature in special natural conditions of national parks, national hiking areas and wilderness attracts visitors to state areas. Visitor appear to invest more travel and recreation time and money in using the versatile outdoor recreation environment of state owned areas than in the visits to areas owned by municipalities or private parties. More costs were related to the use of state areas than to recreation in other areas. The study of Koskela et al. did not attempt to create a profile of those who visit state-owned areas.

The primary purpose of the 35 national parks (as of 2003) in Finland is conservation of the original biotic and abiotic features of nature, including traditional landscapes (The principles of protected area… 2000). *Metsähallitus* (The Finnish Forest and Park Service) has set management policy targets for the national parks, as well as for the national hiking and wilderness areas. In addition to enhancing nature conservation, the national parks also serve the objectives of recreation, environmental education, and teaching with the aim of increasing the Finnish population's general knowledge of environmental matters (The principles of protected area… 2000). According to the principles established for managing Finland's national parks, these areas have an important role in providing all Finns with opportunities to hike and experience nature. The seven national hiking areas have, in turn, been established in accordance with outdoor recreation statutes on state-owned land that is of considerable general importance from the point of view of outdoor recreation. According to a wilderness law that went into effect in 1991, 12 wilderness areas were established in the northernmost portions of Lapland for the purpose of preserving the wilderness in its original state, securing the status of the Sami culture and natural sources of livelihood and diversifying the use of nature. Most Finns traditionally associate wilderness areas with fishing and hunting. More recently, the wilderness has tended to be understood as a place of peace, silence and tranquility, as well as a place where one can experience nature in its original state, largely free of human traces and influence.

Traditional customs in Finland provide that everyone should have equal access to recreational uses of nature. The public right of access to nature, which is

called "everyman's right", ensures that everyone is allowed to use nature for recreational purposes irrespective of who owns the land in question. When nature is used in accordance with "everyman's right", no permission is needed to enter the area, nor can a fee be demanded for using it. This right is enjoyed equally by all Finns and citizens of EU Member States, as well as in practice by citizens of other countries (Valtion alueiden… 1996). Generally speaking, all state-owned areas can be used in accordance with this right. In nature conservation areas there are a few exceptions to this general rule. "Everyman's right" does not include the right of access to certain nature reserves. This right is also not valid as such in national parks, where certain area-specific regulations govern the recreational use of the area in question. Generally all the citizens are in an equal position as recreation users of state areas. However, there are some statutory exceptions concerning hunting, fishing and the use of motor vehicles in order to guarantee the local population in Lapland certain rights that are broader than those granted under "everyman's right". These rights pertain especially to reindeer herders (Valtion alueiden… 1996).

The objectives set for the recreational use of state-owned areas in the statutes and regulations do not take a stand on which population groups should be served by these areas; instead it seems that the objective is to guarantee equal access to all citizens. For example, according to Metsähallitus ordinary Finnish outdoor recreationists constitute the largest client group related to state forests (Metsähallitus suomalaisten… 2002). On the other hand, who uses these areas and how many users there are can be determined or influenced by creating a service profile for state areas and by distributing information to the public about the areas and their use. The awareness of the existence of a certain area and the possibility of using it varies in different segments of the population. In addition, not all Finns can reach these areas as easily on account of the uneven distribution of the population in different parts of the country. Achieving a more balanced user profile with reference to the entire population of Finland might be a very important objective on its own.

Modelling the use of state protected and recreation areas

An attempt is made in this study to find out who uses Finland's state protected and recreation areas (SPRA) and what factors affect the amount or frequency of use. The share of users can be described on the basis of participation rates. The amount of use of these areas within a certain period of time by an individual person can, in turn, be described in terms of either the number of user days or the number of times a particular site is used.

Models of outdoor recreation demand can be used to create profiles of those who use SPRA. The choice of whether to use a particular area can be described with a model of so-called random utility (e.g. Walker & Ben Akiva 2002). According to the random utility model, the choices an individual makes reveals the utility the person gains. However, one aspect of this utility is random and is thus not directly accessible to the researcher. If a particular person is among those who use SPRA, then the utility that accrues to the person exceeds that which results in the event that the person does not use the area. The situation involving the choice of one destination site is typically described with a random utility model (e.g. Parsons & Kealy 1992, Siderelis et al. 1995, Englin et al. 1996). When the use of SPRA is examined, the demand is not studied from the standpoint of one particular area, but from that of all areas belonging to the category in question, in this case state protected and recreation areas. When the objective is to determine whether a person visits a particular area type or not, the attributes of one area and of possible substitute areas cannot be used as explanatory variables. Here, we do not examine the decision to visit one recreation site, but rather the decisions to visit state areas in general during the 12-month period prior to the survey.

The number of outdoor recreation trips taken to a particular destination has traditionally been described with a travel cost model that is based on household production theory (e.g. Bockstael 1995). In this model, the costs of the outdoor recreation explain the number of recreation visits to a certain area within a certain period of time, however other explaining factors, such as income, available leisure time and factors related to the quality of the site in question can also be used. In the travel cost method, demand is traditionally described on the basis of one recreational area and the model is based on on-site data. Here, we are interested in modelling demand for the entire category of SPRA. Because we are not concerned with any particular area, in which case we could measure distance and travel expenses directly, a variable describing the supply of such areas is used as the indicator of travel costs. It is assumed that the costs of using these areas are lower when they are located near the user's permanent residence. Among the other factors that can be used to profile those who use SPRA relate to socio-economic background and to data on their outdoor recreation activities.

Statistical methods

SPRA use is described with a variable that indicates visitation of such an area during the past 12 months on at least one occasion. This variable is assigned the value of 1 if the respondent made such a visit, or of 0 if not. Thus in the first model SPRA use /non-use is described with a logistic regression model (e.g. Hosmer & Lemeshow 2000) that allows the dependent variable to be dichotomous.

The second model explains the annual number of days of use for those respondents who used an SPRA

at least once during the 12-month period prior to the survey. Use days accumulate during the year when recreationists make decisions concerning individual outdoor recreation target areas. In this way the dependent variable, the number of use days, can receive only non-negative integer values. So-called count data models, such as the negative binomial regression model used in this study, are suitable for this purpose (e.g. Cameron & Trivedi 1998). Because the number of use days receives the value 1, 2, 3, etc., the distribution of the use days is left-truncated, such that the zero observations are not included in the model.

Data

Data for this study were taken from the national inventory of outdoor recreation in Finland. This data contains information on the recreation behaviour of Finns aged 15–74 years (Virtanen et al. 2001). The data collection was performed in two phases. Telephone interviews were conducted over a 24-month period every other month as 12 split samples. Data were obtained from altogether 10,651 interviewees with a response rate of 84%. A mail survey was sent to about 8,500 of the telephone respondents who were willing to answer it. A total of 5,535 respondents answered the mail inquiry, corresponding to a response rate of 65%. In this survey 2,632 mail responses contained information concerning the use of the areas of different owner groups.

Respondents were asked whether they had visited an SPRA during the last 12 months. Such areas include national parks, wilderness areas, hiking areas and other areas on which there are trails or recreation services arranged by the state. In a separate item, respondents were also asked how many days they had spent at such a place during the past 12 months.

In the following analyses several variables are used to explain SPRA use or non-use of areas and the number of user days. The telephone interview produced information about participation in about 90 different outdoor recreation activities. The background variables were obtained in the telephone interviews and the postal questionnaires and were used as explanatory variables. Furthermore, variables which describe the supply of state protected and recreation areas – the total area of the national parks, wilderness areas and the national hiking areas in respondents home municipality and the distance from residential centre of the municipality to the nearest state area – were obtained from the databases of Metsähallitus.

Results

During the 12 months prior to the survey, 22% of the respondents had used a state area for recreation at least once. We assumed that the supply of state conservation and recreation areas had an effect on their use. To analyse SPRA use in more detail we estimated the following logistic regression model.

Table 1 shows the estimates of a multiple logistic regression model explaining SPRA use or non-use. The aim was to include variables that described the socio-economic background of the respondent and the supply of state protected and recreation areas in his or her living environment. Furthermore, some variables that were related to outdoor recreation activities and proved to be significant were also

Table 1. Explaining the use of state protected and recreation areas, logistic regression model.

	Coefficient	p-value	Odds Ratios
Gender (male)	0.186	0.068	1.205
Elementary education	–0.269	0.026	0.764
White collar employee or entrepreneur	0.377	0.001	1.458
Camper	0.899	0.000	2.458
Cross-country skier	0.786	0.000	2.196
Downhill skier	0.332	0.009	1.393
Nature trips abroad	0.668	0.000	1.951
Distance to nearest state area (100 km)	–0.829	0.000	0.437
Constant	–1.826	0.000	0.161
N	2511		
Correctly classified, (%, cutpoint 0.50)	78.7		
Pseudo R^2	0.121		
Log-likelihood (constant only)	–1380		
Log-likelihood (model)	–1213		

included. In estimating the model we paid attention to the significance of the variables, and an attempt was made to avoid multicollinearity between the predicting variables. The measure of goodness of fit of the estimated model (so-called pseudo R^2) was 0.12, and in 78.7% of the cases the model predicted correctly whether the respondent had visited the state areas or not.

Socio-economic status and education explained SPRA use. Respondents who had completed only elementary school education used these areas less than those with higher education. Respondents who worked as white collar employees or as entrepreneurs were more likely to use these areas than were respondents in other socio-economic categories (workers, agricultural entrepreneurs and those who were not employed). The effect of the gender was less significant. Enthusiasm for camping, cross-country skiing and downhill skiing increased the likelihood of SPRA use. Participation in hunting was also significant in the model, but was removed from the final model because it was correlated with gender. Those respondents who had made a nature trip abroad during the past 12 months were also more likely to use an SPRA.

We used the distance to the nearest SPRA from the home municipality centre as a variable to describe the supply, accessibility and the costs of use of these areas. This variable was statistically significant and its sign was in accordance with expectations: when distance to the nearest SPRA increased, likelihood of use decreased. The distance to the nearest area was 34 km on average for those respondents who had used an SPRA, for those who had not used them, the distance to the areas averaged 38 km. The variables that described the geographical region of the respondent's home municipality, did not prove to be significant in the model.

It was possible to use the model to predict the likelihood of SPRA use by different population groups. For example, among respondents who had only an elementary education, who did not work as white collar employees or as entrepreneurs and who were not downhill skiers, the probability of using an SPRA was 0.15. For white collar employees or entrepreneurs who had more than an elementary education and were active in downhill skiing the probability of using an SPRA was 0.32. On the basis of the average of the total sample in the model, probability of using these areas was 0.19.

The average number of days of SPRA use was 1.3 days per year (standard deviation 5.1) when zero observations – respondents whom had not used state areas during the latest 12 months – were included. Of those who had visited an SPRA at least once, the median number of the use days was 4, the mean was 6.8 times and the standard deviation 9.9. About 15% of the users had spent more than 10 days at such areas.

We included the variable in the model to explain usage (user days) (Table 2) that showed the most statistically significant correlations with user days and did not correlate very strongly among each other. Respondents who lived in a city with more than 100,000 inhabitants were more likely to spend more days during a year at an SPRA. Another factor that was connected to the respondents' place of residence and increased the use of the state areas was location of respondent's permanent residence in eastern Finland (Kunnat ja kuntapohjaiset... 1999). The number of use days did not seem to be strongly affected by respondent's age, education or socio-economic background, and we found only a few socio-economic background variables, that explained the number of use days. As the size of the household increased, the number of days of SPRA use decreased. As the size of the household correlated with the interviewee's stage of family life, including a variable in our model that described a family with small children could have operated just as well. Number of the respondent's

Table 2. Variables that explain the number of use days, negative binomial regression model.

	Coefficient	Stand. dev.	p-value
Number of residents in home municipality >100 000	0.641	0.150	0.000
Eastern Finn	0.505	0.185	0.006
Household size	–0.111	0.041	0.007
Vacation days	0.001	0.001	0.064
Total area of SPRA in home municipality (1000 ha)	0.074	0.027	0.006
Constant	1.308	0.190	0.000
Alfa	2.260	0.467	0.000
N	458		
Pseudo R^2	0.461		
Log-likelihood (constant only)	–2323		
Log-likelihood (model)	–1251		

vacation days also tended to add use days in the state areas. Of the factors that described the supply of state protected and recreation areas, number of such areas in the respondent's home municipality was the best predictor in the model. When the respondent lived in a municipality that had a higher number of such areas than average, he or she tended to visit those areas more often than a resident living in a municipality with a lower number of such areas. However, the distribution of the number of such areas per municipality was quite skewed, and the majority of those who had used them did not have any in their home municipality at all.

Discussion

Our results suggest that the profile of Finns who use national parks, national hiking areas and wilderness areas for recreation deviates from that of Finns who does not use them at all. Both the supply of such areas and the socio-economic background seem to affect whether they are used or not.

Of the supply factors, proximity of the nearest state protected and recreation areas influenced the probability of their use. The abundance of such areas in the home municipality has a particularly strong effect on the frequency of use. We conclude that if the objective is to make special nature experiences on state protected and recreation areas available to as many as possible, these areas should be located as near as possible to large potential user groups. However, the amount of land area per site need not be large. An abundant supply of state areas near the primary residence makes it more attractive for people to visit them repeatedly. On the other hand, however, the abundance of such areas may reduce the relative share of other alternatives available.

The proportions of users versus non-users of state protected and recreation areas are similar in all five regions of Finland (Kunnat ja kuntapohjaiset... 1999). Even though the state protected and recreation areas in northern Finland are much larger in area, the distance to them for an average visitor in most parts of southern Finland is shorter than in other parts of the country. In southern Finland, such areas are small and fairly close to major populations centres, and thus the need of people living in towns and cities to enjoy natural outdoor settings is met rather well.

The profile of SPRA users is compatible with that which emerges from visitor studies. Those studies showed that level of education and socioeconomic status affected the use of such areas. It was especially apparent that of those who had only a basic education, fewer used state areas, more white collar employees and entrepreneurs tended to use them, than other socioeconomic groups did. The differences in recreational use can be partly attributed to differences in economic resources. Even reaching these areas already entails transport and accommodation expenses, and these are often high enough to keep some from participating at all. In addition, obtaining information about the recreation opportunities on offer in these areas and acquiring the skills needed to get information about them via the internet are probably related to educational level.

In this study, the use of SPRA was associated with participation in certain types of outdoor recreation activity. More of those who avidly participated in a variety of outdoor recreation activities visited these areas than those who were not active recreationists. The use of these areas was especially linked to camping, cross-country skiing and downhill skiing activities. The national parks of northern Finland are typical and logical destinations for downhill and cross-country skiing enthusiasts. The use of the national parks in connection with ski resorts obviously also influences the profile of the users of these areas in other ways as well. The fact that downhill skiing tends to be an activity that is particularly popular among individuals who have higher education and social status (Pouta & Sievänen 2001) tends to mean that these population groups are also important users of the state protected and recreation areas.

The model that was presented here in order to explain the number of use days revealed the importance of factors that are related to the respondents' residential environment. The fact that a respondent lived in a city with more than 100 000 inhabitants increased the frequency of his or her visits to state protected and recreation areas. This finding may be connected to the popularity of skiing tourism in Finland's five largest cities all of which are located in southern Finland. Skiing trips to the national parks in northern Finland typically last several days, and this accounts for much of the increase in the average number of days visitors from urban areas spend in them. Another factor that increased the amount of use among urban populations is the smaller supply of local opportunities to experience nature compared to similar opportunities available to people living in the countryside or in smaller towns.

The tendency for the use of state protected and recreation areas to decrease with increasing household size relates to the impact of growing family obligations and the increased costs of traveling. Another more general factor that tended to increase the number of days spent in state areas was the number of vacation days. When breadwinners had more days off, more time was available for outdoor recreation activities, and this added to the number of days spent enjoying state recreation facilities.

Offering high-quality nature experiences to as wide a group of Finns as possible could be seen as one good reason for increasing their possibilities to participate in outdoor activities and nature tourism on state-owned land (Ohjelma luonnon virkistyskäytön… 2002). The fact that the user profile of the state areas does not correspond to that of the general population in all respects may also be due to the fact that not all Finns are interested in using the current state recreation services and areas. On this basis, one

might well ask if the services offered by the state areas could be developed without endangering their intrinsic natural value while still meeting the needs of different population groups as impartially as possible. The needs of those who visit such areas only occasionally or not at all should be studied more carefully so as to reveal any hidden demand. However, it is almost inevitable that some will not need or want the recreation opportunities offered by the state, particularly at their own expense as taxpayers, if there are plenty of other opportunities to enjoy nature closer to home.

The differences between the user profile and the profile of the general population may also be accounted for by the fact that many of the state protected and recreation areas are relatively difficult to access. An examination of the obstacles to the use of these areas might produce information that would be useful in improving their supply and accessibility. Even though those who provide other similar facilities and services, particularly municipalities and private entrepreneurs, are also able to fill the gap, their contributions may not be able to replace those experiences of nature that are based on conservation values, rather than on profit motives.

A third factor that might account for the difference between these two profiles may be the fact that some population groups have less information about the facilities and services available in state protected and recreation areas. Even though it may be difficult to increase the awareness of Finland's nature reserves in all segments of the population, it is especially important to make this information available to groups that are older or have less education. This will do much to ensure that Finland's basic policy objective will be met: namely that the welfare effects to be obtained from recreation and tourism in state protected and recreation areas will benefit as many citizens as possible across all social spectrums.

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