Methods for monitoring outdoor recreation and tourism in large nature areas
– the case of Södra Jämtlandsfjällen
Tuomas Vuorio, Lars Emmelin, Klas Sandell

www.etour.se
Sammanfattning

Bakgrund och syfte


Studien genomfördes som en del av den fördjupade översiktsplanen som Åre och Bergs kommuner jobbade tillsammans med. De centrala frågorna handlade om naturskydd, förvaltning av friluftsliv, ekonomisk utveckling och resurstromflikter. Redan i början av processen upptäcktes brister i kunskap om turism och friluftsliv av några av de centrala aktörerna. Detta resulterade i den studie som beskrivs och diskuteras i den här artikeln.

Den ursprungliga tanken om att ha den producerade kunskapens roll i planeringsprocessen som central fråga i den här artikeln gjordes omöjligt av det faktumet att planeringsprocessen stoppades relativt tidigt när de olika parterna inte kunde hitta konsensus kring de viktigaste frågorna.

Däremot har vi studerat och diskuterat erfarenheterna av de olika metoderna och använt en ekostrategisk modell för att analysera och diskutera kunskapens legitimitet och förhållandet mellan de olika landskapsperspektiven och det upplevda kunskapsbehovet.

Resultat och slutsatser

Självregistreringar i kombination med tillräckliga bortfallstudier kan ge en tillfredsställande översiktlig bild av områdets användning. Samtidigt är det tydligt att bortfallet varierar för mycket i tid och rum för att göra det möjligt att använda självregistreringar ensam för att studera besöksfrekvenser och -mönster.

En generell konklusion är att några goda genvägar till användbar kunskap om friluftsliv för helheten av planering och förvaltning eller för MKB inte finns. Kraven på möjlighet till prediktion är alltför stora för att grova indirekta mängddata skall ge meningsfull information. Det är i hög grad oklart och osäkert vad kunskap om bruttovolym har för värde som beslutsunderlag.

Däremot kan indirekta metoder, i kombination med ordentlig eftertanke rörande planerings mål och resurstromflikternas karaktär, ge viktig information för att avgöra vilken typ av datainsamling som behövs. De flesta metoder oavsett om de är direkta eller indirekta är både tids- och resurskrävande, men stora skillnader finns dock.

I situationer där det finns konflikter är det viktigt att bilden av den aktuella situationen är både väl etablerad och legitim. Det innebär att både metoder och olika parter som deltar i studien måste upplevas som legitima av alla parter i planeringsprocessen.
6. The case study in Södra Jämtlandsfjällen ........................................................... 37
  6.1 Objectives ........................................................................................................ 37
  6.2 Methods used in the case study ................................................................ 38
    6.2.1 Background .................................................................................. 38
    6.2.2 Self registration and studies of non participation ............................ 39
    6.2.3 Observation of tents ....................................................................... 42
    6.2.4 Registration of cars ................................................................. 42
    6.2.5 Questionnaire .............................................................................. 42
    6.2.6 Data analysis ............................................................................... 43
7. Case study results .................................................................................................. 44
  7.1 Introduction ................................................................................................... 44
  7.2 Number of visitors and groups .................................................................. 44
  7.3 The visitors .................................................................................................... 46
  7.4 Geographical distribution of the visitors ....................................................... 47
    7.4.1 Trail heads ................................................................................ 47
    7.4.2 Hiking along the trails ............................................................... 48
    7.4.3 Special places ............................................................................ 49
    7.4.4 Overnights .................................................................................. 49
      7.4.4.1 Camping ............................................................................... 50
      7.4.4.2 Hiking outside the marked trails ........................................... 51
  7.5 Visitors’ attitudes ............................................................................................ 52
    7.5.1 Wear, litter and noise .................................................................... 52
    7.5.2 Other users .................................................................................. 52
    7.5.3 Service ....................................................................................... 52
    7.5.4 Information .................................................................................. 53
    7.5.5 Threats ........................................................................................ 53
    7.5.6 Management actions ................................................................. 53
    7.5.7 Responsibility for management ................................................... 54
    7.5.8 National park designation ............................................................ 55
    7.5.9 Purists and urbanists in Södra Jämtlandsfjällen ............................... 56
8. Discussion ............................................................................................................. 58
  8.1 Introduction ................................................................................................... 58
  8.2 Eco-strategies and legitimacy of data collection ......................................... 59
    8.2.1 Introduction .............................................................................. 59
    8.2.2 Suggested linkage between landscape perspective and need for data .... 59
    8.2.3 Eco-strategies, data and the case of Södra Jämtlandsfjällen................. 60
    8.2.4 Legitimacy and eco-strategies ..................................................... 62
  8.3 Reflections and recommendations on methods ............................................. 63
    8.3.1 Self registration and non participation ........................................... 63
    8.3.2 Other methods .......................................................................... 66
  8.4 Some reflections on the survey method and results .................................... 67
  8.5 A final word .................................................................................................. 69
References ................................................................................................................ 70
1. Introduction

The paper reports a study of use patterns in the summer season in a large mountain area as well as some theoretical and methodological issues concerning the study of use patterns. The case study was designed to be part of a comprehensive planning process carried out by local and regional authorities. It was carried out as a commissioned project for the planning authorities complemented by aspects of interest to ETOUR research as described in chapter 6.1. The whole planning process was however broken off by decision of the regional authorities. This means that many of the objectives of the study could not be achieved. The present report focuses on methods and on some of the salient results of the case study. The theoretical framework outlined here as well as some of the methodological aspects, such as the use of the purism scale, will be used only marginally for analysis and discussion in this report since they will be used for later analysis within the Fjäll-Mistra project in general rather than specifically in the planning case study.

We will discuss the production of information on outdoor recreation and tourism for spatial planning in the Swedish mountains. The paper consists of the following parts: In chapter 2 the need for information on outdoor recreation and tourism in spatial planning will be discussed. Chapters 3 and 4 discuss collecting data on outdoor recreation, including a description of a number of methods. Chapters 5, 6 and 7 present the case of Södra Jämtlandsfjällen including a description of the methods used and the results. Chapter 8 contains the discussion.

The study was carried out as a part of the thematic, synoptic plan (fördjupad översiktsplan) for Södra Jämtlandsfjällen (figure 1), on which municipalities of Åre and Berg were working together with regional and national authorities. The central questions in the planning process concerned nature conservation, management of outdoor recreation, economic development and resource conflicts. Already at the beginning the lack of information on tourism and outdoor recreation was noticed by some of the central actors. As a result of this European Tourism Research Institute (ETOUR) was contacted to study the use of the area. Two reports has been published earlier, “Vuorio, T., Emmelin, L., Göransson, S., and Gudmundson, A., 2000. Besöksmönster i Södra Jämtlandsfjällen sommaren 1999. Working paper 2000:7. ETOUR.” and “Vuorio, T., Emmelin, L., and Göransson, S. 2000. Vandrare i Södra Jämtlandsfjällen – underlag för översiktlig planering. Working paper 2000:12. ETOUR.”. These reports present the results of the study in detail and are recommended for those who are especially interested in the results. The focus of this paper is on methods and only some results will be presented.
2. Need for data in recreation planning, with special emphasis on the mountain region

2.1 Introduction

In this chapter we will discuss the need for data in recreation planning, with a special focus on i) the situation today in the Swedish mountain region, ii) the need for data in different stages of a planning process, iii) problems caused by that inadequate data on recreation, iv) what knowledge is needed and v) the problem of legitimacy of methods and data.

Planning could be defined as “linking knowledge to action”. The fundamental basis for spatial planning is a truism – all human activities require space and vice versa; all activities can be controlled to some extent by allotting them a place in the space. This is the basis for functional separation of resource use conflicts.

Recreation and protected area planning has been dominated by the rational-comprehensive model, where the focus is on identifying goals, searching for alternatives, evaluating them and choosing the technically most preferred alternative (McCool and Patterson 2000). Assumptions of the rational-comprehensive model about the planning situation (such as that the decision-making power is held by one actor) that are typical for this planning paradigm have been heavily criticised both as norm and as reality.

The spatial planning discourse differs from the nature conservation discourse in two dimensions: Whereas the nature conservation discourse comes from a tradition of “calculating rationality” and a scientific, central general view that points out the foremost values - "riks-intressen", national parks, world heritage areas – the basis of Swedish spatial planning is a conception of local, political decision making. One, often hidden, valuation – from the point of view of conservation – that affects the discussion about the use and protection of nature, is that any change is seen as negative (Emmelin 1997). In addition a close linkage is often assumed between recreation and environmental issues (Emmelin 1997).

Planning has instruments for regulating the urbanised environment – the roots of the spatial planning are in the controlling of the city (Hall 1981). Into this should then be added the spatial instruments of nature conservation: nature reserves where unaffected nature is supposed to live its own life. Nature conservation has a goal of preserving the “natural” landscape in a state of stability, whether the stability is seen as a natural, harmonic stability or from the modern ecology point of view as a temporary state that is affected by external and internal forces. Coming problems that we face in the Swedish mountains between the two poles: balancing interests that are in more or less pronounced competition with each other in a cultural landscape that is neither a landscape of planned artefacts, nor the “natural landscape” of nature conservation. Con-
lict solving through a functional separation in space is in most of the cases made
difficult by a number of valuation problems.

One of the major pitfalls of modern conservation work has been repeated attempts at
developing and implementing universalistic expert-driven frameworks without paying
sufficient attention to local conditions and the need for adaptations (Kaltenborn et al.
1999).

The Swedish mountain region is an area where spatial planning has traditionally been
based on a natural science basis. At the same time it is clear that mountain planning12
is planning for and of outdoor recreation. The commission to produce a “mountain plan” that was given to the Swedish Environmental Protection Agency included tour-
ism (Emmelin 1997). The idea of a single actor managing the mountains is problem-
atic. In reality there are several actors that are “competing” for the resources in the
mountains on several arenas. Because it is only the detailed synoptic plan that is le-
gally binding, the arenas for coordination are often ad hoc, such as project groups, or
sectorized; for example the regional economic work of the county administration
boards that is not necessarily coordinated with nature conservation, environment
protection, management of hunting and fishing etc. Planning often seems to assume
that there are competent authorities with both responsibility and resources for resolv-
ing the problems. This is seldom the case (Emmelin 1997).

In the Government proposal to Parliament ”Om hållbar utveckling i landets fjällom-
råden” (On sustainable development in the mountain region 1995) a need for better
planning and concrete actions in the Swedish mountains was expressed. This together
with a better dialogue about sustainable development was seen as important task for
the municipalities. The municipal synoptic planning was seen as a suitable platform
for developed and coordinated mountain planning.

Planning in the Swedish mountains sets new requirements for the general information
that the county administrative boards have responsibility for providing to municipal
planning. The available information is not detailed or adequate enough to be used in
planning (Alexandersson 2000, Heberlein et al. 2002, Emmelin 1997). This informa-
tion must furthermore be adapted and focused on the questions that are to be solved in
each area. It is however important to see the difference between planning and man-
agement; planning deals with changes in land use while many of the conflicts that are
to be handled via management are conflicts of existing land use. Planning needs to be
complemented by active management and it is important to create models for local
conflict resolution.

Saarinen (2000) categorizes research problems in protected areas and points out the
target groups for different kind of problems as follows:

12 Planning in the Swedish mountains will be called mountain planning from now on
Table 1. Research problems in protected areas (Saarinen 2000).

<table>
<thead>
<tr>
<th>Type of problem</th>
<th>Current research problems in use and management of recreation areas</th>
<th>Theoretical and long term research problems</th>
<th>Research problems pointed out in legislation or agreements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problems that arise from management and use of recreation areas</td>
<td>Academic and large well-known problems</td>
<td>Research problems defined in legislation or agreements</td>
<td></td>
</tr>
<tr>
<td>Research is needed to solve existing problems</td>
<td>Academic and/or public need for knowledge</td>
<td>Law and agreements oblige to carry out research</td>
<td></td>
</tr>
<tr>
<td>Managers of recreation areas</td>
<td>Academic community, political and social decision-makers</td>
<td>Society and parties defined in legislation and agreements</td>
<td></td>
</tr>
</tbody>
</table>

### 2.2 Need for data

Management of outdoor recreation areas has often two goals; i) to maintain natural conditions and ii) to provide opportunities for recreation. These two goals may become contradictory. Outdoor recreation continues to increase, and the potential for disturbance is growing internationally, for example in the USA the increase in mountain protected areas has been as much as 12-fold since 1945 (Cole 1996, Denniston 1995). This is not necessarily the case in Sweden (Heberlein and Fredman 2000, Heberlein et al. 2002) but illustrates the potential dynamics.

According to Freimund and Cole (2001) the use density is increasing faster than per capita-impacts are decreasing and social and ecological impacts will increase without use limits. Denniston (1995) suggests that recreation and tourism activities are surpassing the resource extractive economy as the single largest threat to the preservation of mountain ecosystems. This is why: i) the management of wilderness visitors must have a priority and ii) the manager must have reliable information on visitor use to be able to make effective and right management decisions (Watson 1990). In Scandinavia recreation has previously been described mainly as existing services and infrastructure and with little focus on users themselves (Emmelin 1997, Sievänen 2001). Visitor studies are most needed in areas that are visited by large number of visitors/tourists because conflicts within outdoor recreation and between outdoor recreation and other land uses most probably occur in these areas (see e.g. Kajala 2001).

In general, use measurements have two aspects: i) an inventory of human uses that provides a baseline for planning and management, and ii) a means of determining how human use and resource conditions of the wilderness are changing (Lohnes 1992, Watson et al. 2000). Use measurements are also central in handling conflicts. Such
conflicts may be both those already existing and such that can come up as a result of activities in the area and changes in society in general. This means that data should never be collected without connection to the planning process and its form and contents, present situation and development.

Methods tend to reflect some special need of management or research (Yuan et al. 1995, Recreation site survey manual… 1988, Publikumställinger i naturområder… 1995). Data collection is however often determined by existing techniques. So was in many ways the case in so the Swedish mountain plan (Emmelin 1997).

There are big differences between different visitors in the mountains. Their needs and interest in different nature experiences, their tolerance towards crowding and contacts with other users vary a lot. It is important for planning and management to find out which qualities users are looking for and appreciate and to have a clear picture of the variation between different users and user groups.

Visitor use is often inadequately measured. McClaran’s and Cole’s (1993) survey of wilderness managers in the USA shows that 63 percent relied on “best guesses” to estimate the visitor use. The situation is hardly better in Sweden: there is little tradition in measuring the use of recreation and nature areas and those few surveys that have been carried out are not coordinated and seldom have had a goal of covering the use of the entire area.

Watson et al. (2000) give several reasons for why wilderness use is not assessed adequately:

- Difficulty in quantifying and measuring wilderness use. This can be caused by lack of funding, logistic problems, amount of resources or the type of use.
- Little or no coordination across the wilderness areas.
- Lack of quantitative and practical skills.
- Lack of decision-making and judgement skills.

One fundamental problem has been the lack of data over time. Environmental Impact Assessment (EIA) and spatial planning thus become depended on data from a single measurement. Different ways to compensate this lack are therefore essential. Even if there is data on certain developments it is important to notice that development of one visitor group or activity can depend on shifting between different groups, something that can be hard to analyze.

Quality wilderness use data is absolutely essential for examining and testing various tenets, principles and dogmas of wilderness management; for optimal management of the resource, it is critical to distinguish management principles which have been empirically verified from those which have never been tested, and are based on nothing more than “authoritative opinions” (Cole 1996).
2.3 The need for data in different phases of planning process

Data on outdoor recreation is needed in many phases of the planning process: environmental impact assessment, spatial planning of and for utilization and management of the area and for the implementation of the plan. It should be noticed that preservation of an area also is a form of utilization that may need active management actions that lead to demand for data. One important difference lies in if data is supposed to show the state of things ex ante (impact assessment and planning) or ex post (management that can imply supervision, follow-up or revisions of a plan) as shown in table 2.

Table 2. Planning process and the need for knowledge (Emmelin and Vuorio 2000)

<table>
<thead>
<tr>
<th>Moment</th>
<th>Purpose</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Impact</td>
<td>Environmental impact assessment</td>
<td>Data on environmental effects</td>
</tr>
<tr>
<td>Analysis</td>
<td>Prediction of the pressure on the natural resources</td>
<td>- ware</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- disturbance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data on the level of use</td>
</tr>
<tr>
<td>Spatial planning</td>
<td>Preservation</td>
<td>Base-line data</td>
</tr>
<tr>
<td></td>
<td>Arrangements for outdoor life</td>
<td>Demand</td>
</tr>
<tr>
<td></td>
<td>Development of industries</td>
<td>Reactions on the changes</td>
</tr>
<tr>
<td></td>
<td>Handling of the resource conflicts</td>
<td>Status indications</td>
</tr>
<tr>
<td>Management</td>
<td>Implementation and follow-up of the plan</td>
<td>Supervision of the goals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fulfilment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Limits of Acceptable Change (LAC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recreation Opportunity Spectrum (ROS)</td>
</tr>
</tbody>
</table>

Data that make predictions of reactions to different management actions possible is crucial for all planning and for environmental impact assessment. Data that includes only figures showing gross volumes of use have limited value. More sophisticated data drives up the need for precision and thereby the need for resources for data collection. Important for method development of studies on outdoor recreation and nature management has clearly been the differences in views on which factors govern and thereby predict the consequences of the development.

The need for data is however not only goal-oriented. Ideas of what kind of data is needed depends on problem framing, available strategies etc. and thereby come from ideas within different disciplines, professions and management cultures (Emmelin and Kleven 1999). Sandell (2000) has analysed how a national park process has been associated at the outset with different interests and uncertainty of the goal, interest groups and conflicts has thereby been created.
Research on outdoor recreation in North America has had as a goal to satisfy the recreational needs of the public, also in different commercial forms. In the USA funding of the management authorities have been motivated by the level of use. This has led to the development of different methods for counting visitors in the areas with more or less controlled admittance (Emmelin 1997).

Planning that aims at to secure satisfaction for different groups has led to development of methods for studying patterns of use and different functional methods for differentiated planning, especially the so called ROS-method. For a long time the focus had been on an extended carrying capacity concept and that the main problem was experienced crowding (Shelby and Heberlein 1986).

In the Nordic countries data on outdoor recreation has been associated with large interferences with nature. There have been several cases in Norway where the aim has been to bring in outdoor recreation in the environmental impact assessment in the large oil projects on the Norwegian continental base (Kaltenborn and Vorkinn 1993, Aas and Aasetre 1994). Later the Norwegian Directorate for nature management has produced a method hand-book for studies on outdoor recreation (Direktoratet for natuforvaltning 2001). In Sweden Vägverket13, (The National Road Authority) has started work on a hand-book on outdoor recreation in EIA. In Finland a manual for visitor studies has been developed to standardize the studies and to make it possible to compare results from different recreation areas (Erkkonen 2001, Erkkonen and Sievänen 2001).

In the Swedish planning for nature conservation outdoor recreation has been studied very little as a basis for management actions although they have been motivated with outdoor recreation. Even if the so called mountain plan (“Fjällplanen”) was inspired by the ROS-model, it was only inventories of flora and quaternary geology and to some extent fauna that were done (Emmelin 1997). An early study applying the ROS-methodology built on a thorough collection of recreation data was carried out in Sweden by Wallsten (1988) as a part of “Femundsmarka-Rogen-Långfjället” project. The recently opened Fulufjället National Park is the first example of an official application of the ROS-concept in Swedish mountain planning (Naturvårdsverkets föreskrifter för Fulufjällets nationalpark 2002).

In EIA it is an established principle to use existing and available data as far as possible. The lack of earlier studies forces planning to be based on data that is collected during a short period of time. Therefore indirect methods are often used. Predictions can be based on direct hypothetical questions about reactions on changes or they are made with a help of available data basis on attitudes and behaviour. There is a strong tradition within research on outdoor recreation to use different variations of Ajzen’s and Fishbein’s (1980) models for making predictions on changes. This means that

13 A draft has been produced by Lennart Bäck, Uppsala universitet
users of an area are seen as rational participants that are trying to achieve relatively clearly defined goals.

2.4 What knowledge and what legitimacy is needed?

2.4.1 Introduction

Various landscape perspectives – involving both mental landscapes "mindscapes" (Hägerstrand 1991) and actual use and behaviour – are to be found with regard to a specific physical landscape (figure 2). It could be the differences between the local residents and the tourists; between the preservationists and the foresters; between the cross-country skiers and the snowmobile tourists etc. In addition, these different landscape perspectives change over time due to for example external influences and technical development. Also they could, at least to some extent, be different for the same person or group in different contexts. This means that discussing the need for knowledge that could feed the spatial planning process the point of departure must be taken in questions of what knowledge and whose legitimacy is to be looked for.

To a large extent planning is carried out with a specific, but often implicit, perspective in mind forming the type of knowledge and legitimacy needed. If for example the high mountains in Sweden are seen mainly as a region of interest for its contribution to global biodiversity the need of knowledge could be fulfilled by biologists demarcating the important areas to be protected. But if the high mountain region is seen mainly as the home district of the indigenous Sámi people the inventory by the biologists will only form a very little part of the need of knowledge for spatial planning and will have a limited legitimacy among the main group of interest. Furthermore legitimacy among the Sámi people is no reason to believe that the knowledge collected is seen as legitimate by e.g. tourist authorities. The “triangle drama” (Emmelin 1997) between conservation, outdoor recreation and tourism is a typical example of how different themes and groups are linked to different perspectives. What type of knowledge for a planning process that will be seen as legitimate therefore is a reflection of what landscape perspective is taken as the point of departure for the planning process.

The current tendency to ask for more of a communicative planning approach and more of a "bottom-up" perspective in the planning process, here involves two major shifts with regard to what type of knowledge and whose legitimacy it is necessary to ask for. First, in line with the previous discussion, there are now to some extent new themes and new groups that have to be taken into consideration with regard to what should be investigated (also of course involving a discussion of what type of methods that are suitable). Secondly a planning process more in line with communication and bottom-up must involve the fact that also not previously known themes and groups could be manifested as an outcome of the investigation. In other words, the planning
process must include openness for what values (attitudes, activities, groups) that have to be taken into consideration with regard to the need of knowledge and legitimacy.

Out of this it is essential not only to look for what type of landscape perspectives (themes and groups of interest) traditionally are asked for by planning authorities and the like – but instead to look for what are plausible general patterns of landscape perspectives to look for. Of course there are various answers to such a question but one answer with a great deal of analytical power is the conceptual framework of different eco-strategies introduced below. It is important to note however that the term "strategy" here is used as a description of attitudes and behaviours not always necessarily intentionally chosen, but could to a large extent be seen as an outcome of time-period, type of society and more individual contexts like occupation, education and place of residence. Also it should be noted that the prefix "eco-" does not involve any normative aspects like in "eco-development" but is only indicating that it is the man-nature/landscape relationship that is focused upon (see further in e.g. Sandell 1988 and 2001).

![Diagram of The Landscape and "The Mindscapes"](image)

**Figure 2.** Various landscape perspectives – involving both mental landscapes "mindscapes" (Hägerstrand 1991) and actual use and behaviour – are to be found with regard to a specific physical landscape (Sandell 2000).

### 2.4.2 A conceptual framework of eco-strategies

When constructing general conceptual frameworks for discussing different landscape perspectives, we commonly identify a dimension between the strategies of domination vs. adaptation with regard to human views and use of nature (see e.g. Sandell 1988). A similar division with regard to regional development has been suggested by Friedmann & Weaver (1979) using the concepts "functional" and "territorial" development. In many ways, this is parallel to the dichotomy between centralised and decentralised systems (e.g. Hjort af Ornäs & Krokfors 1992) and with regard to out-of-doors the concepts of "activity involvement" vs. "place attachment" (see e.g. Meyer 1999). A
major effect of this approach is that various aspects of social integration (politics, economy, and culture) are brought into focus together with the human-ecological issues.

Even though the illustrations below focus on the spatial dimension, it seems reasonable to assume that the content of and potential for a more territorial development is to a large extent a question of permanence. The basic point of departure for the orientation along this dimension between "functional specialisation" and "territorial adaptation" is a question more of identity than of e.g. formal residence. This means that when using the term "one’s home district" below it refers more to perceptions of sense-of-place, roots and place identity, than formal residence only – a dimension that probably will be even more important in a further globalized future (Macnaghten & Urry 1998, Massey and Jess 1995). It is also important to note that in practice all eco-strategies (view and use of nature) are composed of various elements that could be more or less linked to the principally different eco-strategies described here. In addition to this dimension it is important to include the general tension between the strategies of active usage and change vs. passive admiration and contemplation of the landscape. Out of this the conceptual framework of different eco-strategies is organized according to the following two dimensions: i) the two strategies of functional specialisation vs. territorial adaptation as discussed above; and ii) the two strategies of active usage vs. passive contemplation (figure 3, see further in e.g. Sandell 2001).

Figure 3. The conceptual framework of eco-strategies with the labels of four quadrants to be used in the discussions below (Sandell 2000).
With regard to the type of landscape relations involved in phenomenas such as outdoor recreation, conservation and nature tourism, we may basically describe the four eco-strategies as follows:

- An eco-strategy in line with an active usage of the landscape and in line with functional specialisation. Here the activities are the point of departure and the landscape is improved in various ways to fulfil the need of these activities. It could be argued that the landscape is looked upon as a "factory" rearranged for the production of adventure. Special areas, equipment and organisations are established for these specialised outdoor activities like slalom slopes, put and take fishing ponds, and in its extreme forms fully designed adventure lands. Long-distance travel and heavy use of material resources are often involved.

- Also the passive contemplation of the landscape in line with functional specialisation takes the point of departure in special functions looked for in the landscape. But here these functions are characterized by the strategy of "freezing" ("conserve"!) a specific landscape (and maintaining that "frozen" landscape) also for example sometimes including the "non-intervention" strategy of preventing all cultural influences. Landscapes are to be "set aside" for the sake of, for example, biodiversity, nature tourism or science. Activities like hiking, excursions or cross-country skiing are characterised by that the landscapes generally are interchangeable with each other (if I am diving here this vacation I will probably dive at another place next time). The landscape is looked upon as a "museum" for these special interests and the spatial planning could use the interest that has been given top priority as the ordering principle for handling different conflicts. This eco-strategy is a well known approach in man’s relation to nature and landscape in terms of tendency to designate areas as "reserves" (e.g. national parks), where the main strategy is to decide what is the preferred landscape (e.g. a "wilderness" without cultural traces, or a "pasture" with cattle, small villages etc.).

- An eco-strategy in line with active usage of the landscape in terms of territorial adaptation originates in the perspective of "one’s home district to be utilized" (but, as mentioned above, more in terms of what is perceived as home district than actual place of residence or work). Here, as in the strategy of passive territorial eco-strategy discussed below, the interest is directed towards the features of the local natural and cultural landscape – the topography, the season, the history etc. But the eco-strategy of active adaptation also involves direct utilisation and change of the landscape – firewood, fishing, hunting etc. Outdoor recreation here is one out of many locally integrated aspects of one’s home district. Also, in line with this eco-strategy – from the entrepreneurs’ point of view – we will find a great deal of the rhetoric with regard to ecotourism and small-scale locally based nature-oriented recreation as regards activities (where the tourists are "invited" to one’s home district).

The strategy of "passive contemplation of one’s home district" involves appreciative activities like bird watching, cross-country strolling, looking for flowers etc.; but, compared with the museum strategy, these activities are subordinated to and inte-
grated in the local landscape. The characteristics of "your" landscape (forests, mountains, coastline etc.) in combination with the season, the weather etc. directs your interest to skiing, climbing, picking mushrooms or bathing etc. In line with this eco-strategy we have many aspects of the sense-of-place that is linked not to utilization of an area like forestry or agriculture (i.e. in line with a home district to be utilized) but to just living there or being associated with the landscape. This is a landscape perspective often linked to long continuity perhaps involving deep roots in terms of relatives and memories.

2.4.3 The framework used for some major planning issues

In the figures showing the conceptual framework of eco-strategies the different strategies may appear to be clear-cut categories, in reality, of course, it is a question of tendencies and blends involving a greater or lesser degree of passive vs. active use of landscape, and of functional vs. territorial strategies. Nevertheless the tensions between different eco-strategies could clearly be found in various cases (cf. the term "ideal types" in social science). In figure 4 below as an example the often occurring struggles concerning national park proposals are analysed (for an example see Sandell 2000), and in the next figure (figure 5) the position of the Nordic tradition of right of public access is illustrated. (For further examples of the application of this conceptual framework see Sandell 2001.)

Figure 4. The conceptual framework used to illustrate the conflict between the traditional national park perspective in Sweden and the local opposition (Sandell 2000).
Figure 5. The traditional Nordic right of public access shown in the conceptual framework of eco-strategies presented above (Sandell 2001).

2.4.4 What knowledge and legitimacy to whom?

Of course not all types of information nor all individuals and groups could be involved as a basis for spatial planning procedures – there has to be a selection and a prioritization and a major element in this prioritization process is the current state of overall political emphasis. Therefore, for example, the shift of approach in the case of a proposed national park in the Southern Jämtland (further discussed below) not only involved a shift in what type of knowledge and whose legitimacy the spatial planning process had to be looking for. But this shift towards a more territorial approach was fully in line with, and linked to, a more general trend toward an interest to handle conservation and nature tourism planning on a more local basis. – A general challenge for what knowledge and whose legitimacy there has to be suitable methods for.
3. Collecting data on outdoor recreation and tourism visitors

3.1 Introduction

A large number of methods have been developed for collecting information on outdoor recreation and tourism. We will present and discuss the most common ones that, as we believe, can at the same time be seen as the most suitable for studies in the Nordic mountain environments. A short discussion of monitoring processes and different variables to measure is followed by a presentation of different methods and their advantages and disadvantages.

3.2 Statement of objectives

It is essential to describe why measurement of the area is to be performed. A statement of objectives will direct the whole project by defining both the type of information that is to be collected and the purpose for which it is collected. Contents of the statement may however be updated during the planning process.

Objectives are not a summary of methods, numerical goals or measurement techniques. Instead it is an identification of a specific management problem in terms that allow some assurance of its solution (Watson et al. 2000, Ackoff 1953). The visitor use measurements is carried out to resolve or to help resolving the identified problem.

3.3 Visitor use characteristics

3.3.1 Introduction

The decided objectives determine what observations that must be carried out. Chosen characteristics must characterize the wilderness use as it is defined in the study objectives. Visitor use data is either quantitative or categorical. Quantitative data is usually presented as visit counts. Other types of visitor data are often a combination of categorical and quantitative information. Visit attributes describe the visits, for example activities, length of stay etc. Visitor attributes describe the visitors, for example preferences and demographics. Watson et al. (2000) use even summary use statistics that combine the characteristics of the visit with visit counts.
3.3.2 Visit counts

Visit counts can be divided into individual visits and group visits. Number of single-person visits is the most commonly used measure. One visit is counted as one person entering the area. Group visit data can be useful for managers in the areas with high number of groups. Although a group can have arrived in the area by several vehicles and not exactly at the same time, it is likely that they are using same camp sites and spending most of the time together. One impact that is particularly attributed to large groups is expansion of campsite boundaries (Hammit and Cole 1998). In our study in Södra Jämtlandsfjällen the individual visits was the basis, but even the group size was studied to give better understanding of the patterns of use.

Every area has visitors that should not be registered as visitors. They can be people working in the area (park employees, forest workers etc.). Even people passing through should be handled separately. It is however important to account for the total number of persons because in most cases the impact of users on ecosystem is one of the factors that are supposed to be measured.

3.3.3 Visit attributes

Visit attributes describe visits, either quantitatively: for example date of arrival, group size etc. or qualitatively: activities, use of services etc. What should be monitored and studied depends on the area and the objectives of the study. Miscellaneous visit characteristics give additional information about visits, for example in case study in Södra Jämtlandsfjällen questions about number of people hiking outside the marked trails and the number of dogs brought.

3.3.4 Visitor attributes

Data on visitors is important from many aspects. Visitors’ behaviour is affected by for example background, education etc. and by, their perceptions of wilderness and its management. Better understanding of visitors is crucial when choosing planning priorities or when choosing different ways to inform visitors and influence their behaviour. This is especially important because of the possible differences between visitors and managers in their tolerance and attitudes towards different management actions (see e.g. Vistad 2002). Studies have also showed that different types of user groups produce different types and amount of impacts (Hammit and Cole 1998). Sociodemographic characteristics, such as age, sex, type of employment etc. are the most commonly used basic variables. Other attributes can be level and type of past experience, knowledge of wilderness conditions and attitudes toward and preferences for different management practices.
As discussed earlier, one of the central issues in planning is the problem of predicting responses and reactions of different user groups to plans and management actions. Planning and impact analysis has needs for certain types of knowledge while monitoring may need other kinds of information in order to understand discrepancies between predictions and actual reactions and responses.

In spatial planning a functional separation of activities as a means of conflict resolution normally implies that one or several user groups may have to adapt to changes in activity, temporal or spatial use pattern etc. The separation of skiers and snowmobilers is a case in point; access to certain areas will change for one or both groups (see e.g. Denstadli et al. 2001). The encroachment on reindeer grazing lands by many activities such as hydro-power development, mining, road building etc has been a major problem in some areas. Understanding the combination of temporal and spatial pattern of conflict is important but also a complex problem to handle for spatial planning since normally only the spatial patterns can be handled with planning instruments. Temporal patterns are more a matter for other types of regulation and management. Functional separation i.e. setting aside areas where one land use has priority is as we have noted above the normal but often blunt instrument available. To introduce more sophisticated spatio-temporal management of conflicts presupposes a more complex understanding of responses.

3.4 To segment the users – the purism scale

Users’ attitudes have been seen as central for how they react on different management actions (Kaltenborn and Vorkinn 1993, Manning 1999). Segmentation of users with the help of different attitude scales has been used for guiding planning towards differentiation in space to be able to satisfy different types of users (Kaltenborn and Emmelin 1993). Fredman and Emmelin (2000) showed that a combination of attitudinal segmentation of users and a study on willingness to pay gives interesting information about differentiation in space according to the ROS-model for planning. There has however been a certain trend of using activities as a basis for planning and management during the recent years (Mowen et al. 1998).

It is quite obvious that outdoor recreationists and tourists have different interests and needs concerning "nature without human influence", that their tolerance towards crowding, contact with other people and that their idea of untouched nature differs a lot. From a scientific point of view it is interesting to study different individuals’ and groups’ attitudes on wilderness and wilderness experience. For management and planning it is very interesting to know what kind of qualities people are looking for and appreciating. Tourism industry that is supposed to be based on wilderness experience should have a strong interest to get a more varied picture of customers’ attitudes and expectations.
In practical management and marketing simplifications are needed. Using average values is unwise—they often hide interesting and useful information. Moscardo et al. (2001) and McVetty (2002) discuss visitor segmentation and state that it should describe visitor use reliably in several dimensions, producing segments that are: homogeneous, durable, measurable, responsive, relevant, accessible, substantial and compatible.

There are a large number of classifications that are used in studies on outdoor recreation. Sociodemographic segmentation of visitors has been widely used and these variables, for example sex, age and income, are useful to some extent (see e.g. Manning 1999). If the users are instead segmented after behaviour or motives the methods are usually called psychographic segmentation. The psychographic segmentation can be based on either visitors answers to variables that are defined in advance (for Scandinavian examples see e.g. Aas and Vorkinn (1991) and Vistad (1992)) or the criterias that distinguish between different user groups can be determined with a help of statistical analysis (for Scandinavian examples see e.g. Kleiven (1992), Lindberg et al. 2002, Miettinen and Horne (1999), Sievänen (2001) and Vistad and Vorkinn (1992)).

An interesting and at the same time practical classification of users is to look at the most sensitive, the most tolerant and the group between them separately. In the international literature the most sensitive group is often called "the purists" concerning the wilderness experience. Purists have high demand for areas with wilderness characteristics and they react strongly even for moderate disturbances. They want to be alone in the nature, or at least have an illusion of it, and they do not want to see other people or the signs of use of the area. They want especially to be alone at the camp sites and to have a freedom to put up their tents where ever they want: the feeling of freedom is important for the experience. The term for the opposite group is "the urbanists". The urbanists have a higher tolerance concerning other users, for example along the hiking trail they can experience meeting other users as positive. They do not only tolerate different settings but also want to have different forms of service. Between these two groups there is a large group of "neutralists".

By asking a set of questions about different indicators for unspoiled nature or wilderness characteristics it is possible to get a good picture of individuals’ preferences on a purism-scale. Characteristic questions are for example about visitors’ attitudes towards marked trails, huts, other visitors, different restrictions etc. The object is to get a picture of visitors’ general ideal, not only expectations on a certain area. The purism scale is a one dimensional addition of answers on all these questions.

14 Cf the classic article in outdoor recreation research "The average camper who does not exist"; Schafer 1969.
4. Methods for collecting information on recreation and tourism

4.1 Introduction

Outdoor recreation participation can be either monitored when it takes place, or the aim can be to estimate outdoor recreation participation in general or in the future. Because this paper has its focus on methods used in the field, not on different estimation models, the latter will be discussed only in short.

Basic information on outdoor recreation can be collected by going through already existing data, such as lodging statistics, data available at the municipalities and the county administration boards and by interviewing officials that are working with the area of current interest. This kind of data is seldom sufficient, but is of good help when planning a monitoring project. In the US with the longest traditions of visitor management the problems and needs have been slightly different from those in Scandinavia which is evident in method development (Manning 1999, Yuan et al. 1995). Many of the methods are however useful in Scandinavia. It is important to choose methods that are compatible with other data from other sources. For studies in Scandinavia, see e.g. Aas and Vorkinn 1991, Bäck and Bäck 1986, Bäck and Hedlund 1983, Denstadli et al. 2001, Emmelin and Iderot 1998, Emmelin and Ohlsson 1999, Erkkonen and Sievänen 2001, Fredman and Hörnsten 2002, Kaltenborn and Vorkinn 1993, Lindhagen 1996, Lunde 1996, Meyer 1991, Miettinen and Horne 1999, Odden 1995, Wallsten 1988, Vistad 1992 & 1995, Vistad and Vorkinn 1992.

The counting methods can be classified as follows (see e.g. Yuan et al. 1995). The methods will be described and discussed in chapter 4.5.

1. mapping of physical traces
2. mechanical/electronic counters
3. counting of access permits and tickets
4. documentation and self registration
5. manual observations
6. questionnaires
7. interviews
8. indirect observations

4.2 Problems and ethical aspects

People visiting nature areas, especially remote areas do not expect to be watched. They seek peace and quite and may even escape urban environments partly to avoid social control. This may not be a problem as long as visitor monitoring is based on volunteer registration, although it may affect the percentage of visitors registering
themselves. Use of cameras or video can be experienced as violation of privacy. One possibility is to place cameras so that individuals cannot be identified, only counted (see e.g. Muhar et al. 2002, Arnberger and Brandenburg 2002). The use of such methods is governed by very strict legislation in Sweden and would for many purposes be ruled out.

Counting devices can be vandalised. They can be totally destroyed or manipulated. Counters should be hidden as well as possible and placing of for example self registration stations should be considered well.

4.3 Validity, legitimacy and other factors affecting the choice of methods

One problem with visitor studies is the representativity of data. Size and type of the whole population is seldom known which makes it hard to estimate the sample size and its representativity. It is important to register even some external factors that can affect the visitors and their activities. These can be for example special events, weather or special campaigns. Even holidays should be registered.

Legitimacy of the knowledge base for spatial planning is a complex mixture of views on the processes of acquiring data and knowledge and views on the legitimacy of different actors to express views and to participate in decisions. The positions defined by the eco-strategy model (see above and further in e.g. Sandell 2001) gives insights into both these aspects of legitimacy. A case in point is the view expressed by the Sámi reindeer herding representatives in the case of Södra Jämtlandsfjällen on who should collect data on camping.

An interesting illustration to the problem of legitimacy of knowledge for planning was the issue of whether camping outside the immediate vicinity of trails and mountain huts has increased. As part of our user study it was agreed that an aerial survey of tents should be made several times during the summer. The county conservation administration offered assistance, having a plane and pilot available. However the representatives of the Sámi villages very forcefully claimed that they would place no reliance on data collected by the regional conservation authorities. They demanded that the data collection be done by ETOUR personnel flying with helicopter pilots experienced in reindeer herding. The fact that inventories with fixed-wing aircraft flown by experienced conservation officers living in the region would be more cost effective and allow much more data collection was no argument in this case as it would be if scientific reliability were the most important criterion for legitimacy of knowledge. It was agreed to complement the helicopter surveys with the aircraft surveys. Although the local knowledge and spotting ability of the helicopter pilots was formidable we have no indications from the ground controls that there is a significant difference in the reliability of the data collected by the two methods.
This example shows that even the alternative method affects the legitimacy of the used method. The legitimacy was also affected by the actors - although we were neutral in our role as researchers, it was obvious that the county administration board, representing the central power, would have reduced the legitimacy of the study. This illustrates the problem that different groups can have different views on the legitimacy of a given method or set of data.

4.4 Where and when to monitor?

The choice of the place for monitoring is often affected by practical things, such as electricity supply, security, and distances. It is often easiest to “catch” the visitors at the entrance points (trail heads, parking lots etc). The entrance points often give a good picture of visitor flows in and out of the area. This includes some problems: Over-representation of short-time users, lack of information on the use and the visitors in the core areas. Muhar et al. (2002) point out the importance of visitor monitoring in the core areas if the aim is to quantify interactions between visitors and the ecosystems. They also point out the importance of pre-tests if there are a large number of entrance points to the area. The practicality of such pre-testing can however be questioned in many planning situations with limited time available.

Covering all the seasons is necessary for understanding the dynamics of recreational use of the area. This does not mean that every single visitor has to be recorded; use of good sampling techniques makes it possible to cover longer periods at reasonable costs. This is of course not possible everywhere. Covering only the peak periods usually gives misleading information if monitoring results are used for predicting the visitor flows during the whole season. It is not only the visitors that determine the choice of monitoring period. As important may be the spatial and temporal patterns of conflicting resource use. Reindeer husbandry is one example of other activities that are affected by outdoor recreation and it is important to cover periods when there is risk for conflict. The sensitiveness of both flora and fauna is varying depending on the time of year. Even small number of visitors can have a strong effect during this kind of sensitive periods.

4.5 Description of the methods

4.5.1 National screener surveys and projections of outdoor recreation

If outdoor recreation is supposed to be estimated, not monitored (i.e. when it takes place), there are several methods to choose from. One example is the national screener surveys. In this method a random sample of the whole population is interviewed about for example their recreation activities, visits to certain areas etc. This method was used for example in the study of patterns of mountain tourism in Sweden.
This is quite easy in Sweden, because of the existence of the comprehensive data register of inhabitants from which a suitable sample can be taken. This is a cheap and effective way to get a rough picture of peoples’ leisure habits in the whole country or in a chosen area. One problem can be that what really is measured is participation, not demand. Another problem is that they concentrate on the activity, not the meaning of it for the respondent (Manning 1999). If too much attention is paid to the activity itself there is a risk of ignoring the fact that different activities can compensate each other and fulfil the same needs.

The aim of projections of outdoor recreation is to estimate outdoor recreation participation in the future in a certain area. Regional cross-sectional models have been used in the USA in several projects (English et al. 2001, Hof and Kaiser 1983, Walsh et al. 1992). One method is a logistic regression model where individuals answer yes or no to different behavioural questions. The model is used to estimate the probability of that an individual will participate in a given recreation activity based on the recreation opportunities near the individuals residence and on the individual’s characteristics. Several studies show that availability of recreation resources is important in estimating whether and to what degree individuals recreate. Results are then combined with population information to obtain estimates of the total number of recreation participants in an activity in the region.

4.5.2 Mapping of physical traces

By using physical traces it is possible to get information on the past use of an area (Manning 1999). There are two types of proof: erosion and wear or waste. They are useful measures of frequencies of use, the spatial characteristics of use and level of use. It is however important to find out the relation between wear and amount of use. Using footprints is sometimes possible as it is done in wildlife monitoring. This can be possible in areas with low use levels. Use of sand beds is one technical possibility. The biggest advantage of this method is the objective nature of the results. Disadvantages are for example that the nature of the physical evidence can vary randomly during different periods of time and places. The representativeness, reliability and generalability of results are quite low. Mapping of physical traces is usually used together with other methods to give additional information.

There is a large literature on different methods for measuring the physical environmental factors. Hammitt and Cole (1998) and Manning (1999) give a comprehensive exposition of different methods that can be used in different natural environments. See also Monz (2000) and Hendee et al. (1976). For methods applicable to the Swedish conditions see for example Emmelin and Iderot (1999), Wallsten (1988) and Vistad (1995). Sievänen (1989) has measured the spatial distribution of outdoor recreation in areas close to urban environments with the help of naturally born (i.e. not build) trails.
4.5.3 Mechanical/electronical counters

Mechanical/electronical counters can be used alone or together with other techniques. They are useful especially for measuring visit numbers. One limitation is the technical problems in nature environments without buildings and electricity. Counters require control to make sure that they measure that they are supposed to. They are often very cost effective. There are several types of counters that are used in different kind of outdoor settings (Cessford et al. 2002, Gasvoda 1999, Yuan et al. 1995, Watson et al. 2000):

1. Mechanical
2. Pressure sensitive devices
3. Seismic and vibration
4. Photoelectric counters
5. Devices measuring warmth or sound
6. Inductive loop sensors
7. Magnetic sensing
8. Microwave sensing
9. Other

Use of turnstiles is possible only in areas where entrance is limited to certain place(s). Number of visitors should be relatively high. There is a risk for over-estimation, especially if the devices are not guarded. Turnstiles can seldom be used in recreation areas in Scandinavia.

Different kind of pressure sensitive devices has been developed for counting visitors. These kinds of counters are mainly used for counting road traffic. Pneumatic tubes are one often used counter type. Advantage of devices used for counting vehicles is that cars stay on the road and are thus easy to register automatically. Observations of number of passengers per vehicle and share of visitors arriving to the area by car are needed. It is often necessary to estimate how many of the registered cars were actually there to visit the recreation area. Lindhagen (1996) points out the fact that many of the motorized visitors stay only a short moment, many of them does not even leave the car. Direct observations are a useful method for controlling the countings, even interviews can be used (Lindhagen 1996).

Bikers can also be counted by using pneumatic tubes, detecting hikers is more problematic. Several pressure sensitive plates has been developed, the best places for them are narrow bridges and in a step sequences.

Photoelectric counters can be used even in remote locations because they can be battery-supplied and have usually low energy consumption. Calibration and set-up has to be paid attention to. Wrongly installed counter will even register wildlife. It is important to control the results by observing the counting stations manually.
Countings can also be based on measuring warmth or sound. Another type is inductive loop sensors which can be used mainly for counting traffic. The signal is triggered by the movement of metallic objects. These methods have not been used widely in Sweden although there have been plans for monitoring snow mobiles by using inductive loop sensors.

Gasvoda (1999) has identified several problems with counters that are used by USDA Forest Service: 1. Accuracy, 2. Installation and sensitivity adjustments, 3. Maintenance and battery life, 4. Vandalism, 5. Poor workmanship, weatherization, and equipment malfunction, 6. Too expensive to purchase or operate, 7. Could not classify use, or distinguish human use from animals, 8. Interpreting data was difficult.

### 4.5.4 Counting of access permits and tickets

There is often already existing data on visitors that can be used. It can be lodging statistics, counting of vehicles or statistics on common traffic. The number of sold licences has been one way to measure outdoor recreation in the North America. This kind of indirect method must often be calibrated with factors that can be unknown or difficult to find out without field measurements (for example the number of passengers per car, bus or train etc.). One advantage with the indirect methods is the low costs. Another advantage is the possibility for comparison with other time periods and by that information on changes over time (Teigland 2000). Low reliability limits the usefulness of such indirect methods except perhaps as rough guides to changes over time.

### 4.5.5 Documentation

Documents are continuous or discontinuous statistics or other similar documents. The problem is that they are collected by someone else than the researcher. The advantages are the low costs and relatively simple data collection. Summit books, guest books at huts and books used for leaving information about the hike (färdmeddelande) are also useful sources of information. The reliability depends on the placement and type of the guest book, number of visitors, the weather and hut personal. Guest books are a valuable source of information in areas with low visitor numbers and highly dispersed patterns of use. They have been used for example in the wilderness areas in Northern Finland (Kajala 2000).

### 4.5.6 Self registration

Self-registration is a method that has been widely used in North America. The visitors are asked to give information about themselves and their visit in a notebook, on a form or by using a computer. It is usually a quite cheap and easy method but the rep-
resentativeness of the collected data is a problem. Self-registration normally gives large amounts of data but must be complemented with studies of non-participation to assure the reliability of the results. A combination of self-registration and electronical or mechanical counters gives information on both the level and the type of use. This was done for example in Fulufjället (Fredman and Hörnsten 2002). Visitor registrations give base-line data and are suitable for supervision. They are not however suitable for making predictions and they do not give information about visitors attitudes. The self-reporting system is a good choice in areas used by a few visitors who are very interested in nature conservation subjects (Wallsten 1988). This is also an aspect of the “legitimacy problem” – participation is among other things a function of the perceived legitimacy of a study, a question etc.

4.5.7 Manual observations

One way to study outdoor recreation is to observe the phenomenon when it is happening. It is best suited for pre-studies, for example for estimating the sample size. There are two kinds of observation methods: 1. participating-simple-uncontrolled; 2. non-participating-systematic-controlled (Yuan et al. 1995). It is mainly the second one that has been used in studies in outdoor recreation. Manual observations are tied to time and place and its suitability depends on the type of the area and object of the study. The object of observations can be humans, parked cars, boats etc. Manual observations are often used together with self registrations as a control. The largest disadvantage using manual observations is that the number of observations give is high due to the large variance between different times of observation (Lindhagen 1996). Using fixed positions for observation can even be regarded with a great deal of scepticism. Lindhagen (1996) used a running observer when studying use of a forest area.

Fixed counting stations are usually used only for shorter observation periods. It is however possible to involve personnel working at souvenir shops, information desks etc. It depends on the infrastructure of the place and number of visitors how systematic this kind of observations can be. It is important to survey and describe the circumstances before deciding on which way data should be handled. This is also the case with use of roaming observers. They can be park personal or others working in the area. Their observations can usually be used as additional information unless their roaming in the area is set up systematically (Muhar et al. 2002).

Manual observations have been tried even in larger areas with similar methods to the observation of large mammals. Keirle (2002) used randomly chosen grid squares to investigate recreational activity in a 466 square kilometre area of Mid Wales. Each grid square was surveyed three times during the survey period. This kind of methods can be useful if the aim is to study areas that are too large to be covered totally or where sampling for a specific activity etc is the object.
4.5.8 Questionnaires

Methods that not only give information about patterns of use are needed to be able to measure visitors’ attitudes towards an area, activity, management, service etc. Questions about attitudes, satisfaction and experiences are often central in questionnaire studies. Such methods are for example mail surveys (see e.g. Dales et al. 1993, Yuan et al. 1995; Recreation Site Survey Manual 1983, Pigram and Jenkins 1999, Mitra and Lankford 1999). Even evaluation of photographs can be used as a method when comparing different management alternatives (see e.g. Lyytikäinen 2002 and Vistad 2002).

These kinds of studies are common in the USA where visitors are first contacted in the area during their visit and some basic information is collected. They are also handed a larger questionnaire that they are asked to mail back or the questionnaire is sent to them by using the address information that the respondents have given during the interview. The advantages are relative low costs and a possibility for getting large material. The biggest problem is usually low respond rate which affects the representativeness of the material (Yuan et al. 1995). The questionnaires can also be made at place which makes it possible for field personal to help respondents with the questions. In the Swedish mountains questionnaire studies have been carried out among outdoor recreationists for example in Fulufjället (Fredman and Hörnsten 2002), Femundmarka-Rogen-Långfjället (Wallsten 1988 and Vistad 1995) and Mittåkläppen (Emmelin and Iderot 1999).

Self-filled questionnaires are usually placed at public places such as cafeterias, mountain lodges etc. It is up to every single visitor to fill in a questionnaire. This method is commonly used in recreation areas because of low costs and simplicity. It is hard to get information on the representativeness of the sample and there are certain visitor groups that can be over or under represented.

Another advantage of the attitudinal studies is that they can both give information about attitudes and be used for predictions of development and are suitable for monitoring. They are suitable for getting base-line data, often with higher precision than with visitor registrations.

4.5.9 Interviews

Oral and written interviews provide mainly qualitative information about visitors and their motivations and needs. They are an important part of visitor monitoring and combined with quantitative data they give deeper understanding of visitors’ needs and habits. One advantage with interviews is its flexibility, the interviewer can always make sure that respondent has understood the question right and that received information is what the study was aiming to. Another advantage is often high response rate. Disadvantages are connected to the advantages. It is almost impossible to elimi-
nate the influence of the interviewer. At what degree the interview is standardised and the place for interviews affects also the quality of the data.

Lindhagen (1996) points out the problem of representative selection of the visitors. He refers to studies carried out in forest areas in Sweden close to cities. He points out two main reasons for this: interview studies are highly dependent on weather; when the weather is bad only regular visitors are in the forest, while the number of occasional visitors is higher when weather is good. Another reason according to him is that people in a hurry more often refuse to participate in the study.

4.5.10 Indirect observations

Cameras give more information than counters that only measure frequencies. Use of cameras or video cameras makes it possible to register not only number of persons but also group size, direction of movement, mode of transport etc. One problem is the operating time (change of tapes, film or disc). Use of automatic cameras and time-lapse video recorders makes it possible to operate longer periods of time without maintenance. Another problem is electricity supply; most of the available devices depend on standard electricity supply. As noted above Swedish legislation on use of surveillance cameras is strict which would limit the use of such methods.

Modern technology makes it possible to operate and read off counting devices wirelessly from a short distance (infrared interface) or longer distance (mobile phones). Even electricity supply can be solved for example by solar panels with buffer batteries. Muhar et al. (1995) have tried automatization of the interpretation with the help of digital image analysis and have got promising results.

Visitors can also be studied from a longer distance, usually from an aeroplane (see e.g. Meyer 1991), a helicopter or a balloon. A balloon can be equipped with a camera that takes pictures by using a remote control or a timer. Aeroplanes and helicopters require an observant. Even satellite pictures can be used in the future. Remote sensing can be used in areas which good visibility, such as mountains, water ways etc.

4.5.11 Discussion groups and audits

Using expert or focus groups is one way to collect information on recreation. This is often combined with collections of other variables. Group techniques are also used in nature planning and management, such as ROS and LAC to gain a better understanding of key stakeholders (Manning 1999). They also give information on attitudes, experiences and the interactions within the groups. Expert or focus group technique is often used as a combination of participant observation and interviews. Expert groups have been used for example in Australia (Ottesen and Woodley 1992). Focus groups
methods have recently been used as a basis for determining objectives of revegetation in arctic and alpine environments (Hagen et al. 2002)

4.6 Sampling

Sampling is a systematic description of the system that is used for collecting the data. Sampling is needed in some form to ensure that the data are representative for larger populations from which they are drawn. Sampling can be based on judgement; data collection is carried out according to the subjective knowledge of the investigator. Statistical sampling is based on statistical principle often seen as preferable to convenience sampling (Watson et al. 2000).

4.7 Data analysis

To be able to use the data it must be analyzed. Observations that have been carried out are only the raw material of the study. The numerical information must be analyzed and characterized to be able to see and show groups and populations, which are often the most interesting thing for the managers. There are numerous methods for analyzing this kind of data and they can be found from several introductory statistics.
5. The case of planning in Södra Jämtlandsfjällen

5.1 Description of the area

Södra Jämtlandsfjällen is located in central Sweden, on the border to Norway in the west. The total area is about 2300 km² and consists mostly of bare mountains and wooded mountain valleys. The size of the area in southern-northern direction is about 40 kilometres.

The area is the central part of Sweden’s southern mountain region including continuous areas of bare mountains. The landscape is diversified with the highest peaks over 1700 m above sea level. It is the most alpine area in this part of the Swedish mountain region, and higher and steeper mountains can be found only in the northern counties. Sweden’s southernmost glacier is found in the area and several threatened species such as gyr falcon, golden eagle, great snipe, wolverine and lynx breed in the area.

The vegetation is variable; the western parts of the area have rich vegetation partly due to limestone in the bedrock. The eastern parts are poorer in vegetation, partly because of the hard bedrock, partly because of the more continental climate.

The southern Jämtland mountain area has the densest network of publicly managed trails in the Swedish mountains. The trail system consists of about 500 kilometres of marked summer and winter trails and about 200 kilometres of snowmobile trails. There are three mountain stations and six lodges in the area managed by the Swedish Tourist Association. These services provide overnight facilities, food and other supplies. There are also several private hotels and cabins located just outside the area, and some of Sweden’s major downhill ski resorts are only ten to twenty kilometres away. Many of the winter trails in the area are marked with poles holding a red cross on top, which is characteristic for Swedish standards.

The whole area is used for reindeer herding, fishing and hunting. Outdoor recreation is extensive with some of the trails being among the most frequently used in the Swedish mountains. The eastern parts are a nature reserve where for example forestry is prohibited, and for most parts the area is publicly owned with rights of grazing and hunting and fishing for e.g. the Sámi population.

5.2 The case of a proposed national park in Södra Jämtlandsfjällen

The general plan for national parks in Sweden (Nationalparksplan för Sverige 1989) included the establishment of a national park in the southern part of the high mountain region of Jämtland and in 1995 a working group was formed to prepare a detailed plan for this (for a discussion of the process of this park proposal see Sandell, In manuscript). But a couple of years later it was obvious that the working group could not
not agree on basic issues and in 1998 the further process was changed and directed towards a national park on based on local conditions (“en nationalpark på bygdens villkor”) using the thematic synoptic plan (“fördjupad översiktsplan”) as an arena for discussions. The two municipalities were instructed to produce a joint comprehensive plan and the process was supported by resources and participation by various national and regional interests. The main reason for this shift of strategy was the local resistance and scepticism very much in line with other national park proposals (see e.g. Sandell 2000). In the beginning of the year 2000 also this work was stopped and the municipality of Are proceeded on its own with comprehensive planning for the area within that municipality. Work on a national park on local conditions was put on the shelf for the foreseeable future time.

The goal for the planning process was to deal with the questions of development and nature conservation without being tied to a national park proposal as an instrument for conservation. Several groups from national, regional and local level that took part in the process. The goals and needs of the planning process will be discussed more in detail below in connection with the description of the goals of the case study. The central actors were:

- The Swedish environment protection agency
- County administration board of Jämtland
- Municipalities of Berg and Åre
- Sámi villages (Handölsdalen, Tossåsen and Mittådalen)
- Residents in the surrounding villages
- STF (Swedish Tourist Association)
- Tourism contractors in the area

The process of the national park proposal in Southern Jämtland could be discussed in the eco-strategical framework (see above and further in e.g. Sandell 2001). It could then be described as a start in a more traditional reserve perspective followed (from 1998) by an approach described as "a national park on local conditions" ("på bygdens villkor", figure 6, see further in Sandell In manuscript).
Figure 6. The proposed national park and its shift of strategy illustrated with the help of the conceptual framework of eco-strategies presented above (Sandell In manuscript).
6. The case study in Södra Jämtlandsfjällen

6.1 Objectives

ETOUR was called into the Södra Jämtlandsfjällen planning process to assist with a description of the use patterns. Special focus was to be placed on the patterns that were considered to be in conflict with other natural resources uses and with conservation objectives. The most contentious issue was whether the hikers in recent years had to an increasing extent started to use areas outside the system of marked trails.

ETOUR was called in by the regional steering group of the planning project i.e. by that level in the planning system which is charged with providing inputs on natural resources and environment into municipal planning.

In discussion with the regional reference group the original brief was extended to an attitude study of hikers. There were four objectives to fulfil with the study: First, to provide further information to the planning process concerning the visitors in general and especially in relation to the management issues, tourism development and resource conflicts. Second, to produce background for a number of specific management issues that were to be dealt with in the planning process and subjected to experiments with local management: visitor fees, regulation of the conflicts between reindeer herding and tourism including zoning and temporal changes in access. Third, to study the use of the information produced in the planning process. In this respect the problem of legitimacy of the knowledge provided and the possibility of it forming a basis for a common understanding of a number of contentious issues was of primary interest. Here the problem of anticipating the needs for information in a developing planning process with a large element of consultation and participation would have been of great interest to study. Fourth, to produce information comparable to that provided by other studies conducted by ETOUR of summer recreation and tourism as a contribution to the data on mountain visitors for the Fjäll-Mistra project.

The objectives combined with the timing – ETOUR was called in with only a few months in which to plan a study – meant that we decided to apply methods already well tried in other studies such as in the FRL area (Emmelin and Ohlsson 1999, Hultman & Wallsten 1988).

An important type of study that was not commissioned was an investigation into the attitudes both to the resource conflicts and to tourism of the local population. ETOUR has however carried out such studies separately in the area (Lindberg et al. 2002).

Because of the planning situation when ETOUR was called in only a summer study was considered feasible. The main disadvantages of this was that the patterns of use in the winter season, the conflicts with early reindeer migration into the area and the conflicts between different winter activities, especially snow-mobiling and skiing...
were not covered. However ETOUR has carried out focused studies of some of the resource uses with winter recreation and tourism as well as studies concerning the influence of wind power utilisation and tourism. These studies have been reported in (Denstadli et al. 2001 and Lindberg et al. 2002).

The joint comprehensive planning carried out by the two municipalities and the project to support this from regional level were broken off by decision of the regional administration which judged the chances of arriving at a joint plan as limited. This has meant that it has not been possible to reach the case study objectives as outlined at the outset.

6.2 Methods used in the case study

6.2.1 Background

The fundamental objective for our studies in Södra Jämtlandsfjällen was to produce information about important aspects of patterns of recreational and tourism use. Firstly the pressure on the existing trails, campsites and huts were of interest. For this quite rough data is usually satisfactory. Secondly it was important to find out if there were more complicated resource conflicts or interests in development of specific activities.

Conflicts that are caused by hiking and tenting that coincide with sensitive periods for flora, fauna or reindeer husbandry require bigger precision of the studies. In such cases the divergences from the general patterns of use can be the most important information. One of the important questions at issue for our studies was to make clear the extent of hiking and tenting outside the areas close to the marked trails, the mountain lodges and the mountain huts.

For development of tourism data on visitors’ place of residence is important. The area that is dominated by visitors from the immediate surroundings or the region requires different kind of management than an area that is utilized by tourists from a distance. Even the conflicts between utilization of the area as a recreation area and commercial development do require this kind of knowledge.

Differences between different user groups and their use of the area are important to study, especially to study if zoning, for example ROS planning could be a way to handle conflicts. We have studied the visitors both by using the traditional variables, such as age and sex, but also by using the purism scale that is described in the chapter 3.4.

It is important to attempt predictions of the effects of different management actions in the future. This is of interest both for management of the area and for the handling of
different conflicts. The questionnaire study of visitors was formed to give deeper understanding of interplay between attitudes, quality of the environment and patterns of use, visitors’ attitudes towards management, arrangements for outdoor recreation and service etc.

It is important to not only gather knowledge about attitudes, but also to try to get closer to behaviour of the visitors. We used some questions where concrete examples were given and the respondents were forced to make a decision that could be possible in real life. One example is the question where the respondents were facing a situation where they were forced to take a longer route back to their starting point due to reindeer separation. They were asked about their reactions in this kind of situation.

By asking the visitors about their intentions in the beginning of the visit and by asking repeated and more detailed questions after their visit it has been possible to compare results from different parts of the study.

There have been discussions about a proposal of a national park in Södra Jämtlandsfjällen (see chapter 5.2). It is interesting even in general to get knowledge about visitors’ attitudes towards a park designation, although the plans have at present been stopped. For tourism industry it is interesting to know what kind of attraction a national park status has. For planners and managers it is important to get knowledge about possible changes in people’s behaviour, and of course attitudes towards a park designation. It is important to have in mind when studying our results that the questions were directed to people that already had decided to visit the area and had at least some knowledge about the area.

The experiences of the visitors affect both their own behaviour and choice of recreation area, and their meaning for “mouth to mouth” marketing. For planners and managers of a recreation area it is important to know if the existing infrastructure and service meets the needs of visitors. This is in many cases connected to the visitor’s experiences of problems, such as wear and tare, litter etc. Visitors may have a different view on the problems and on the ways to handle them than the managers (see e.g. Emmelin and Iderot 1999 and Vistad 2002). It is also quite common that visitors that are satisfied with the situation indicate their opinions more seldom than the dissatisfied visitors (see e.g. Sievänen 1992).

6.2.2 Self registration and studies of non participation

So called self-registration boxes were used in the study (see figure 7). They were placed at the most important trailheads. The distance from the starting point of the trail was varying depending on the topography and possible crossings. There is a risk for vandalism if the registration boxes are situated too close to the parking spaces (see for example Hultman and Wallsten 1988 and Wallsten 1988). We wanted also to avoid having them too close to different information signs, which are quite common especially close to the mountain stations. It was also important to have them in places,
where they could be easily seen. The boxes were placed so that ground around them would bear wear and tare as well as possible.

The total number of boxes was 21 (see appendix for map showing the location of the registration boxes). We wanted to cover all the important trailheads, especially the marked trails. There is a possibility for a diffuse inflow to the area that cannot be caught totally. The aim was however to give a rough picture of the use of the area, not to capture every single visitor. The number of the registration boxes was also steered by the available resources. The methodology reflects best the patterns of use in the area as a whole. It is quite probable that it is mostly the local visitors that are hard to catch. (Emmelin & Ohlsson 1999) They are at the same time the easiest groups to contact afterwards if it is important to get more information about them (see e.g. Lindberg et al. 2002).

Figure 7. One of the self registration boxes used in the study

Two information signs were fixed on the outside of the boxes, one on the front, and one on the back (see appendix). The text was quite short and the purpose was to raise interest among the visitors and to get them open the box for more information. There was a map over the study area and more information about the study and the registration cards inside the boxes (see appendix). The texts were in Swedish, English and German.

Special studies were carried out to examine non participation. These studies made it possible to estimate the total number of visitors. The studies of non participation were carried out by the project personnel, including four project leaders and eleven project assistants. The project leaders were educated adults that were participating in many
different parts of the project. The project assistants were partly students from local schools from the municipality of Åre, partly adult trainees from the municipality of Berg. The project assistants were trained for the task at the beginning of the study period and were guided by the project leaders during the study period.

Every registration box was controlled during five to eight days, on average 6 hours per day. The observers were standing or sitting several meters from the box, behaving neutrally. The idea was to not to give the visitors a feeling of being watched and thereby affecting their behaviour. The number of visitors that registered themselves was counted as well as visitors passing the box without registering themselves. The following variables were registered of the visitors passing the registration boxes without registering themselves: sex, age, nationality and activities. This was done to be able to see if there was a connection between some of these variables and the frequency of registrations.

As many as possible of those who had not registered themselves were interviewed; the final share of the interviewed was 73.2 %. Questions were asked about motives for not registering themselves. Although the question was open, the interviewers were using following categories to simplify the work and the analysis of the answers: i) have already filled in a registration card, ii) not interested, iii) did not see the registration box, iv) thought that it was information and v) other. All those, that had not registered themselves before were also kindly asked to fill in a registration card. The number of visitors doing so was recorded.

Some things with the studies of non participation turned out to be problematic. Controlling the boxes and making notes worked without problem, but the interviews were experienced as a bit uneasy to make in some occasions. To interrupt someone, often older person than the interviewer him/herself, was experienced as uncomfortable, especially by the younger project assistants. Another problem was that even if the interview was made, the result may in some cases be misleading, mostly because in certain cases follow up questions should have been needed. The project personnel was instructed to do that, but it was especially in these situations that some felt uncomfortable. That was the case for example if the interviewed person answered that the reason for not filling in a registration card was that he/she had already done that earlier. This was also pointed out on the registration boxes.

Some things can be mentioned concerning the methodology. It is important to remember that answers to some questions in the registration card reflect visitors’ intentions – most of the visitors filled in the registration card in the beginning of their visit and this is why the answers give information about their plans rather than what they may actually have done. Many factors, both positive and negative, can contribute to changes in plans.
6.2.2 Observation of tents

Flight observations were carried out with nine occasions, three times with a helicopter and six times with an airplane. Points of time for helicopter flights were the 7th of July, the 20th of July and the 18th of August. The county administration board carried out their flights with an airplane the 13th of July, the 30th of July, the 7th of August, the 19th of August, the 30th of August and the 10th of September. Two of nine flights were carried out on weekends. All the flights were carried out as early in the morning, as light conditions permitted visual flying and observation. This varies during the summer.

The flight routes differed (see appendix). Observations with the airplane were carried out in the western parts of the research area; the helicopter was used also in the eastern parts, Anarispjallen and Lunndörrsfjällen. To control the precision of these two observation methods against each other by flying the same route during one day was seen as too expensive and also undesirable for safety reasons.

The total length of the flight routes were 265 km for helicopter and 255 km for airplane. 113 kilometres (43 %) of the flight route with helicopter and 92 kilometres (36 %) of the flight route with airplane was outside the marked trails. Both the pilot and an observer made observations. Notes were made directly on a map. Colour of the tents was noted to make comparison with the observations the observations from the ground possible.

At the same time with flight observations ground observations were carried out. Several observers were hiking along those parts of the flight routes that coincided with trails and making notes of the tents. They were also making notes direct on the map to make it possible to compare with the flight observations.

6.2.4 Registration of cars

Registration of cars was carried out on three car parks in Storulvån, Vålådalen and Kläppen. A special registration card was used; the noted variables were place, date, time of the day, total number of cars and total number of caravans. All the Swedish registration numbers were written down, likewise nationality of all foreign vehicles and commentary of special kind of vehicles, for example campers.

6.2.5 Questionnaire

The goal of the questionnaire was to give deeper understanding about attitudes, visitor flows, and motives. Special attention was paid on attitudes towards different management actions and service. The target group was the people that had visited the area during the summer 1999. For the questionnaire, see appendix.
A sample was taken from the group of Swedish, Norwegian and German visitors (the three largest groups). Totally 2138 questionnaires were sent, 1418 to the Swedish visitors, 394 to the Norwegian visitors and 352 to the German visitors. Two reminders were sent, with about two weeks in between. The first reminder contained only a short letter, the other one even a new questionnaire.

6.2.6 Data analysis

Data was analyzed by using SPSS and Microsoft Excel statistical programs. The GIS-program Arc View was used for analyzing the spatial distribution of the visitors and the tents. Frequencies and mean values were counted and the results were summarized in frequency tables. For detailed description of the data analysis see Vuorio et al. (2000) and Vuorio, Emmelin and Göransson (2000).
7. Case study results

7.1 Introduction

An overview over the results will be given in this chapter. For detailed results and figures, see Vuorio, Emmelin and Göransson (2000) and Vuorio et al. (2000). The results should be looked at with the used methods in mind. The aim of this paper is not to give a comprehensive picture of the visitors in Södra Jämtlandsfjällen, but to discuss how well the used methods worked in answering the central questions in the planning process.

The total number of returned and correctly filled questionnaires was 960 Swedish (69 %), 207 Norwegian (54 %) and 242 German (69 %). The response rate among the Swedish and German visitors was satisfactory but a bit lower than expected among the Norwegian visitors.

7.2 Number of visitors and groups

The total number of registrations was 15 238, it makes up to 17 301 with non participation included (see table 3). 38,6 % of the observed visitors did not register themselves. 73,2 % of them were interviewed and the results show that about 65 % of them had already registered themselves. This gives non participation of 13,5 %. There were also 1907 persons that were mentioned in the registration cards as members of a group but that had not however filled in their own registration card, even if the visitors were asked to do that. It is however hard to estimate how many of these are included in non participation.

The results represent the group of visitors that walk into the area, not only visit the establishments nearby. The total number of visitors differs consequently from the total number of tourists. This delimitation was part of the assignment that was given to ETOUR.
Table 3. Results of the studies of non participation.

<table>
<thead>
<tr>
<th>Category</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of control occasions</td>
<td>113</td>
</tr>
<tr>
<td>Number of control occasions per registration box</td>
<td>5,4</td>
</tr>
<tr>
<td>Total control time</td>
<td>680 h</td>
</tr>
<tr>
<td>Number of observed registrations</td>
<td>588</td>
</tr>
<tr>
<td>Number of observed non-registrations</td>
<td>370</td>
</tr>
<tr>
<td>Per cent of observed non-registrations</td>
<td>38,6 %</td>
</tr>
<tr>
<td>Number of interviewed visitors (^{16})</td>
<td>271</td>
</tr>
<tr>
<td>Per cent interviewed</td>
<td>73,2 %</td>
</tr>
<tr>
<td>Number of observed registrations</td>
<td>588</td>
</tr>
<tr>
<td>Number of observed non-registrations</td>
<td>370</td>
</tr>
<tr>
<td>Per cent of observed non-registrations</td>
<td>38,6 %</td>
</tr>
<tr>
<td>Number of interviewed visitors (^{17})</td>
<td>271</td>
</tr>
<tr>
<td>Per cent interviewed</td>
<td>73,2 %</td>
</tr>
<tr>
<td>Number of interviewed visitors that had already registered themselves</td>
<td>176</td>
</tr>
<tr>
<td>Per cent of interviewed visitors that had already registered themselves</td>
<td>64,9 %</td>
</tr>
<tr>
<td>Per cent of interviewed that should have registered themselves</td>
<td>35,1 %</td>
</tr>
<tr>
<td>Non participation (per cent)</td>
<td>13,5 %</td>
</tr>
<tr>
<td>Per cent of visitors that registered themselves after the interview (^{18})</td>
<td>48,4 %</td>
</tr>
<tr>
<td>Number of filled in registration cards</td>
<td>15238</td>
</tr>
<tr>
<td>Total number of visitors non participation added</td>
<td>17301</td>
</tr>
<tr>
<td>Number of “extra” persons written down on the registration cards (^{19})</td>
<td>1907</td>
</tr>
</tbody>
</table>

Non participation was 13,5 %. Non participation varied from 31,8 % in Tjallingen (see appendix) to 2,9 % in Blomsterstigen. The most common reason for not filling in a registration card was that the respondent had earlier filled in a card during their visit. All the visitors that should have registered themselves were kindly asked to do it after the interview and 48 % of them also did that. The most common reasons for not filling in a registration card are reported in the following table.

\(^{16}\) Only those who had not registered themselves were interviewed  
\(^{17}\) Only those who had not registered themselves were interviewed  
\(^{18}\) Only those that had not registered themselves earlier were asked to do that  
\(^{19}\) Visitors had made notes on the registration cards, writing for example that they are a group of three people but only one of them filling in the registration card. It is however hard to estimate how many of these have been included in the studies of non participation. This is why the total number of visitors includes only non participation.
Table 4. Reason for not filling in a registration card.

<table>
<thead>
<tr>
<th>Reason</th>
<th>% of the interviewed visitors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have already filled in a registration card</td>
<td>49.5</td>
</tr>
<tr>
<td>Not interested</td>
<td>25.5</td>
</tr>
<tr>
<td>Other</td>
<td>11.3</td>
</tr>
<tr>
<td>Did not see the registration box</td>
<td>11.2</td>
</tr>
<tr>
<td>Thought that it was information</td>
<td>2.5</td>
</tr>
</tbody>
</table>

7.3 The visitors

The Swedish visitors are dominating in the area, only about 10 % are foreigners. The majority of the foreign visitors are from Norway, Germany and Denmark. A large share of the Swedish visitors comes from the big towns in Southern and Central Sweden. About 15 % of the Swedish visitors come from the county of Jämtland. The group of visitors from the other parts of Norrland is also about 15 % of all the visitors.

The proportion of men and women is about equal. The majority of the visitors are married or common law husbands/wives. The share of high educated is relatively high, which is common among the mountain hikers in Sweden and in outdoor recreation settings in other parts of the world (see for example Mackay 1999 and Manning 1999). Two clear age groups can be found, the young adults between 20 and 30 years of age and the middle aged between 40 and 60 years of age. A third, smaller group of teenagers can also be found.

Hiking, both day hikes and hikes of several days are the most common activity among the visitors. About 40 % of the visitors give day hikes as the main activity and this group can be assumed to be under represented. The geography and the natural conditions of the area are certainly one of the main reasons for the absence of certain activities, such as canoeing and mountain biking. Södra Jämtlandsfjällen is also traditionally an area for hikers and hiking.

Camping is important as an activity, not only as a type of housing for a considerable share of the Swedish visitors. At the same time the flight observations show that the share of tents outside the marked trails and the immediate vicinity of the establishments is very low. This shows together with the segmentation of the visitors that the group that would be affected by restrictions for nature conservation and the reindeer herding would in any case be at present small. This is also a group that is more puristic in their attitudes towards untouched nature and would probably be more disturbed by some restrictions, although not the ones that aim to heighten the wilderness characteristics of the area.

Most of the visitors come together with others, most often family. The most common group size is two persons. The share of visitors that are part of an organised group is small (5 %), no matter if the group is commercially organised or other arrangements.
It has to be noticed that such groups can be a bit difficult to catch because they tend to pass the registration boxes without stopping.

On average the Swedish visitors spend 5.6 days in the area. The German visitors stay 6.8 days, although the area is not in all the cases the only goal of the trip. The Norwegian visitors spend a little shorter time in Södra Jämtlandsfjällen, 3.3 days, which can be explained by the fact that many of them come from the areas close to Södra Jämtlandsfjällen and that many of them have the visit in the area as a part of a longer hike on the Norwegian side of the border.

About one fourth of the visitors were visiting the area for the first time. Almost half of the visitors making a multiple day hike were doing it for the first time in the area. There are both very experienced visitors that return to the area year after year and a group of first time visitors that are getting their first mountain experiences in the area. About 60% of the first time visitors had never done a multiple day hike in the Swedish mountains. This together with the earlier presented geographical spreading of the visitors shows that Södra Jämtlandsfjällen is an important area for the Swedish outdoor life and as recruitment area for mountain tourism.

Most of the visitors travel by car to the area. Approximately one fourth of the Swedish visitors travelled by train to the area. Visitors from the surrounding areas were mostly using car.

Most of the visitors are planning to visit the area again (about 90%); the share is even bigger among those who had visited the area before. The visitors are also planning to recommend the area to other people.

A majority, 67% of the Swedish visitors had not had any alternative travel plans. About 60% of the Norwegian and German visitors had had other alternatives. Most of the visitors that had had other travel plans, had had other mountain areas in Sweden as an alternative. The only exception was the Norwegian visitors that had had Norwegian mountains as an alternative. This can be partly explained by their place of residence: a majority of them come from areas close to Södra Jämtlandsfjällen and are using the area as their “home mountains”.

7.4 Geographical distribution of the visitors

7.4.1 Trail heads

The use of the area has some clear geographical features. The north western trail heads have almost half of the visitors. Other important starting areas are Vålådalen and Ljungdalen with about one fourth’s share each. About five percent of visitors
came across the Norwegian border. For map showing the share of visitors on different trail heads, see appendix.

### 7.4.2 Hiking along the trails

Frequency of hikers along the trails gives similar picture as the self registrations. Trails from and to Storulvån, Vålådalen and Ljungdalen are the most frequently used (for map showing the frequencies, see appendix). It is also obvious that the western parts of the area have more visitors than the eastern parts. This can be seen even in the STF statistics (see table 5). Pattern of camping is also confirming this.

<table>
<thead>
<tr>
<th>Trail</th>
<th>Swedish visitors, %</th>
<th>Norwegian visitors, %</th>
<th>German visitors, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storulvån - Sylarna</td>
<td>33,2</td>
<td>15,9</td>
<td>15,3</td>
</tr>
<tr>
<td>Blåhammaren - Storulvån</td>
<td>31,5</td>
<td>16,9</td>
<td>18,6</td>
</tr>
<tr>
<td>Sylarna - Blåhammaren</td>
<td>22,5</td>
<td>17,9</td>
<td>16,9</td>
</tr>
<tr>
<td>Kläppen - Helags</td>
<td>18,5</td>
<td>1,0</td>
<td>25,8</td>
</tr>
<tr>
<td>Vålådalen - Stensdalsstugorna</td>
<td>16,9</td>
<td>2,4</td>
<td>14,4</td>
</tr>
<tr>
<td>None of the given trails</td>
<td>15,5</td>
<td>7,2</td>
<td>15,7</td>
</tr>
<tr>
<td>Helags - Sylarna</td>
<td>13,9</td>
<td>8,7</td>
<td>23,3</td>
</tr>
<tr>
<td>Vålådalen - Vålástugan</td>
<td>12,9</td>
<td>2,4</td>
<td>17,8</td>
</tr>
<tr>
<td>Gäsen - Sylarna</td>
<td>12,3</td>
<td>4,3</td>
<td>10,2</td>
</tr>
<tr>
<td>Rundhögen - Blåhammaren</td>
<td>12,1</td>
<td>31,4</td>
<td>4,2</td>
</tr>
<tr>
<td>Storulvån - Gäsen</td>
<td>12,1</td>
<td>5,8</td>
<td>12,7</td>
</tr>
<tr>
<td>Vålådalen - Lunndörrstugorna</td>
<td>8,3</td>
<td>3,4</td>
<td>7,6</td>
</tr>
<tr>
<td>Blåhammaren - Storerikvollen</td>
<td>8,0</td>
<td>27,1</td>
<td>5,5</td>
</tr>
<tr>
<td>Helags - Gäsen</td>
<td>8,0</td>
<td>2,9</td>
<td>7,6</td>
</tr>
<tr>
<td>Gäsen - Stensdalsstugorna</td>
<td>6,8</td>
<td>1,0</td>
<td>6,4</td>
</tr>
<tr>
<td>Vallbo - Lunndörrstugorna</td>
<td>6,4</td>
<td>0</td>
<td>2,1</td>
</tr>
<tr>
<td>Fältjägaren - Helags</td>
<td>6,0</td>
<td>2,9</td>
<td>10,6</td>
</tr>
<tr>
<td>Sylarna - Storerikvollen</td>
<td>5,9</td>
<td>34,3</td>
<td>2,5</td>
</tr>
<tr>
<td>Lunndörrstugorna - Vålástugan</td>
<td>5,4</td>
<td>1,9</td>
<td>4,7</td>
</tr>
<tr>
<td>Stensdalsstugorna - Vålástugan</td>
<td>5,2</td>
<td>0,5</td>
<td>4,2</td>
</tr>
<tr>
<td>Enafors - Blåhammaren</td>
<td>5,1</td>
<td>2,4</td>
<td>6,8</td>
</tr>
<tr>
<td>Enafors - Storulvån</td>
<td>5,0</td>
<td>0,5</td>
<td>4,7</td>
</tr>
<tr>
<td>Gäsen - Vålástugan</td>
<td>4,7</td>
<td>2,4</td>
<td>6,4</td>
</tr>
<tr>
<td>Vålástugan - Helags</td>
<td>4,1</td>
<td>0,5</td>
<td>7,6</td>
</tr>
<tr>
<td>Storvallen - Blåhammaren</td>
<td>4,0</td>
<td>7,2</td>
<td>9,3</td>
</tr>
<tr>
<td>Sylarna - Nedalshyttan</td>
<td>3,8</td>
<td>44,4</td>
<td>1,7</td>
</tr>
<tr>
<td>Tossäsen - Lunndörrstugorna</td>
<td>2,3</td>
<td>0</td>
<td>3,4</td>
</tr>
</tbody>
</table>

---

20 STF= Svenska Turistföreningen, the Swedish Tourist Association
<table>
<thead>
<tr>
<th>Location</th>
<th>Distance</th>
<th>Time</th>
<th>Difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ljungris - Välstågstan</td>
<td>2,3</td>
<td>0</td>
<td>2,5</td>
</tr>
<tr>
<td>Rundhögen - Storulvån</td>
<td>2,0</td>
<td>4,8</td>
<td>0,8</td>
</tr>
<tr>
<td>Helags - Nedalshyttan</td>
<td>1,9</td>
<td>5,3</td>
<td>2,1</td>
</tr>
<tr>
<td>Vallbo - Anarissstugan</td>
<td>1,8</td>
<td>0</td>
<td>3,0</td>
</tr>
<tr>
<td>Anarissstugan - Lunndörrstugorna</td>
<td>1,3</td>
<td>0</td>
<td>2,1</td>
</tr>
</tbody>
</table>

### 7.4.3 Special places

It was important to study the number of visitors in certain places, partly in sensitive areas or areas where conflicts between different land uses could exist, partly places of touristic interest. Respondents were given a number of alternatives to choose from and they were also allowed to choose other places. Even the answers on this question confirm the fact that it is only a few visitors that hike outside the marked trails, the most popular places to visit are situated close to the trails, roads and mountains stations and huts.

### 7.4.4 Overnights

About half (54 %) of the visitors that stay in the area at least one night, stay overnight at the STF establishments. 33 % are camping and the rest of the visitors had overnighted in some other way (the most frequent alternatives were own hut, rented hut and caravan). It seems to be characteristic for the area to attract visitors with large demand for marked trails, huts and other arrangements. This is confirmed even by the used PNU-scale which shows that visitors in Södra Jämtlandsfjällen are less puristic in their relation to the wilderness experience than visitors in some other mountain areas (Wallsten 1988, Vistad 1995, Odden 1995, Lunde 1996, Emmelin and Iderot 1999).
Table 6. Overnights at STF establishments during the study period\textsuperscript{21}. It is important to notice that Storulvån and Vålådalen can be reached by car.

<table>
<thead>
<tr>
<th>Mountain station/hut</th>
<th>Number of overnights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sylarna</td>
<td>7139</td>
</tr>
<tr>
<td>Storulvån</td>
<td>6025</td>
</tr>
<tr>
<td>Vålådalen</td>
<td>5461</td>
</tr>
<tr>
<td>Blåhammaren</td>
<td>4373</td>
</tr>
<tr>
<td>Helags</td>
<td>3294</td>
</tr>
<tr>
<td>Gåsen</td>
<td>1950</td>
</tr>
<tr>
<td>Stensdalen</td>
<td>1199</td>
</tr>
<tr>
<td>Vålåstugan</td>
<td>763</td>
</tr>
<tr>
<td>Lunndörren</td>
<td>696</td>
</tr>
<tr>
<td>Fältjägaren</td>
<td>280</td>
</tr>
<tr>
<td>Anaris</td>
<td>101</td>
</tr>
</tbody>
</table>

7.4.4.1 Camping

Totally 649 tents were observed during the nine observation flights. The largest number of tents was observed in the beginning of August, about at the same time with the peak of number of visitors. The second half of July is also popular among campers.

Most of the tents were close to the marked trails and the mountains huts and lodges. Only about 4% were pitched outside the immediate vicinity of the marked trails. About 35% of tents were lying close to the huts and lodges, the rest of the tents (about 60%) were close to the marked trails. A considerable part of the last-mentioned group was close to the wind-shelters.

As the map shows (see appendix), the most frequently used campsites are situated along the so called Jämtlandstriangeln\textsuperscript{22}. The eastern parts of the mountains above the tree line are not so popular among the campers; this reflects even the relatively low number of people hiking in this area. It is important to keep in mind that the flight observations were not carried out in the forested areas, this means that data is missing for example for the forest covered parts of the valley of Vålådalen. In the following table the tent observations are presented.

\textsuperscript{21} The study period and the season for STF mountain huts and stations were almost identical.

\textsuperscript{22} Jämtlandstriangeln = the mountain lodges in Storulvån, Sylarna and Blåhammaren and the marked trails connecting them to each other.
Table 7. The observed tents on the nine observation occasions.

<table>
<thead>
<tr>
<th>Date</th>
<th>Observation carried out by</th>
<th>Number of tents</th>
</tr>
</thead>
<tbody>
<tr>
<td>990707</td>
<td>ETOUR (helicopter)</td>
<td>40</td>
</tr>
<tr>
<td>990713</td>
<td>County administrative board (airplane)</td>
<td>80</td>
</tr>
<tr>
<td>990720</td>
<td>ETOUR (helicopter)</td>
<td>110</td>
</tr>
<tr>
<td>990730</td>
<td>County administrative board (airplane)</td>
<td>100</td>
</tr>
<tr>
<td>990807</td>
<td>County administrative board (airplane)</td>
<td>135</td>
</tr>
<tr>
<td>990818</td>
<td>ETOUR (helicopter)</td>
<td>55</td>
</tr>
<tr>
<td>990819</td>
<td>County administrative board (airplane)</td>
<td>63</td>
</tr>
<tr>
<td>990830</td>
<td>County administrative board (airplane)</td>
<td>32</td>
</tr>
<tr>
<td>990910</td>
<td>County administrative board (airplane)</td>
<td>34</td>
</tr>
</tbody>
</table>

The following table (table 8) shows the comparison of observations of tents from air and ground. Most of the missed tents were close to the mountain stations or huts. Observations close to the mountain stations and huts were supposed to be done with respect to the people staying at the establishments (the early time of the observation). This means that it was not possible to stay on all too long to be able to observe all the tents that sometimes were lying very close to the buildings.

Table 8. The results of the observation of tents

<table>
<thead>
<tr>
<th>Date</th>
<th>Number of tents observed from the air</th>
<th>Number of tents observed from the ground</th>
<th>Tents observed both from the air and the ground</th>
<th>Tents missed from the air (of the controlled)</th>
<th>Per cent missed from the air</th>
</tr>
</thead>
<tbody>
<tr>
<td>990707</td>
<td>40</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>990713</td>
<td>80</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2,5</td>
</tr>
<tr>
<td>990720</td>
<td>110</td>
<td>53</td>
<td>45</td>
<td>8</td>
<td>7,3</td>
</tr>
<tr>
<td>990730</td>
<td>100</td>
<td>5</td>
<td>1</td>
<td>4</td>
<td>4,0</td>
</tr>
<tr>
<td>990807</td>
<td>135</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>990818</td>
<td>55</td>
<td>26</td>
<td>21</td>
<td>5</td>
<td>9,1</td>
</tr>
<tr>
<td>990819</td>
<td>63</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1,6</td>
</tr>
<tr>
<td>990830</td>
<td>32</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0,0</td>
</tr>
<tr>
<td>990910</td>
<td>34</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0,0</td>
</tr>
</tbody>
</table>

7.4.4.2 Hiking outside the marked trails

The results show that a large majority follow the marked trails. Only 22,6 % of the visitors answered that they were planning to hike outside the marked trails at least one day. The share of these respondents is changing between 6 and 50 % at different trailheads. The Swedish visitors walk outside the marked trails to a greater extend than
the Norwegian and the German visitors. The most common reasons for following the marked trails are convenience and security.

7.5 Visitors’ attitudes

7.5.1 Wear, litter and noise

Recreational impact on the ground is not experienced as a problem by majority of visitors. This is in line with other studies carried out in the Scandinavian mountain region (see e.g. Emmelin and Iderot 1999, Vistad 1995, Vistad 2002).

About 25 % of the visitors state that they have experienced wear (erosion and vegetation damage) or seen litter during their visit. Most of the wear and the litter had been seen by the trails and on the campsites. The noise is not either a disturbing factor, only a few of the visitors had heard noise and even fewer had been disturbed by it. Almost all of the noise had been from a helicopter or an airplane.

7.5.2 Other users

A majority of the visitors had met as many people during their visit as they had expected. About 15 % had met fewer people than they had expected. It is only a few that had been disturbed by other users, only 3,3 % of the visitors in Södra Jämtlandsfjällen had been disturbed by other visitors. This is much less than in many other countries, where crowding is one of the main problems managers of recreation areas are struggling with (see for example Freimund and Cole 2001 and Kearsley et al. 1998). It is obvious that demands for wilderness of the majority of the visitors can be accommodated in environments that have been “hardened” to minimize physical damage. At the same time other areas can be reserved for more puristic groups.

7.5.3 Service

The visitors were happy with the quality of the service and establishments. The existing infrastructure, such as wind shelters, signs, footbridges, bridges etc. are of satisfactory for the visitors. The most requested changes were building of more footbridges and signs, however only by about 20 % of the visitors.
7.5.4 Information

The visitors had had information boards, information at the mountains stations and lodges as the most important source of information during their visit. More information on nature conservation and reindeer herding is desired by a majority of the visitors. When they at the same time consider information as the most desired management action, it is obvious that this knowledge should be used by the managers of the area.

7.5.5 Threats

In Södra Jämtlandsfjällen the wind power mills, snowmobiling, terrain vehicles, power transmission lines together with crowding and overexploitation are considered as threats towards the values of the area by most of the visitors. Even increased restrictions are seen as negative, however not by as large amount of the visitors. It is however important to notice that the visitors are mostly hikers, which affects their attitudes towards for example snow mobiles or mountain bikes.

7.5.6 Management actions

The most desired management action to avoid wear of the area was information about sensitivity of nature. Information is commonly seen as the most effective way to affect visitors’ attitudes. Information has showed to be the most popular action in other Scandinavian studies too (see e.g. Vistad 2002). For table showing the answers to the question, see appendix.

The other desired management actions to avoid wear of Södra Jämtlandsfjällen were nature conservation, footbridges, and limited entry to sensitive areas, to control the number of visitors during the sensitive periods, to guide visitors to the marked trails and to prohibit tenting in certain areas.

Hard restrictions to manage disturbance and environmental influence are seen as less desirable by the visitors. Even prohibition of snowmobiles and terrain vehicles and restriction of biking and riding were considered as desirable management actions. The most negative reactions were caused by the suggestion of new fees for visitors and limitation of the right of common access. This has been a common result in studies carried out in Scandinavia, mostly due to the right of common access (see e.g. Ovaskainen 2001 and Vistad 2002).

Over 60 % of the Swedish visitors would like to extend protection of nature in the area, prohibit entrance to the especially sensitive areas, manage the number of visitors during the sensitive periods and build more footbridges.
The visitors are not ready to accept extensive restrictions that would affect their own activities. It is obvious that restrictions that affect other user groups are more accepted. The German visitors are more positive to measures with regard to reindeer herding than the Swedish and Norwegian visitors.

To reserve certain areas for reindeer herding or nature conservation by prohibiting entry to these areas raises a bit more resistance than moving certain trails. Acceptance for closing certain trails temporarily due to the reindeer husbandry or nature conservation is relatively good as even the following table shows. It can also be noticed that a majority of the visitors are not disturbed by the mark of reindeer herding and they think that it is positive or very positive to see reindeers. This together with the fact that wear and tear are generally not experienced as a big problem shows that reindeer herding is not seen as a negative factor for tourism and outdoor recreation. Only exception is all-terrain vehicles which are experienced as more or less negative.

The group that would be affected by restrictions with regard to the nature conservation and the reindeer herding would in any case be at present very little. This is also a groups that is more puristic in their attitudes towards untouched nature and would probably be more disturbed by some restrictions, however not the ones that aim to heighten the wilderness characteristics of the area.

Table 9. Answers to question: “Think about the following situation: you are in Sylarna mountain station and on your way to Storulvån. You are told that because of the reindeer separation you are forced to take another way home – the trail towards Blåhammare to Ulvåtjärn and from there to Storulvån. The new route is about 4 kilometres longer it will take about an hour longer to come there. How would you experience the situation?”

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Swedish visitors, %</th>
<th>Norwegian visitors, %</th>
<th>German visitors, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very positive</td>
<td>6,0</td>
<td>8,2</td>
<td>15,7</td>
</tr>
<tr>
<td>Positive</td>
<td>26,8</td>
<td>25,1</td>
<td>27,5</td>
</tr>
<tr>
<td>Neutral</td>
<td>42,2</td>
<td>42,0</td>
<td>50,0</td>
</tr>
<tr>
<td>Negative</td>
<td>15,9</td>
<td>15,0</td>
<td>3,8</td>
</tr>
<tr>
<td>Very negative</td>
<td>4,5</td>
<td>3,9</td>
<td>1,3</td>
</tr>
<tr>
<td>Do not know</td>
<td>2,9</td>
<td>3,9</td>
<td>0,8</td>
</tr>
<tr>
<td>No answer</td>
<td>1,7</td>
<td>1,9</td>
<td>0,8</td>
</tr>
</tbody>
</table>

7.5.7 Responsibility for management

All the three nationalities considered that the Swedish state (i.e. The Swedish environment protection agency and the county administration board of Jämtland) has the biggest responsibility for the management of the area. The visitors are considered to have almost as much responsibility as the state except by the Norwegian visitors.
Between 20 and 30% of all the visitors thought that reindeer husbandry has responsibilities for management of the area. Almost as many thought that travel organizer, the municipalities and STF are responsible for the management. The share of Norwegian visitors that think that STF and the municipalities are responsible is much higher than among the Swedish and German visitors. This can probably be explained by the differences between management systems in different countries.

![Figure 8. Responsibility for management.](image)

### 7.5.8 National park designation

It is first of all the German visitors that would be positively affected if the area became a national park (43%). At the same time only a fifth of the Swedish and the Norwegian visitors would be affected positively. Over half of the visitors think that it would be positive for tourism development. About half of the visitors think also that the number of non-Swedish visitors would rise if the area became a national park. This could have negative impacts on the nature and the reindeer herding according to the visitors.
7.5.9 Purists and urbanists in Södra Jämtlandsfjällen

In this paper the focus will be on the Swedish visitors regarding the purism scale. Even the Norwegian and German visitors were studied according to the purism scale, results can be found from Vuorio, Emmelin and Göransson (2000).

The used scale was from 1 to 5. Answers to the 40 questions were summarized and the mean value for the whole population was counted. The mean value was 124,0 and the standard deviation was 9,8. Neutralists are the group laying inside the standard deviation and urbanists and purists the groups that are lying outside the standard deviation.

![Classification of the Swedish visitors using the purism-scale](image)

Figure 9. Classification of the Swedish visitors according the purism scale. It is important to notice that the scale is relative, i.e. the classification is done within the actual group.

A majority of the Swedish visitors consider that it is in general positive that there are physical arrangements, such as foot bridges, bridges, marked trails with information signs and huts and lodges for overnighting in Södra Jämtlandsfjällen.

About two thirds think that it is positive to be able to camp freely or to camp in places where they cannot be seen or herd. About as many visitors think that it is positive to be able to hike several days without seeing any houses, roads or too many other visitors. About 75 % of the visitors think that it is positive that the four largest predators exist in the area.
Almost all the visitors (98%) think that it is positive to be able to experience untouched nature. There is also a smaller group (27%) that think that it is positive to be able to take car inside the area to be able to make day hikes. About 12% think that it is positive to be able to fly into the area. At the same time the visitors think that it is negative to hear noise from cars or airplanes. This shows that when using several indicators for studying attitudes, the results are not always consistent.

---

Figure 10. Mean value on the purism scale for different groups

<table>
<thead>
<tr>
<th>Score</th>
<th>Location 1</th>
<th>Location 2</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>76</td>
<td>Rogen, canoeists, 1985</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>Femundsmarka, fishermen &amp; canoeists, 1986</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stabburdsalen nasjonalpark, all groups, 1990</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>Femundsmarka, multiple day hikers, earlier experience of the area, 1986</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Femundsmarka, all groups, 1986</td>
<td></td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>Rogen, all groups, 1985 / Femundsmarka, multiple day hikers, without earlier experience of the area, 1986</td>
<td></td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>Södra Jämtlandsfjällen, all Swedish visitors, 1999</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Rogen, day visitors, 1985</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Femundsmarka, day visitors, 1986</td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>Mittåkläppen, day visitors, 1998</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

8. Discussion

Effective spatial planning in the mountains presupposes better information on tourism and outdoor recreation than is available at present. Data on tourism and recreation is not systematically collected at local or regional level. Municipalities need adequate data to base planning on. In other sectors the regional administrations are responsible for information support to spatial planning. Thus planning for tourism and recreation infrastructure and resolution of conflicts with other forms of land-use becomes difficult. The lack of information influences both perceptions of the existing situation, its problems and opportunities, but also hampers establishing of a common understanding among actors in the planning process. The data collection should thus be planned with the goals that planning has for the area and from the present resource conflicts in focus.

8.1 Introduction

The case study was designed to be part of a comprehensive planning process carried out by local and regional authorities. It was carried out as a commissioned project for the planning authorities complemented by aspects of interest to ETOUR research as described in 6.1. As noted in the introduction to this paper the joint comprehensive planning carried out by the two municipalities and the project to support this from regional level were broken off by decision of the regional administration. The reason was that the two municipalities failed to come to a sufficient consensus on some of the basic issues but also on the planning process. This means that the objectives of the study could only partly be fulfilled. While the relevant information was gathered the test of its use in the planning process could not be studied. This also means that an important methodological aspect could not be studied. We have pointed at the need to relate studies to planning and management objectives. However the design of a study at the early planning stages necessitates a number of assumptions concerning what information will be needed. The development of a planning process with considerable components of consultation and participation means there is a very real problem of trying to anticipate what information will be needed at later stages. We are thus unfortunately not able to analyse and draw methodological conclusions concerning this. The interesting and important issue of legitimacy and the ability of external expertise to aid in producing a basis of a common understanding or description of a contentious issue can not be analysed. This is an area with considerable research interest, especially as it relates to attempts at designing effective but also efficient participatory processes. In the Södra Jämtlandfjällens case it would have been especially interesting to follow the attempts at producing a common basis for a problem, the planning process and the design of local management strategies. This is a type of issue where the theoretical framework of "ecostrategies" can be used to understand not only the principles but also the degree of success or limitation of the attempt to produce a common basis of problem description and perception. A discussion within the frame of the planning process as far as it went is given below.
8.2 Eco-strategies and legitimacy of data collection

8.2.1 Introduction

In section 2.4 above it was argued that the question of what type of knowledge for a planning process that could be seen as legitimate is among other things a reflection of what landscape perspective that is taken as the point of departure for the planning process. Therefore the conceptual framework of "eco-strategies" was introduced as a means to an end for general descriptions of different landscape perspectives (see figure 2 and figure 3). Here, in this section of the discussion, we will use this conceptual framework for a general discussion of suggested linkages between different eco-strategies and what type of data are to be looked for and could seen as legitimate in a planning process (8.2.2. below). This will be followed by a discussion of the case of the Södra Jämtlandsfjällen using the same conceptual framework (8.2.3). Thereafter this section of the discussion will be closed with some remarks concerning the linkages between different eco-strategies and the turbulent process of planning in the Södra Jämtlandsfjällen and the parallel interest of improving the data available – i.e. a major reason for the establishment of the empirical work presented in this paper but also the fact that thereafter the data was not used (at least in the way originally planned for).

8.2.2 Suggested linkage between landscape perspective and need for data

In figure 11 below a few key-words have been suggested with regard to some general characteristics of what could be seen as basic aims and threats with regard to the different eco-strategies in a planning process (cf. the general figure 3). Of course, in a real case there are many circumstances that will influence this picture but it could be argued that these key-words are some of the interests that probably will be manifest when different landscape perspectives are claiming their interests in what type of data should be collected to feed a planning process.
Figure 11. Some suggestions with regard to what type of aims and what types of threats that probably could be found among different landscape perspectives with regard to what data a planning process should be fed with.

8.2.3 Eco-strategies, data and the case of Södra Jämtlandsfjällen

In section 5.2 above the "shift of strategy" in 1998 with regard to the proposed national park and the planning process in Södra Jämtlandsfjällen was mentioned. This shift of perspective could of course, in line with the arguments given in this paper, to some extent be described as shift in what data are to be looked for to feed the planning process and what is the legitimacy of different sources of collected data. Here it could be noted that in the beginning of 1999 a program was written with regard to the new approach (see further in Sandell, In manuscript) – and only a few months later the interest of new data to be collected was addressed to the European Tourism Research Institute (which formed the point of departure for the case study presented in this paper). This simultaneous shift in the case of Södra Jämtlandsfjällen of i) planning/landscape strategy and ii) shift of data needed and legitimacy could be illustrated as in figure 12 below, that could be compared with figure 6.
Figure 12. An illustration of the shift of data needed for the planning process and the legitimacy of different sources for data collected that could be seen as part and parcel of the shift of planning strategy in 1998 with regard to the planning process including a proposed national park in Södra Jämtlandsfjällen (cf. section 5.2 above and its figure 6).

As more concrete examples we could note the following three illustrations of what type of data to be collected and what about the legitimacy of different sources of collected data (all examples touched upon in the methodological discussions of this paper):

- The strengthened interest of collecting data concerning disturbances between tourists (e.g. linked to establishments in terms of trails and mountain huts managed by the Swedish Tourist Association and the reindeer herding representing eco-strategies in line with the lower left position and the upper right, respectively). Here especially we could note the involvement of questions asked to the tourists with regard to their willingness to accept the change of routes due to the need of limiting the disturbances, plus the questions with regard to their tendencies and interest to take routes outside the organized trails according to the right of public access. The results here showed a high willingness to accept a change of routes and a very limited tendency to walk outside the trails. – That of course does not exclude that the right of public access could be seen as both an important aspect of coming to the area and, when being there, as an important possibility even though not so much used (but indicates that it is a limited problem for the reindeer herding).

- Also we could note, with regard to the legitimacy of different sources of collected data, the importance of involving pilots with good local knowledge
and familiarity with reindeer herding when carrying out the tent counting from air.

- As a third example of the "shift" and the linkages between landscape perspective and collecting of data in this study we could note the importance of in-depth studies of non participation. The line of reasoning is that it is reasonable to believe that the results of a "general" method to a larger extent could be questioned by persons and groups with good local knowledge (compared with a more general audience in e.g. central authorities often familiar with the methods used). – And, even more important, that it is reasonable to believe that arguments like "internationally well established methods" could not (and should not!) be taken as a general key to local acceptance of the results.

8.2.4 Legitimacy and eco-strategies

In section 2.4.1 above it was argued that as a consequence of a shift in landscape and planning perspective to some extent new themes and new groups have to be taken into consideration with regard to what should be investigated (also of course involving a discussion of what type of methods that are suitable). Also it was argued that a planning process more in line with communication and bottom-up (which the "shift" discussed above must be interpreted as) must involve the fact that also not previously known themes and groups could be manifested as an outcome of the investigation. The planning process therefore in such a case must include openness for what values (attitudes, activities, groups) that has to be taken into consideration with regard to the need of knowledge and legitimacy. This in line with the basic difference between i) functional strategies of general approaches to be applied in various local contexts, and ii) the territorial adaptation strategies there the local context is to be seen as the point of departure (the left and right directions respectively, in the conceptual framework).

In the case of the Södra Jämtlandsfjällen discussed here these general arguments were very well illustrated so to say, as the close linkage between the general planning process and the proposed national park ended up in a situation there some groups in the region were so strongly against the park proposal that it was put on the shelf for an indefinite period. In other words we could say that the landscape perspective of a national park – an eco-strategy closely linked to the "museum" position in the conceptual framework and also a point of departure for the original planning process – was rejected by important groups when the planning process shifted its point of departure to the local eco-strategies.
8.3 Reflections and recommendations on methods

8.3.1 Self registration and non participation

Self registration combined with satisfactory studies on non participation has given a relatively good synoptic picture of the use of the area. This kind of base-line data for planning and EIA, i.e. data that describes present situation roughly was possible to produce. At the same time it is obvious that the non participation varies too much geographically and between different points of time for self registration alone to be used for studying frequencies and patterns of use. To make the method reliable enough alone the need for studies on non participation would be too big to make the method useful. In our case the extensive studies on non participation were made possible with labour paid by the municipalities. That is seldom the case.

Data from self registration as a basis for management actions and for estimating the qualitative aspects of disturbance for reindeer herding is not necessarily enough. It is first when the data is combined with attitudinal studies conclusions about effects of different management actions to strengthen the position of reindeer herding on outdoor recreation and tourism can be drawn.

When self registration is combined with other methods it can have an important function – to make it possible to collect name and address data and to put a small number of questions to the visitors. Names and addresses make it also possible to continue with e.g. a questionnaire study. Although the number of questions on a registration card is very limited, it can however be very valuable for the managers to get information on activities and use patterns of importance to the management of the area without being forced to carry out a questionnaire study. One example of usefulness of this kind of rough data is a combination of the share of the visitors and their place of residence and nationality on different trail-heads, which shows that the municipality of Berg has importance for international tourism in the area, something that should be taken into account in the attitude of the municipality towards actions that would support tourism.

Given the size of the area the resource use for self registration was relatively limited. Photo electronic counters need less maintenance, but give at the same time limited information compared to self registration. The initial investment is also bigger making it necessary to consider whether the equipment is to be used repeatedly. At present there is no market for lease of electronic counting equipment or consultants active using such equipment. But a combination of these methods would be a useful solution: Fredman and Hörnsten (2002) used photo-electronic counters in their study in Fulufjället to measure the number of visitors and to control self registration. The direct observations had several functions too, to control the number of visitors not filling in a registration card and passing the counter and to make interviews to find out
reasons for not registering themselves. Their methods were partly based on our experiences from Södra Jämtlandsfjällen.

Fixed counting stations combined with self registration at regular intervals would give both continuous data on number of visitors and make it possible to study changes in visitors’ attitudes. For the actual planning situation a rough picture of the patterns of use is important to be able to create unity about the situation. Data over time is however crucial to be able to follow the changes in number of visitors and patterns of use and to follow changes in visitors’ attitudes. This kind of follow up study will be carried out for example in Fulufjället during the summer 2003. In that area the national park designation may cause changes both in the number and type of visitors.

In situations where conflicts of interests exist, it is important that the picture of the present situation of planning is considered reliable but also comprehensive. In our case the combination of data from self registration and the inventory of the tents give such rough picture. Observations inside the area, such as patterns of camping, complement this picture. When these are combined and compared with overnight statistics and information on visitor’s routes, a satisfactory picture of patterns of use not only on the outskirts of the area is achieved.

An important goal of the study was to compare different methods to find methods that would not require too big resources but would still give reliable information. The role of this information in the planning and the different methods is discussed in chapter 2.3.

From our general experience some reflections and recommendations can be made regarding self registration boxes and their function: Technically they worked well, thanks to the earlier experiences from Rogen, Femundsmarka and Långfjället (Hultman and Wallsten 1988, Vistad 1995). The boxes can hold up to 400 cards at time, but that proved to be a bit too little in places with a high number of visitors. However only twice the cards ran out. How much surveillance work the boxes require depends thus on the number of visitors on the trail in question.

The information text on the outside of the boxes worked relatively well. Wallsten (1988) suggests a rather commanding choice of words; this was also discussed in our case. We decided however to try to raise interest by having word “Mountain counting” (Fjällräkning) as heading. It might have however been better to be more commanding and use words like “Stop” and “Important” as heading instead. Many of the interviewed said that they are not interested and some of them said that they thought that it was an information stand. The aim is not to force people to register themselves, but it is at the same time important to make it clear that it is very important to stop and fill in a registration card. Day-visitors may need more pronounced information. This is however based on our experiences, not on questions put to the visitors. It is very important that the text on the outside of the boxes arrests the attention since the observations of the boxes showed that a majority of visitors that stopped and opened a box also filled in a registration card.
Our studies on non participation were quite extensive, partly because of the interest in testing the reliability of the method, partly because of the available resources in form of manpower. Studies on non participation are necessary, but the amount has to be discussed with a help of pre tests and experiences from other similar areas. As already discussed above, it could be possible to use electronic counters for controlling self registration and use personal observations for getting information on reasons for not filling in a registration card. That would make the need for man power much smaller.

It is obvious, that during the peak season when many people in some cases arrive at the same time (e.g. due to buss and train connections) the share of people not registering themselves may rise. The biggest reason for this is that when a registration box is already occupied, visitors may easier pass by without stopping. There is also a risk that visitors are not non participating randomly, but certain groups may be overrepresented among the visitors not filling in a registration card. This has to be noticed, because the results are supposed to describe the whole visitor population.

The non participation was 13.5% and it varied from 31.8% to 2.9%. This is satisfactory, although there is a risk that it can have been a bit higher in certain cases (see comments on studies on non participation in chapter 6.2.2). It is apparent that non participation is higher on trail heads that are used by many day-visitors and have a high number of visitors that are causing crowding next to the boxes. It is important to notice that all visitors were supposed to fill in a registration card every time they entered the area. This means that day-visitors that maybe stayed overnight outside the borders of the area, but visited the area several days in a row should have filled in a registration card every time they arrived in the area. Although it was motivated in the information text, it seemed to be hard to get people to do that. The share of these visitors among the interviewed non-registered was relatively high. As mentioned earlier in chapter 6.2.2, the follow up questions about earlier registration did not work well. This can have caused bias in the results. It might be worth discussing if this is the best way to handle the day-visitors. It is important that every visit is counted, but it could be possible to do in the same way as with the multiple day visitors, but instead of only asking them to give date for their arrival and departure, to ask them to fill in the number of visits during the given time period. In this way they should only fill in one registration card.

One central issue was question of hiking and camping outside the marked trails and surroundings of the mountain huts and stations. Questions on this were asked both on the cards and in the questionnaire. As noted above the card would mirror the intention of the visitor whereas the survey the actual results. The difference between visitors’ intentions and patterns of behaviour was one of the questions in the study. Comparison of visitors’ answers in the beginning of their visit and their answers afterwards are in line with each other. 26% of the Swedish visitors answered in the beginning of the

---

24 It is important to keep in mind that there may be big differences between visitors in different otherwise “similar” areas which can affect the non participation.
visit that they were planning to hike outside the marked trails. At the same time 24 % of them answered in the questionnaire that they had been hiking outside the marked trails. It is only the German visitors that have underestimated to what extent they are planning to hike outside the marked trails. Because they are a minority (3.4 %), it is not a problem for the rough picture we were supposed to create. Self registration gives satisfactory information even on the length of the stay, although the Swedish visitors seem to slightly underestimate the length of their stay.

8.3.2 Other methods

Flight observations give a good synoptic picture of the patterns of camping. They show that problems outside the marked trails are concentrated in a small number of attractive places. They were also important for conflict analysis and studying divergences. Although the method was expensive, it can be judged as important for both test of methods and knowledge about patterns of use in the area.

The indirect methods for estimating the total number of visitors have to be calibrated often, which can be difficult (for example number of visitors in a car or a buss). In some cases this may require so large resources that their usefulness can be questioned. The indirect methods risk missing factors that make it possible to get indications of possible tendencies in the use of an area. In our case indirect methods were used in form of the registration of cars and STF: s accommodation statistics.

The number of cars on the parking spaces correlates relatively well with the number of self registrations. There are however points of time when the results differ from each other. The registration of cars does not make it possible to estimate total number of visitors without being combined with personal observations. On the other hand they seem to give a relatively satisfactory picture of the season, with the exception of a few days when the results differ some from self registration. We did not make any observations to control the number of passengers in every vehicle (much due to available resources). This makes it impossible to see, if the differences between the registration of cars and self registration are caused by varying number of passengers in each car or by varying share of people using other means of transportation.

Registration of cars gives valuable information for authorities responsible for the parking spaces. The results are useful both for planning new parking spaces and for discussions about fees for parking. Our method of writing down the registration numbers was chosen to make it possible to control the number of “new” cars on the parking space and to count the number of days every vehicle had been standing on the parking space. It would be possible and much easier and cheaper to use pressure sensitive devices for counting cars. That would not make it possible to control the length of stay, but combined with manual observations and statistics from public transport they would give satisfactory base-line data on visitor volumes. It is however very important to understand the limitations of this method in modern planning and management situations, where visitors’ attitudes are in an important role.
A comparison of STF’s accommodation statistics and data from self registration show that the accommodation statistics give a good complementary picture of the patterns of use inside the area. On the other hand the accommodation statistics do not give a satisfactory picture of the patterns of use in whole; the outskirts of the area have a relatively high frequency of day-visits that is concentrated in certain areas (Vålådalen, Storulvån and Kläppen). Management actions such as by founding a national park in the area to further tourism development in the western parts of Jämtland can be expected to affect the outskirts of the area and the largest entrance points in a different way than the most frequently used areas and the wilderness core areas. Accommodation statistics as an indirect data source for planning have to be considered as patently unsatisfactory.

Observations done by people working in the area proved to be problematic. A large number of forms for tent observations were sent to STF personnel, county administration board, mountain rescue and Sámi villages. This method worked best in STF’s case, most likely because of the close cooperation with them in other parts of the project. The number of filled in and returned forms was very low and the observations were very occasional, with the exception of observations from two of the STF’s hut hosts. This method could give valuable additional information, especially if there would be possibility for more organised observations. It is however important that the observations can be carried out in addition to other assignments in the area, having observers for just tent observations is not likely to be cost-effective.

A general conclusion is that there are not any good short cuts to useful knowledge about outdoor recreation for planning, for management or for EIA. The need for data that supports predictions is too big to make indirect data useful alone. It is highly unclear what kind of value information on rough figures has as a basis for decision making. On the other hand it is possible to use indirect methods in combination with carefully discussed objectives of the study to be able to choose suitable data collection techniques. Most of the methods are both time and resource consuming, although there are big differences between them.

8.4 Some reflections on the survey method and results

The questionnaire worked well in spite of its size. It seems that people visiting Södra Jämtlandsfjällen are interested in the management of the area. It is a general experience from similar studies (Vistad 1995, Wallsten 1988; Emmelin and Ohlsson 1999, Emmelin and Iderot 1998) that the frequency of reply is high. Samples from the type of self selected visitor group that is produced with the self registration method are normally good keeping in mind however the problem of initial selection and the control of that. Many of the questions and question sections had been used and tested before in other studies. The reference group that we were able to use was also useful in forming the content of the questionnaire. Advantages and disadvantages with questionnaires are discussed even in chapter 4.5.8. A relatively large questionnaire sent to visitors from three different countries makes it possible to examine in detail visitors’
attitudes and experiences, something that was one of the main objectives of the study. A questionnaire requires always either a database of names and addresses or a considerable organised field effort. The data produced by self registration in itself is as discussed above useful so in many cases this would be our recommended method as opposed to field collection. The problems of manpower for this are considerable. That method seems to be most useful in cases where a large area can be controlled from a single or few points as discussed in the cases studied by Odden 1995 and Emmelin & Iderot 1998.

Of the main planning issues that we can throw light upon by the use of data reported and by further analysis some are worth mentioning here. A combination of data of domicile, age, previous experience, return visits and willingness to return show that the area is of considerable importance as what is sometimes called a “nursery” for Swedish mountain tourism. The relatively low purism score and the information on the adherence to the trails and use of facilities is a further indication of this and of the national importance of the area for recreation policy. This may imply an inherent conflict with the local and regional aims for tourism that gives larger local revenue. One of the central motives for a national park i.e. national importance to recreation is supported but the form of protection and management are not necessarily those of a traditional national park in perceived wilderness.

Our results here reported show a considerable tolerance for management actions aimed at temporal and spatial conflict resolution between hiking and reindeer herding – see chapter 7.5.6. The issue of hiking and camping outside the area of the trails can be further analysed in some detail related to the purism scale. This will make the issue of how large the group is that would be hit by restrictions but also the amenity loss if restrictions are placed on camping. However the indications given by the aerial surveys are that the level of camping in the actual conflict zones demarcated by the reindeer interests in planning the surveys is very low.

The collection of a “visitor fee” was very prominent in discussion in the planning process and in reference groups. Acceptance for such a fee of any economic significance is not high. The deterring effect on visitors is however also not very high.

Among other data that can be pointed to in relation to the planning issues the importance of the entrances that are within the municipality of Berg to the area for foreign tourists is noticeable. Here resistance to tourism development was an important factor in halting the planning process. It is tempting to speculate about the possible impact on the continuation of the process if such information had been used in a round of consultation.

It is important to note that every study on patterns of use at one point of time or over a certain period of time gives only limited information on possibilities of development of an area. It is for example dangerous to make predictions of new visitor groups or marketing areas based on data from only one area. Two types of studies are needed for discussions about development: Firstly studies on visitors’ attitudes towards dif-
ferent management actions, values etc. that will make it possible to understand and predict visitors’ reactions in a case of changed management. The type of simple “type situation” questions such as those on willingness to pay fees and the acceptance for management actions are important in such studies. Such type situations are closer to actual actions than for example the “behavioural intentions” in the Ajzen and Fishbein model (Ajzen and Fishbein 1980) often used in lieu of study of actual behaviour. We conclude that for important areas such as the present case the time and resources for a survey of the general type used here is necessary. Whether a full winter survey or the type of point studies carried out by ETOUR here is needed will depend on characteristics of the area and the known and projected uses. Secondly, complementing studies of representative samples of groups of current interest, i.e. groups that include non visitors. A study among the whole Swedish population (Heberlein et al. 2002) is one example of this kind of studies that give valuable information for local and regional planning and management. Without that kind of studies there is a risk that impact analysis, planning and management is left with too limited information and that the local information is not set in a relevant context of for example potential uses and use patterns.

8.5 A final word

We must conclude by reiterating that it would have been interesting and useful for method development to study the use of our data in a planning process carried to its conclusion in a thematic, development plan with indications of management. This does however not mean that our efforts have been in vain. Firstly the importance of the data is pointed out in the planning documents (Åre kommun 2002), where it is stated that because the planning situation right now does not allow any bigger changes, the data from the study has its greatest value as general information and in the future planning of the area. This means that thoughts of ROS-type of planning based on the knowledge of visitors’ attitudes and use of the different parts of the area will be a relevant question only in the future, if the situation changes. But the data can be used both for management and for tourism and recreation development and for monitoring. Secondly it is our intention to utilise the data, as pointed out above, for comparative purposes in the Fjäll-Mistra studies of planning for sustainable use of the Swedish mountains.

The need for theoretical frameworks within which to analyse some of the more complex issues is also obvious. In line with Hall’s (1981) famous plea for eclecticism in planning research we would however argue against the use of only one single theoretical framework if the object is insight leading to practical action such as planning and management.
References


76


