



Nordic and Baltic Workshop on Visitor Information Needs and Monitoring Methods (NBW)

Final Report

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**Nordic and Baltic Workshop on Visitor Information
Needs and Monitoring Methods (NBW)**

Final Report

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Nordic co-operation

Nordic co-operation, one of the oldest and most wide-ranging regional partnerships in the world, involves Denmark, Finland, Iceland, Norway, Sweden, the Faroe Islands, Greenland and Åland. Co-operation reinforces the sense of Nordic community while respecting national differences and similarities, makes it possible to uphold Nordic interests in the world at large and promotes positive relations between neighbouring peoples.

Co-operation was formalised in 1952 when *the Nordic Council* was set up as a forum for parliamentarians and governments. The Helsinki Treaty of 1962 has formed the framework for Nordic partnership ever since. The *Nordic Council of Ministers* was set up in 1971 as the formal forum for co-operation between the governments of the Nordic countries and the political leadership of the autonomous areas, i.e. the Faroe Islands, Greenland and Åland.

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Summary

The project organized a workshop “Nordic and Baltic Workshop on Visitor Information Needs and Monitoring Methods” (NBW) on June 14-15, 2004 as described in the original project plan. The workshop took place in the Arctic Circle Hiking Area, County of Rovaniemi, Finland. The NBW was very successful and improved the co-operation and networking between the agencies and specialists who work with visitor monitoring in protected and recreational areas in the Nordic and Baltic countries. All together there were 28 participants in the workshop.

Visitor monitoring was seen as a very actual topic and there are similar needs in the Nordic and Baltic countries. However, previous experiences and preconditions are very different as regards systematic visitor monitoring. There is a need for common guidelines and exchange of best practices in visitor monitoring in the Nordic and Baltic countries in the future. It is necessary to aim at harmonizing the monitoring methods and data collection in order to get the same kind of basic visitor information from all the Nordic and Baltic countries.

As a conclusion of the NBW, it was decided to continue the co-operation within the Nordic and Baltic countries. The aim of the future co-operation is to develop visitor monitoring methodologies for Nordic and Baltic agencies which work is related to visitor management in protected and recreational areas. It was seen important to start with translation of the Finnish visitor survey and visitor counting manuals in English. The output of the co-operation could be an updated manual for visitor monitoring. The organizers of the workshop were delegated to develop further actions of the Nordic and Baltic co-operation. A new application was submitted to the NFK in August 2004 and further funding for the year 2005 was received in September 2004.

1. Final Report

1.1 Introduction

Metsähallitus (Natural Heritage Services, Northern Finland) and Finnish Forest Research Institute (METLA) organized a Nordic and Baltic Workshop on Visitor Information Needs and Monitoring Methods on June 14-15, 2004. The workshop was financed by the Nordic Council of Ministers and it took place in the Arctic Circle Hiking Area, County of Rovaniemi, Finland.

The main reason for organizing the workshop was that several of the Nordic and Baltic countries are most probably encountering similar challenges and problems related to increasing nature tourism and outdoor recreation. Visitor information (both quantitative and qualitative) helps park agencies in visitor management; e.g. in controlling flows of visitors, for example, by directing them to routes that cause less deterioration to vegetation and landscape. Uncontrollably increasing recreational use leads to trampling and other disturbances to ecosystem, endangering of ecological values, and to crowding endangering the social carrying capacity of the area. In addition, visitor information also helps to maintain and to develop recreation services, which better correspond to the expectations of visitors. Also, an accurate estimation of numbers of visitors improves the sizing of services, which needs to correlate with the correct number of visitors (e.g. firewood supply and waste disposal). Furthermore, reliable visitor statistics are needed for evaluating the cost-effectiveness of management, and for monitoring changes.

1.2 Objectives of the workshop

The aim of this workshop was:

- to create a Nordic-Baltic network of agencies and specialists who work with visitor monitoring in protected and recreational areas in the Nordic and Baltic countries.
- to provide an opportunity to exchange experiences of visitor surveys and counting, and also developed ideas and actions to improve methods and practices.
- to provide a forum to outline possibilities for a joint Nordic-Baltic project with an aim of harmonizing visitor monitoring methods.

1.3 Participants

Researchers as well as practitioners and managers, who are dealing with visitor management in recreational and protected areas, were invited to participate in the workshop. In addition, Dr. David Cole from Aldo Leopold Wilderness Research Institute (USA) and Professor Paul Eagles from the University of Waterloo (Canada) were invited as guest lecturers to share their knowledge and experiences in the workshop. See the participant list in appendix 1.

1.4 Programme

The 2-day workshop started on June 14 (appendix 2). In the morning session of the first day the participants were provided with an introduction to the workshop by the organizers. The first guest lecture was held by Professor Paul Eagles, University of Waterloo, Canada. Paul Eagles gave an inspiring lecture on “*Goals of Public Use Measurement and Reporting at Parks and Protected Areas*”. In the afternoon of the first day the needs and experiences on visitor monitoring in practise were emphasized in the presentations of Finland, Sweden, Lithuania and Estonia. Later on in the afternoon the participants got an introduction to the Arctic Circle Hiking Area with the help of a multivision presentation and rapids shooting. Outdoor activities, such as rapids shooting and a smoke sauna, proved to be good way for raising the inspiring atmosphere of the workshop.

The second day started outdoors with the demonstration of visitor counters and counting methods given by the Finnish and Swedish participants. After that several presentations were given about visitor flow modelling, balancing between nature protection and outdoor recreation, visitor conflicts, economic impacts of recreation and future challenges. Dr. David Cole from Aldo Leopold Institute, USA, gave the second guest lecture. He shared his knowledge about “*The Limits of Acceptable Change Process – Theory and Practice*”.

The participants were divided into four groups in order to work efficiently with certain themes. The findings of the four groups and a conclusion of the future working in the field of visitor monitoring were presented in the end of the workshop. In the end of the workshop, the participants gave their feedback on the preparations, implementation and outcome of the workshop (see appendix 3).

The presentations given at the workshop are compiled in chapter 2.

1.5 Results of the group working

Firstly the groups discussed about the visitor information needs generally. Then they discussed the aims of visitor monitoring in Nordic and Baltic countries and draw some conclusions. Each group proposed concrete examples of future Nordic and Baltic cooperation in visitor monitoring.

Secondly the groups processed the idea of a joint Nordic and Baltic visitor monitoring project. The groups discussed various aspects of the project starting from the needs and possibilities and ending with concrete suggestions and conclusions.

The results of the group working can be summarized as follows.

Needs for visitor information in general

- The concept of protected areas (i.e. National Parks) differs between Nordic and Baltic countries. The history and traditions of nature conservation and outdoor recreation differ as well. Therefore, we have special visitor information needs which are characteristic for each country, but on the other hand there are common needs which are quite similar in Nordic and Baltic countries.
- We should try making the most of the experiences what we have collected in the Nordic and Baltic countries so far.
- We need more both quantitative and qualitative information and statistics on recreational use of protected and recreational areas. Common guidelines are needed.

Future co-operation

- Meetings and workshops like NBW are seen very important also in the future. This was the first time when researchers as well as practitioners and managers were gathered together to exchange ideas and experiences. In the future, the topics could focus more on certain concrete themes (e.g. surveys or case studies).
- The idea of a collective Nordic and Baltic visitor monitoring project was raised in the group working. The project could include both standardization of monitoring methods, common guidelines, best practises and educational parts.
- The Finnish guide books for visitor counting and visitor surveys are a useful starting point for the future co-operation. At the moment, the guide books are made from the Finnish point of view and they need to be updated. They should first be translated into English. After that it would be possible to make comments on them from different perspectives. In a common Nordic and Baltic project the guide books could be used as a basis and they could be updated and compiled into a common Nordic and Baltic visitor monitoring manual.

- The collective Nordic and Baltic visitor monitoring project needs an efficient project coordinator who could concentrate full time on the project.
- At this point a list of contact persons from the participants of the NBW should be wrote down for the future co-operation.
- The project could possibly be funded by the Nordic Council of Ministers or some EU programme. Metsähallitus from Finland and Naturvårdsverket from Sweden could also invest some national funding for the project.
- EUROPARC's Nordic-Baltic section could perhaps also take an active role in the future co-operation.

1.6 Conclusions

In the last session the organizers made some key conclusions of the NBW. First of all, the objectives of the workshop were fulfilled very well. The workshop offered a good opportunity to learn from others' experiences, changing ideas and to networking with other experts in the same field.

The first concrete conclusion was that the co-operation should start with the translations of the Finnish guide books. After that it would be possible for all the contact persons and their colleagues to become familiar with the guide books and make proposals from their point of view for the updating of the guide books.

The second conclusion was that Joel Erkkonen and Tuija Sievänen from Finland and Per Wallsten from Sweden were delegated to develop further actions of the Nordic and Baltic co-operation. This group should prepare a project application "Visitor Monitoring Methods in the Nordic and Baltic Countries" for the Nordic Council of Ministers.

The third conclusion was that a list of contact persons should be compiled. Two persons from each participating country, both from the scientific and practical side, were selected as contact person for the future Nordic and Baltic co-operation.

The proposed list of the contact persons:

- Denmark: Hans Skov Petersen, Centre for Forest, Landscape and Planning; Marianne Linneman, The National Danish Forest and Nature Agency
- Estonia: Anu Amik RMK, Riigimetsa Majandamise Keskus; Kalle Karoles, Ministry of Environment, Centre of Forerst Protection and Silviculture
- Finland: Joel Erkkonen, Metsähallitus; Tuija Sievänen, Metla (The Finnish Forest Research Institute)
- Iceland:

- Latvia:
- Lithuania: Lina Diksaite, Kursiu Nerija National Park; Ausrine Armaitiene, Klaipeda University, Tourism and Recreation Department
- Norway:
- Sweden: Per Wallsten Naturvårdsverket; Peter Fredman, Etour

The overall atmosphere of “Nordic and Baltic Workshop on Visitor Information Needs and Monitoring Methods” (NBW) was casual and very inspiring at the same time.

2. Summaries of the Presentations

2.1 Goals of Public Use Measurement and Reporting in Parks and Protected Areas

Paul F. J. Eagles

University of Waterloo and World Commission on Protected Areas, Canada

The Tourism Task Force of the WCPA has six approved objectives:

- Provide guidance to the WCPA, and others, on the relationships between tourism and protected areas.
- Identify the size and characteristics of protected area tourism.
- Develop case studies to investigate best practice models for tourism management.
- Develop guidelines for the management of tourism in protected areas.
- Communicate tourism management theory and practice to planners, managers and others.
- Provide opportunities for parks and tourism people to work together on shared issues within protected area tourism

One important aspect of the work of the task force is to develop guidelines for tourism management. It is well known that a phenomena not measured and reported does not exist politically. Government allocations are directly related to the level of reported public use. Public interest is related to the actual and the reported level of public use. Therefore, it is important for all parks and protected areas to have a systematic policy and procedure for the measurement and reporting of park visitor use. Therefore the Tourism Task Force published *Guidelines for Public Use Measurement and Reporting in Parks and Protected Areas* in 1999.

All programs must have goals and objectives. *Goals* are defined as the broadly stated social purposes for which a protected area is established. *Objectives* are more explicit statements of what is to be accomplished. Defining goals and objectives is the first step in the planning process, and the most difficult component of park planning for tourism. The process of defining goals and objectives is critical. In order to measure progress towards the achievement of objectives, *indicators* need to be developed for monitoring.

The wording of objectives is very important. They should be specific, measurable statements that provide guidance in making decisions about

appropriate levels, types and amount of tourism and tourism developments. Objectives should have five characteristics:

- Output-oriented;
- Time-bound;
- Specific;
- Measurable; and
- Attainable

A public use measurement program must have:

- Clearly defined goals and objectives;
- Standard definitions;
- Level of program appropriate to the task;
- Standard methods; and,
- Internal and public reporting.

The Uses of Public Use data in a park include:

- General management;
- Natural and cultural resource management;
- Maintenance;
- Visitor services and protection; and,
- Public understanding.

A public use program requires standardized definitions. Example of common ones found in the IUCN public use guidelines include:

- *Visitor*: a person who visits the lands and waters of a park or protected area for purposes mandated for the area. A visitor is not paid to be in the park and does not live permanently in the park.
- *Entrant*: a person going onto lands and waters of a park or protected area for any purpose.
- *Exclusions*: park or protected area use, which is not visitation for statistical reporting purposes/.
- *Visitor Nights*: the count of persons staying overnight in a park or protected area for a purpose mandated for the area.
- *Visitor Hours*: the total length of time, in hours, (both continuous and intervals) that visitors stay in the park while visiting for a purpose mandated for the area.

The IUCN public use guidelines have five progressive levels of a public use measurement including:

- Initial level (I);

- Basic (II);
- Intermediate (III);
- Developed (IV); and,
- Advanced (V) levels (Figure 1).

Figure 1: Progressive Levels of Public Use Measurement

Level	Staff	Time	Funding
Initial (I)	1 Part Time	As time permits	None
Basic (II)	1 Part Time	10%	Nominal
Intermediate (III)	1 Part Time	25%	Small Dept
Developed (IV)	1 Full Time	100%	Normal Dept
Advanced (V)	2 + Full Time	100%	Enhanced Dept

Level I is the *Initial* Public Use Reporting Program. The *Initial* counting program consists of a staff person keeping track of people who enter facilities or programs while engaged in some other work, such as law enforcement or information provision. This measurement is only part of this person’s responsibilities and therefore prone to errors. A separate count is recorded for day visitors and the number of visitors who stay overnight.

Level I has benefits. The Level I program is low in cost and is administered as time permits. Even this initial program helps staff become familiar with record keeping and the need for attention to detail. It is better for a park to establish a reporting program with such initial simplicity than to design a more comprehensive program that cannot be administered.

Level I has disbenefits. It is inefficient. It is prone to large counting and recording errors. Clerical errors are common. It does not discriminate amongst visitors and entrants. Many facilities and programs are not monitored.

Level II is the *Basic* Public Use Reporting Program. In this level improvements are made in data collection to reduce over- and under-reporting. There are better collection methods and better data recording methods.

Level II has benefits. The data is more accurate. Staff members have more experience. Sufficient experience is gained to understand the needs of a fully functional measurement program.

Level II has disbenefits. The accuracy, volume and duration of stay of day-use are unknown. The error rate is unknown. Nothing is known about visitor characteristics. Many facilities and programs not monitored.

Level III is the *Intermediate* Public Use Reporting Program. At this level a visitor survey is implemented in addition to manual and electronic recording. A comprehensive estimate of public use of the entire park is available, at least for one period of time. The complexities of park uses are known including local day visits, non-local visits, visitation and total entries, overnights, and visit hours. The full volume of park use can be

estimated because the numbers who slip past the counters can be estimated from survey data.

Level III has benefits. The needs of park operation, resource protection and visitor services functions can be served accurately for the sampled period and at a gross level for the rest of the year. Respect for the data grows amongst staff and data users.

Level III has disbenefits. Refinements of the data are based on extrapolations, estimates, and proportions from a survey at only one point in time. The survey may not fully represent the visitors. No one staff has full responsibility for the program.

Level IV is the *Developed* Public Use Reporting Program. One specialized staff is responsible for the program. More than one visitor survey is done. Instrumentation is installed to monitor both high and low use areas.

Level IV has benefits. Accuracy and completeness is the responsibility of one specialized staff. There is much more complete knowledge of visitor use, visitor characteristics, and low use areas. Managers have more confidence with the data.

Level IV has disbenefits. Clerical errors can occur and can compound. Full understanding of the visitors is not yet present.

Level V is the *Advanced* Public Use Reporting Program. Several trained staff members are dedicated to the program. Advanced field data collection instruments and visitor surveys are used. The use of computers, enhanced graphic and statistical presentations of data, additional detail for all park operating departments. Real time, online data availability is possible.

Level V has benefits. All managerial functions of the park have some level of data availability from the program. There is a high level of accuracy and confidence with the data. There is a sophisticated understanding of visitor numbers, movement, changes over time, motivations, length of stay, spending habits, satisfactions. There is strong confidence in the data.

Level V has disbenefits. It is expensive. It may be too sophisticated for some of the field managers to use effectively. It often involves outside researchers with concurrent control and reporting issues.

There are a number of common issues that arise from this system involving progressive levels of program development. Visitor use monitoring and reporting requires specialized knowledge that is usually not available in a park agency. Specialized training or hiring may be required. Unfortunately, accuracy in public use measurement is not given as high a priority as accuracy in natural resource inventory and research. Many people accept doubtful data. Fraud by staff can occur and must be planned against and therefore independent auditing is essential.

Reporting is a critical component of the program. The data and information must be readily available to be effectively used. A common ele-

ment is an annual visitor use report for all parks in a park system. Special reports for managers are often needed. Specialized surveys data and analyses of data are needed. Reports designed for special public interpretation of park use are popular with park visitors. In recent times it is increasingly possible for park managers to have access to online, real time use data. For example, online visitor preregistration allows managers to know months in advance the level of future use, the type of use, the identity of the users, the type of programs desired, the type of equipment, etc. Registration data and map data in a GIS allows managers to see visitor distribution patterns in real time. Occurrence reporting that is georeferenced can map problem sites, problem times, and locations needing special attention.

Since publication in 1999 the use of the IUCN public use guidelines has expanded. Several countries, i.e. Mexico, adopted them. The standardized definitions were very well received and are now heavily used. The 5-Level system was well received, with many parks reporting a 0 level, that is no public use measurement underway. Many parks aspire to a Level III program. Very few parks report a Level IV or V program. Many managers report that errors and fraud are now better detected.

The *Guidelines for Public Use Measurement and Reporting in Parks and Protected Areas* are available in pdf format at: <http://www.ahs.uwaterloo.ca/~eagles/parks.pdf>.

2.2 The Limits of Acceptable Change Process: Theory and Practice

David N. Cole

Aldo Leopold Wilderness Research Institute, Missoula, Montana, USA

In the early 1980s, I was part of the group that developed the Limits of Acceptable Change (LAC) process as a framework for making management decisions regarding the ill-defined concept of recreational carrying capacity. In wilderness areas in the United States, a common goal is to provide recreational access with minimal restriction of free and spontaneous behavior. This goal increasingly conflicts with the more fundamental goal of protecting the biophysical and experiential qualities of these areas. Managers are faced with difficult decisions regarding the most appropriate compromise between these goals. LAC was designed to be a process for working through to such a compromise. Although developed specifically for wilderness, the process is equally useful across an array of recreational and protected areas and is even applicable to issues of conflict beyond recreation management.

The first articulation of the concept of LAC occurred in 1963 in a study of campsite impacts in the Boundary Waters Canoe Area Wilder-

ness, Minnesota, conducted as a masters thesis by Sid Frissell. He observed that even very lightly used campsites experienced impact. This led him to conclude that impact is inevitable if recreation use is allowed. Instead of trying to avoid impact, the manager's job should be to limit impact to acceptable levels. Managers must decide how much impact is acceptable and take steps to keep impacts to acceptable levels. In the early 1970s, Sid Frissell and George Stankey suggested that this way of thinking was also applicable to concern about impacts on visitor experiences. Moreover, this concept might provide an effective way to manage for recreational carrying capacity. Work to make LAC a formal planning process began about 1980.

Beyond an interest in developing a process for dealing with carrying capacity, we were also interested in improving recreation management planning generally. Perhaps our foremost concern with existing plans was the absence of specific, achievable management objectives. The objectives in most plans were so general and vague as to be of no value in distinguishing problem situations, identifying promising management strategies or evaluating management success. Only when describing management actions and programs were plans specific. We strongly believed that a management program should be shaped primarily by specific objectives regarding the types of conditions a protected area should provide—not by the management actions managers would like to take. The management actions taken should be those necessary to achieve the conditions explicitly stated in a plan.

Other concerns included (1) lack of accountability for quality management, (2) management programs that appeared arbitrary and (3) inadequate knowledge of existing conditions and trends. Without either objectives or monitoring data, the strength of management is entirely dependent on the perceptiveness and intuition of managers. Management programs will constantly be in flux as different managers come and go. Consequently, we hoped LAC could make plans more trackable. We wanted a process that could increase accountability, through the specification of explicit and visible objectives that were essentially contracts, with success at meeting objectives evaluated with objective monitoring data.

In its simplest form, the LAC process consists of a series of steps designed to objectively identify problems, followed by steps to correct these problems. The problem identification phase involves setting specific management objectives and then using monitoring data to assess how current conditions compare with objectives. Once there is agreement on the value-based decisions regarding objectives, even different people with different biases should be able to agree about what should or should not be considered a problem. Problems are simply situations where objectives are not being met. Where objectives are not being met, management actions must be identified and implemented, such that objectives are met.

Periodic monitoring continues over time, to ensure that objectives continue to be met.

This process is neither original nor complex. Management by objectives has been a recommended planning approach for decades. This process emulates the way many people unconsciously make rational decisions in their everyday lives. However, that does not mean it is easy to do. Much of the difficulty lies in developing specific management objectives that describe conditions—how much impact to biophysical resources and experiences to allow in order to accommodate recreational use. Many of the steps in the LAC process involve incrementally working from broad goals to specific statements of management objectives.

In 1997, a workshop was held on LAC and the virtually identical planning processes, Visitor Experience and Resource Protection (VERP), Visitor Impact Management (VIM) and Carrying Capacity Assessment Process (CCAP). Participants agreed that all these processes were conceptually equivalent, differing only in the details of how they are implemented. At that workshop, we decided to add a tenth step to the LAC process—a new first step in the process related to defining goals and desired conditions.

Briefly, the first step is to define broad goals and desired conditions. For example, goals might be to provide as much access for recreation as possible, while providing outstanding opportunities for solitude in some places. Clearly these goals will conflict to some degree. Indeed, the primary purpose of the LAC process is to decide how to compromise these conflicting goals and to make that compromise explicit in a set of indicators and standards. The second step is to identify issues, concerns and threats. Continuing with our example, in this step we might note concern about growing population in urban areas close to the park. This might lead us to conclude that we want to both provide for this increasing demand while keeping some portions of the park more lightly used. This strategy involves zoning, which is what the third step involves—defining and describing prescriptive management zones (referred to as opportunity classes in the original LAC report). Zoning is referred to as prescriptive because zones are based on desired conditions rather than current conditions. In our example, we might define a recreational zone to accommodate use and a wild zone to provide more solitude. The fourth step is to develop indicators of the conditions to be provided in each zone. Indicators are developed for important attributes that represent compromise between the goals developed in step 1 and that are subject to managerial control. Indicators need to be written with sufficient specificity that it is clear how they should be assessed. In our example, we are concerned about the compromise between access and the ability to find solitude. Since opportunities for solitude are strongly influenced by the amount of interaction with other groups that occurs, we suggest the number of other groups encountered per day as an indicator. The final step in this part of

the process is to develop standards for each indicator. These standards are the limits of acceptable change that give meaning to the management objectives for each prescriptive zone. Different standards are written for each zone. For example, to provide outstanding opportunities for solitude, we might set a standard of #3 encounters per day in the wild zone. This commits management to taking whatever actions are needed to ensure that groups in the wild zone do not encounter more than 3 other groups per day. In the recreation zone, we could have no standard for encounters, if we felt use density was not an issue. Or perhaps use levels in this zone would be limited by a standard we developed for acceptable resource impact. Alternatively, we might set a standard such as #100 encounters per day. This would allow for substantial recreational use, while recognizing there is some limit to the ability of the place to absorb use.

Once standards are in place, encounters can be monitored and “problem areas” can be identified as places where conditions are not in compliance with standards. Where standards are exceeded, potential reasons the problems exist need to be explored so that effective management actions can be identified. Violation of encounter standards could be alleviated by limiting use or perhaps by making access more difficult or even by using information to redistribute use. Periodic monitoring of encounters provides insight into the success of actions taken and ensures that standards are not violated.

The LAC process has been used successfully in a number of wildernesses and parks around the world. However, there have been problems with the implementation of LAC. Generally, it is often viewed as being too costly and difficult. The most serious specific problems are (1) the difficulty of deciding on indicators and standards, (2) lack of resources for monitoring, and (3) unwillingness to implement restrictions when standards are violated.

Most of the difficulty with deciding on indicators and standards reflects managers not being comfortable making value-based decisions that give preference to certain sets of values rather than others. Any decision about standards will be viewed favorably by certain populations of users and unfavorably by other populations. Managers are understandably uncomfortable deciding which group wins and which group loses. They need to recognize, however, that not setting a standard or maintaining the *status quo* is just as much a value-based decision, with implications for who wins and who loses. Managers have turned to scientists, seeking a “scientific basis” for decisions about appropriate standards. While some scientists encourage this, suggesting there can be an empirical basis for standards, I disagree. Science can improve our understanding of visitor experiences and factors that influence the nature of the experiences. This can give us more insight into the implications of decisions about indicators or standards, but the decision about appropriate conditions—about “what ought to be”—remains fundamentally a question of values. One of

the reasons for incorporating zoning into management planning is to provide a diversity of opportunities that span the array of public interests and values.

Monitoring problems largely reflect inadequate resources for professional recreation management. If we are serious about professional management, then we need to invest more resources in monitoring. There is often a need to articulate who should be doing the monitoring. Problems are created when planning, monitoring and implementation become separate tasks undertaken by different people.

Finally, managers have often been unwilling to implement restrictions when standards are violated. Sometimes this reflects a belief that standards operate as “warnings” rather than as “contracts, as a commitment to act. Once viewed as contracts, lack of willingness to act suggests that perhaps the standards are inappropriate. If the solution to the problem is worse than the problem itself, then the standard is inappropriate. This reinforces the recommendation that the management actions that might need to be undertaken be considered before standards are set. Standards define the ideal compromise between deteriorating conditions and restrictive actions. If they are too strict, then management will be too restrictive. If too lax, deterioration will be excessive. There may need to be a few iterations of setting standards and implementing actions to arrive at the most appropriate balance.

Despite these problems, there have been a number of positive outcomes of LAC. More monitoring of conditions is being conducted and the quality of monitoring programs has increased. Plans increasingly include specific statements about desired conditions and experiences. Recognizing the value-based nature of decisions about objectives, innovative approaches to citizen participation have been tried. Zoning is receiving much more attention. Importantly, zones are increasingly defined as much by variation in desired conditions as by variation in their management programs. Finally, LAC has proven to be a systematic process for dealing with carrying capacity issues and for deriving defensible use limits, where limits are necessary.

In conclusion, LAC provides a framework for resolving conflict between opposing goals, each of which is subject to compromise. This makes it useful for dealing with the issue of carrying capacity, where we are compromising between use and protection. Two implications of this statement follow. First, much of visitor planning and management does not involve conflict and compromise; LAC is not necessary or useful for these tasks. Second, the LAC process can be used in situations beyond visitor management to develop compromise between conflicting goals. Visitor use monitoring is absolutely critical to a process like LAC and is critical to professional management of recreational and protected areas. Conversely, a process like LAC, with decisions about desired conditions,

management objectives and indicators, makes monitoring programs more efficient and focused.

2.3 Standardisation of Visitor Surveys and Visitor Counts – Experiences from Finland

Joel Erkkonen1, Jere Rauhalal & Heikki Iisalo1
Metsähallitus, Natural Heritage Services

Tuija Sievänen
Finnish Forest Research Institute

Introduction

Protected and recreational areas in Finland

Protected and recreational areas include national parks, state-owned hiking areas and wilderness areas and other nature conservation areas to which access is permitted, as well as other areas reserved for recreation. In Finland, protected and recreational areas are mainly managed by the Natural Heritage Services of Metsähallitus (Forest and Park Service). Metsähallitus is a state enterprise, which, in addition to business activities, also has social responsibilities. Issues relating to nature conservation and recreational services provided for citizens are social responsibilities and they are mainly financed by the state.

At the beginning of 2003, there were 35 national parks, 7 state-owned hiking areas and some 400 other protected areas in Finland. In addition, several new national parks and hiking areas are being planned.

Need for visitor information in state-owned areas

The number of recreational visits to state-owned protected and recreational areas is continually growing, thus presenting increasing challenges in the planning of the management and use of these areas. This also creates new opportunities. The growing numbers of visitors leads to increasing problems in relation to the ecological and social carrying capacity of the protected and hiking areas. Heavy visitor traffic causes deterioration and other disturbances in the terrain from the perspective of nature conservation. Visitors may experience congestion as disturbing to their own recreation.

At the same time, the amount of budget funds allocated to recreation services have not increased to meet the growing service needs of the increasing number of visitors. It has become more important than ever to know how many visitors use the area, and also to know the visitor profile

and visitors' opinions of the area and the services provided, so as to manage and to prepare for changing situations in advance.

Besides the number of visitors (number of recreational visits), other information on visitors is also necessary. This is gathered by means of visitor surveys. Visitor counts and visitor surveys are complementary to each other and they should be carried out simultaneously (Erkkonen et al. 2001).

Need for standardisation of visitor surveys

There were several reasons for the standardisation of visitor surveys in Finland. Some visitor surveys had been conducted earlier in municipal recreational areas and state-owned hiking areas and national parks (e.g. Sievänen 1992a and 1992b, 1993, Ovaskainen et al. 1999). In several contexts, it appeared to be necessary to compare visitor information gathered from different areas or from the same area at different times.

Secondly, there is a need to collect information on the demand for outdoor recreation throughout the country and to create a national information system on recreational use. This was the motivation behind the compiling of a national outdoor recreation demand and supply inventory (LVVI) (Sievänen 1998). The nationwide demand for recreational use was studied with the help of an extensive population survey. Another approach to assess demand in the LVVI study was to develop methods for visitor surveys that would enable us to obtain comparable information on the use of the individual areas, e.g. visitor information. On the national level, use information is gathered together with information on natural resources, hiking trails and services in recreational areas into a national database (supply inventory) (Sievänen 2001).

Need for standardisation of visitor counts

Reliable estimates of the number of recreational visits are extremely important for planning and managing the use of the areas in question. On the basis of such estimates, it is possible to obtain a clearer picture of the use of the area and the sites where visitor traffic is heaviest. Information on visitor numbers help the people responsible for managing the areas to control the flow of visitors, for example, by directing them to routes that cause less deterioration to vegetation and landscape. In addition, visitor counts also help to maintain and develop services so that they better correspond to the real number of visitors to the area (e.g. firewood supply and waste disposal). Standardisation of counting methods improves the reliability and comparability of measurements of visits, and thus offers a better basis for controlling visitor flows.

Standardisation of visitor surveys

A visitor survey standardisation project was conducted in cooperation by METLA (Finnish Forest Research Institute), Metsähallitus and the University of Helsinki in 1998–2000. The aim of the project was to develop a method for gathering data, to test indicators for visitor surveys, and also to develop calculation and reporting methods. Another objective was to produce a manual for conducting visitor surveys and utilising visitor information in planning management and use of protected and recreational areas. The project produced technical recommendations and guidelines for data collection, including data forms. In recent years, Metsähallitus has carried out extensive visitor surveys using the results of the project.

Questionnaires

Visitor surveys are carried out by means of questionnaires and interviews among the visitors to the area. Metsähallitus usually uses guided questionnaires. In most cases, it is recommended to collect some 300–500 questionnaires during the survey period (summer, winter). Sampling arrangements and the size of the sample vary considerably, depending on the nature of the area and the resources (e.g. working time) available. The randomness of the sample is ensured by distributing the collection of the questionnaires over the entire data collection period (season). Questionnaires are also collected at different entrance points to the area, so that at least the most important peak areas of visitor flows are covered. It is recommended that visitor surveys should be repeated about every 5 years, depending on the area.

Standard form

Only the most relevant issues that are usually of interest in visitor surveys are included in the questionnaire. Special attention is given to the formulation of the questions and to the structure of the questionnaire. The standard questions form the basis of the questionnaire in all visitor surveys, but there is also room for questions specific to the areas. The standard form has been tested and further developed as experience has accumulated (Erkkonen 2000 and 2001). It has evolved into a basic form that is effective and easy to apply in different areas (Erkkonen & Sievänen 2001).

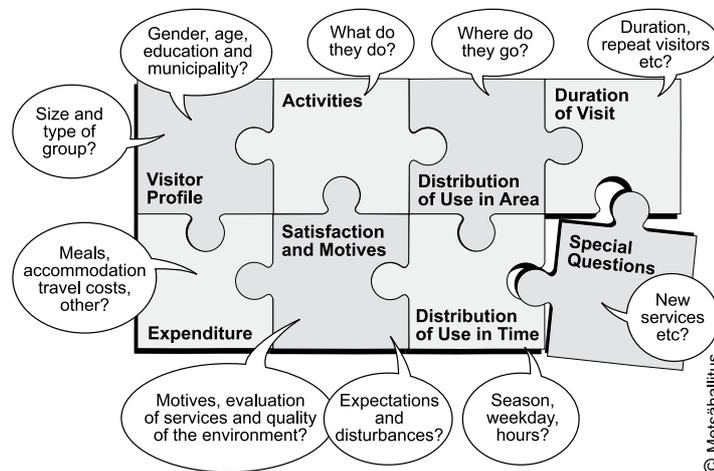
What kind of information is collected?

Visitor surveys are used to gather information about visitor profiles, activities, use of the area, visitor satisfaction, duration of visits and expenditure during visits. Visitor profile information consists of socio-economic data such as age, gender, education and place of residency. In addition, visitors are asked whether they have visited the area before and if so, when they visited the area for the first time. The questionnaire also asks

the ages of the oldest and youngest members of the group and whether any visitors are disabled.

Outdoor activities and other forms of use are inventoried, mainly for the purpose of correct dimensioning of services and accommodation for different visitor groups in the same area. Visitor satisfaction is measured by means of an indicator that consists of almost 20 different factors. Visitors are also asked to assess factors that disturb their recreation experiences. Questions relating to individual areas may concern such things as traffic arrangements and the need to increase or decrease the amount of services (Fig. 1).

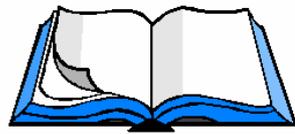
Figure 1. The most important factors inventoried in the visitor survey.



Outcomes of the visitor survey standardisation project

The actual outcome of the project is the visitor survey manual (Erkkonen & Sievänen 2001). The manual contains comprehensive instructions for carrying out a visitor survey, reporting its results and utilising visitor information (Fig. 2). The purpose of the manual is to facilitate the conducting of visitor surveys, so that the basic tools, such as the questionnaire and the report model, are ready for use after minor modifications in each individual area. The manual also gives instructions for sampling and the arrangements for data collection.

Figure 2. Outcomes of the visitor survey project in Finland.



Visitor Survey Manual

- ☞ step-by-step instructions
- ☞ standard questionnaire
- ☞ manager's guide

Software

- ☞ based on MS Excel
- ☞ standard analyses
- ☞ immediate results
- ☞ tables and pictures can be easily transferred to MS Word etc.



Reports

- ☞ standard form
- ☞ comparable
- ☞ monitoring of changes



A MS Excel (Excel 97) application was developed during the project for storing the data on the forms and processing the data. The application enables the production of various tables and graphs (direct distributions and means), which can easily be transferred to summary reports. The data outprints correspond to the structure of the visitor survey manual (see Fig. 1). This makes it considerably easier to compare the results between different areas or within the same area. The application is used by Metsähallitus.

Number of visitor surveys on the increase

More than 40 visitor surveys have been conducted in state-owned protected and hiking areas in 1998–2003. The surveys have been carried out using the standardised method, and the results are for the most part comparable (e.g. Erkkonen 2000). In the future, Metsähallitus plans to carry out a visitor survey in 5–10 protected or recreational areas annually.

With the help of the manual, the personnel of protected and recreational areas can conduct visitor surveys in the course of planning their activities, and they do not have to start from scratch or hire an external researcher for the job. Metsähallitus has trained personnel of the protected and recreational areas in the conducting of visitor surveys.

Visitor counting

Methods of visitor counts

Numbers of visits are counted by electronic and mechanical counters of different kinds. In addition to these, trail logs, in which the visitor can write comments are still useful tools for estimating the number of visits. Earlier, the estimates were based on trail logs, examination of footprints and deterioration of the trails, various permits and best estimates made by personnel working in the areas. However, with visitor counters it is pos-

sible to get more systematic and reliable estimates of the number of visits to the areas in question.

Choice of the counter model and type is influenced by the characteristics of the site and the amount and quality of the information needed. The features of the installation site to be considered include the width of the passage, the possibilities for reading, monitoring and installing the counter, and the electricity supply available. This is basically a question of whether the information is needed all the year round or not. The site for installing visitor counters should be chosen so that it gives the most representative picture of the movements of visitors in the area. In selecting the site, the sites where the visitor traffic is intense must first be defined. At the beginning this is done by using the best available local knowledge of the area's personnel.

The electronic counters usually comprise infrared photocell sensors, reflectors, a power source and a counter with delay circuits and a housing. The power source is generally an enclosed lead or nickel battery. The mechanical counters used are generally Mechanical Stroke Counters, which are built into the structure of a door or its lock. One of the most promising future developments for visitor counts is to get in use an electronic counter type based on a data logger and wireless gsm data transfer technology. The counter is equipped with a gsm telephone for the loggers's data transfer. At the moment counters of this kind are being tested at Metsähallitus and the technology will be further developed in cooperation with Teknovisiot Oy.

Correction coefficients of counters

The readings given by counters describe the number of visits at best as relative changes in readings between counting intervals. In order to establish the actual number of visits, the counters have to be calibrated. A qualitative and technical correction coefficient is defined for each counter separately because the counters give erroneous readings. Technical errors are caused by characteristics of the counter and the installation site. Such errors are caused, for example, when visitors walk side by side or too close to each other, especially when the passage is wide. In addition, weather conditions (misting or ice) may cause technical problems. Qualitative errors are caused by movements that do not represent real customers or visitors. These include movements of servicing and other personnel and animals, for example reindeer in northern areas (Horne et al. 1998).

The counters are calibrated by monitoring the counting stations at different times of day. Metsähallitus has a standardised monitoring form so that every counter is calibrated on the same basis. During monitoring, the times at which the observation period began and ended, the passers-by, their number and direction of movement and (other) factors that might affect the counter's results (such as visitors going round or passing the

counter several times or walking side by side with another person) are recorded. All factors that have been observed are recorded during the one-hour observation periods. For each calibration interval there should be at least 4–6 hours of observation. In order to calculate correction coefficients, several calibration intervals are required, preferably 4–6. The more calibration intervals are included in the coefficient, the more accurate the results.

The correction coefficient is defined for each counter on the principle that, as far as possible, only real visitors are registered and preferably only once. Visits of servicing and other personnel and animals etc. should be excluded from the final estimates of number of visits.

Systematic training

The first manual on visitor counting in Finnish was published by Horne et al. in 1998. Before that good models were found in English from Scotland and the United States (Dales et al. 1993, Yuan et al. 1995). With the help of the visitor counting manual, Metsähallitus has begun to count visitors (visits) to the areas, especially in national parks and hiking areas, more systematically and consistently during the past two years.

In order to ensure quality and commensurability of the results, the personnel participating in the counts are trained in almost identical situations. The training deals with the basic elements and aims of visitor counting as well as counter technology and installation techniques. In the context of basic elements and aims, efforts have also been made to influence attitudes. Positive attitudes of personnel are very important for the success and development of visitor counting.

Interpreting and utilising visitor information

A visitor survey primarily produces information for resolving practical problems relating to planning and management. It also facilitates decision-making. The results of the surveys can be used to decide the locations and scope of the services provided and also the timing and maintaining of these services. Visitor information is used in allocating human and other resources and in marketing the recreation areas and services (e.g. Dales 1993).

Planning and management of use of recreational and protected areas

When compiling a management plan, a visitor survey should be one of the basic studies carried out at the outset of the process. The visitor survey and the visitor count both produce important basic information which is used to describe the present status, to analyse problems, to look for solutions and finally to set targets. However, a visitor survey or a count does not produce solutions for problems, but at best supports planning and decision-making by suggesting alternative solutions.

It is useful to know why visitors come to the area and what their most important motives are. The aim should be to offer visitors the opportunity to have the kind of experience that they expect of their visit. On the basis of visitor satisfaction information, resources can be allocated to develop services that visitors are dissatisfied with or that they have found to cause problems. Information about how well visitor experiences have met expectations and to what extent visitors report on disturbances during their visit also tells something about visitor satisfaction. Changes in visitor satisfaction can be studied by repeating visitor surveys.

Information on the expenditure of visitors is utilised in the planning of paid services (accommodation and restaurant services) and in developing new services (new activities and recreation services). In addition, information on the number of visits and their distribution in the area can be used as grounds for new investment plans presented to project funding agencies and for more efficient allocation of human and other resources between the different sites.

A visitor survey carried out in a protected or hiking area can also be utilised by a visitor centre or service point in the area or in its vicinity. It can provide vital basic information for deciding on opening hours, exhibition themes and the needs for developing new services. In addition, visitor information can be utilised when planning brochures, identifying and selecting target groups and deciding on the focal points of nature interpretation.

Information relating to visitors' backgrounds and their place of residence is exploited in the marketing of the services and recreational activities offered by the area. It is also advantageous for nature interpretation to know the visitors of the area as well as possible. The visitors' place of residence indicates whether the area is of local, regional, national or international significance.

Conducting visitor surveys and counts systematically and on a routine basis at regular intervals enables us to monitor changes in the recreational use of the area in question. Changes can concern the visitor profile or their opinions on the area or the quality of services. The monitoring of changes makes it easier to assess what impacts the measures taken have had on visitor satisfaction (e.g. increase or reduction of services) and whether changes in management policy have influenced the visitor profile.

Visitor management

Visitor information can be used if there is a need to control visitor behaviour in the area. This may be necessary due to conflicts between different visitor groups, visitor traffic peaks or use that exceeds the ecological carrying capacity of the natural environment. By controlling the use of the area it is possible to guide visitors towards activities that are most suitable for the area in terms of ecological and social sustainability.

It is useful to know the distribution of the sites visited, for example, when planning services, trails and routes, rest points, firewood supply and waste disposal. Systematic control of visitor flows can also help to avoid deterioration of the terrain and to level out peaks.

Monitoring recreation demand at the regional and national level

When similar questions and indicators have been used for monitoring the use of areas, it is possible to compare different areas with each other, even though the areas are very different. In addition to qualitative descriptive visitor information, comparable quantitative information on the number of visits (visitor counts) is also necessary. Comparable information on protected and recreational areas maintained by the state or local governments is needed for monitoring the use and cost development of the areas. A consistent database could be utilised in the monitoring and reporting of annual operations of the agency, in research and in quality classification of the areas.

Comparable quantitative and qualitative information about recreational use of natural resources is also needed by public agencies providing funding for recreational services, such as ministries and municipal decision-makers, in order to direct the allocation of resources according to the recreational needs of the population. Information on the amount of use and the expenditure of visitors can furthermore be used as a basis for assessment of the economic impacts of a national park or a hiking area in a region.

Visitor information from state-owned, municipal and private areas is collected in the National Sport Databank, which is maintained by the University of Jyväskylä. Information about the demand for recreation gathered from the areas is compared with information obtained from population surveys. The on-site information about recreational use provides a sound basis for analysing whether the recreation demand and supply meet.

Conclusions

In Finland, the most extensive protected and recreational areas are owned by the state and administered by Metsähallitus. The situation is good in terms of visitor surveys and visitor counts, as reliable and tested methods are put into practice very quickly around the country. In the state-owned areas visitor surveys are currently well under way, but we are only starting out on the long road to collect monitoring data. Closer integration of visitor surveys and visitor counts into the routine planning of management and use of these areas is a challenging task facing us. We therefore need to invest more in gathering both qualitative and quantitative visitor

information. In particular, the reliability of visitor statistics should be improved.

One of the most significant achievements of the visitor survey and count standardisation projects was its impacts on attitudes. Nowadays, attitudes towards visitor surveys and counts are positive, and the surveys are considered important for the development of protected and recreational areas. Conducting visitor surveys and systematic counts of visitors by various methods has now been registered as one of the annual management targets of the protected and recreational areas managed by Metsähallitus. This being the case, the accuracy of visitor information is increasing and it will be exploited more actively in the future.

Information gathered from protected and recreational areas maintained by the state and local governments and registered in the national database can be used to assess recreational services and projects financed from the state budget and also to support the setting of targets, decision-making and the implementation of recreational policy. In the years 2000–2001, the Finnish government commissioned the Ministry of the Environment to prepare a programme for the development of outdoor recreation and nature tourism (Programme for 2002). In this task, outdoor statistics produced by the LVVI study and information from the visitor surveys and counts were used. In the future, information produced by visitor surveys will be exploited in following up the development programme.

In recent years (especially since Finland joined the EU), ministries and other government bodies, such as METLA and the Finnish Environment Institute, have received many European and other international statistics inquiries which include questions about the recreational use of the natural environment. Monitoring of the sustainable development of natural resources also requires updated statistics that can be used to assess any changes in the use of the natural resources. In addition, national visitor statistics provide necessary and useful background information for research on recreational use of natural resources.

2.4 Visitor management in Sweden's protected areas – trends and future

Per Wallsten

Principal Administrative Officer, Swedish Environmental Protection Agency, Sweden

Protected areas in Sweden

Today around 10% of Sweden's area is protected in national parks (28 parks of totally 600 000 hectares) and nature reserves (2 500 areas of totally 3,5 million hectares. Now Sweden designate on average 70 new

nature reserves annually, and for this purpose the state purchase around 15 000 hectares each year. Our goal is to protect 300 000 hectares more land, mainly productive virgin forests, in nature reserves. Since our National Park Plan was launched 1989 we have established eight new national parks, the plan suggests about ten more to come.

For the management of protected areas the Swedish Environmental Protection Agency (SEPA) funds the actions of our country administrative boards. In 2004 the amount was 18 million Euros. Of this, 25 % was used for outdoor recreation purposes; such as information, trail management, visitor centres, etc.

During the last ten years the amount for nature management has risen from 7 million Euros, meaning a 160 % increase. At least for the closest years to come, we can foresee even more funds annually provided by the government. This is partly due to the parliamentary situation, with pressure from the green and left-wing government supporting parties in the budget negotiations, for creating a more nature-friendly profile on national politics.

New governmental environmental conservation politics

The government has recently formulated a widened responsibility for the nature conservation sector. Important future areas are local community participation, integration of cultural aspects, benefits for regional development; combination of preservation and sustainable use, nature tourism in protected areas, and stronger focus on outdoor recreation, including health and well-being issues.

This has implied a certain shift of focus and attitudes in the nature conservation sector: From the former “all light on biological diversity” we now see a situation with a larger human dimension, including the awareness of the necessity of better visitor management. This is also the case in the present and coming work of the SEPA.

The Fulufjället national park case

The establishment of Sweden’s latest national park, the 40 000 hectares large Fulufjället (i.e. the “Fulu mountain”) in southernmost part of the high mountain range, is considered by the government as a successful case in line with the new politics. The process and results are certainly good representatives for modern nature conservation, as breaking new grounds in several aspects:

- By changing the perspective and working with the local community on a bottom-up approach, we transformed strong negative attitudes to acceptance of the national park.
- The park objectives define not just traditionally that the area shall be pre-served in virgin conditions, but also its requirements for visitor experiences, such as tranquility, solitude and unspoilt nature.

- The objectives were basis for area zoning in the management plan. For each zone, visitor opportunities were formulated in line with the US concept Recreation Opportunity Spectrum (ROS). Opportunities were de-fined by a) desirable physical, social and managerial settings, b) appropriate activities and c) probable experiences.
- The normative definitions of the zones were the used for different management actions to improve nature quality and visitor experiences. This includes visitor infrastructure, information, a visitor centre, etc.
- Sustainable tourism is explicitly permitted at different levels in different zones, and local tourism activities, certification actions and ecotourism are encouraged.
- Monitoring visitor use and attitudes is an important part of the overall monitoring system of the national park. This has included development of new methods; a parallel study carried out before and after the park establishment, for studying how this affects the visitor pattern; and instructions in the management plan for regular use of quantitative and qualitative visitor studies as a base for area management.

The SEPA's liability is now to use the Fulufjället process and management plan as a good case for inspiring future work in national park and nature reserve planning and management.

23 actions for better management of protected areas

The SEPA has launched a programme to enhance the quality for our protected areas. The 23 defined actions include:

- Management plans in all protected areas shall have operational conservation objectives, possible to monitor and evaluate by the year 2010
- All protected areas are managed in a way that the conservation objectives for outdoor recreation are obtained by the year 2010.
- The area mangers shall by the year 2008 have knowledge of methods for collecting and using quantitative and qualitative visitor data in protected areas. Guidelines for this and educational programmes will be carried out by SEPA from 2005 to 2008.
- Guideliens fo high quality national park entrances will be formulated, and all parks shall have attractive entrances latest in the year 2015.
- All areas shall provide basic information for visitors, and the most qualified shall have nature interpretation actions, latest in the year 2006. Guidelines for qualified on-site information will be formulated.

The 23-programme implies work on several levels in the nature conservation sector. The SEPA is responsible for encouraging the managers, promoting knowledge and rising the level of methods and skills for field

management. This will mainly be done by publishing handbooks and guidelines, creating education programmes and arranging seminars and courses. We will also fund and accomplish certain actions, as evaluating and approving national park entrances.

Summary conclusions

The consciousness of the importance of outdoor recreation use in protected areas has risen the latest years in Sweden, as well on the political level as by the central agencies and the regional managers. This implies more funds for visitor management actions. It also means growing awareness of the value of visitor data as a base for planning and management, for providing desirable recreational outcomes. This in turn presupposes more deliberately planning efforts.

We therefore will need more knowledge of methods for measuring visitor use, attitudes, motives etc. With a greater demand of using protected areas for tourism, as an important mean for local and regional economical development, we also need to emphasize the necessity of monitoring visitor use effects. This will be valid for enhancing and securing both visitor experiences and nature values, as bases for handling carrying capacity issues, as well as to show tourism-induced economical benefits as arguments for area protection.

The SEPA's work with handbooks, guidelines and education, parallel with the creation of good examples of planning and field management, will need to expand in the coming years. This is necessary in order to correspond to the growing expectations from our politicians, tourism entrepreneurs and present and future visitors to our protected areas. The 23-actions-programme for better management should be regarded as a concrete symbol of this responsibility.

2.5 Experiences from visitor research at Fulufjället National Park, Sweden: Self registration and non-response bias

Peter Fredman

European Tourism Research Institute, ETOUR, Sweden

Introduction

In order to be successful in management and development of natural areas with respect to ecological and social values, it is crucial to collect relevant and accurate data on visitor numbers, characteristics, behavior and attitudes. The reasons for visiting natural areas are often just as diversified as there are visitors – some come to participate in specific activities, other to experience a certain place or environment. Among the ques-

tions managers need to ask themselves are what motivations and constraints there exist to make a visit; are there recreation conflicts to solve; and ultimately how should the area be managed to maximize visitor benefits while the natural environment is preserved and costs are minimized (Loomis & Walsh, 1997; Manning, 1999).

There are several techniques available for measurement of visitor use in natural areas – mechanical and electronic counters, direct and indirect observation, self registration, personal interviews, telephone and mail surveys (Vuorio, 2003; Eagles & McCool, 2002; Yuan et al., 1995). The choice of method depends on many aspects, including what questions one want to answer, the site and visitor characteristics, and financial resources. The different data collection techniques can be summarized in two groups – on site studies and general population surveys;

On site data collection

- Mechanical and electronic counters – automatic registration of visitors at certain locations
- Manual observation – manual registration of visitors at certain locations
- Camera monitoring – Fixed cameras, air photography etc.
- Self registration – questionnaire distributed at on site self registration boxes etc.
- Direct interviews – personal on site interviews
- Indirect methods – visitor estimation based on water consumption, waste disposal, lodging statistics etc
- Follow-up surveys – mailed questionnaires or telephone interviews based on addresses or telephone numbers collected on site

General population surveys

- Mailed questionnaires, telephone or personal interviews based on a population sample
- Focus groups, expert panels

An important difference between the two groups is that on site surveys will include a cross-section of all kinds of visitors to a specific site (i.e. include different nationalities, ethnicity, activity groups etc.) while general population surveys are restricted to a sample of the target population (i.e. individuals living in certain regions or countries). Yet another important difference is that on site surveys will include those who have made the decision to visit a specific site, while general population surveys also include individuals who have not visited the site. Consequently, on site surveys are more efficient to estimate current use and base line data for specific sites while general population surveys are preferred when focus

is on participation (motivations, constraints etc.) among a certain population (Heberlein & Fredman, 2002). Because of the dynamics of outdoor recreation and complexity on many site characteristics, visitor studies are often based on a combination of different techniques. While visitor numbers could be estimated by means of car and visitor counters, on site interviews or self registration boxes can be used to collect addresses for a follow-up mailed questionnaire.

In addition to the measurement of visitor numbers, use and attitudes, every visitor study should also pay attention to possible sources of measurement and non-response bias. On site data collection and mailed surveys involve several possible sources of non-response errors (Mangione, 1995; Mitchell & Carson, 1989), and when different techniques are combined the possible sources of bias in the estimates increase. Both methods are for example sensitive to bias from non-response since sample members can decide themselves whether or not to fill in and return the questionnaire. Individuals who have a greater interest in the topics of the study may be more inclined to complete the questionnaire than those who are less interested. It may also be that people from certain geographical locations or activity groups are more or less inclined to leave their answers. No matter how well a visitor study is performed, most surveys will be subject to a potential non-response bias because a one hundred percent response rate is either practically impossible or very expensive to obtain. Consequently, on site counters need to be calibrated according to location and use categories, field-staff must receive correct instructions, and non-responses to on site self registration boxes and follow-up questionnaires need to be monitored. Unfortunately, these procedures are not always performed due to limitations in knowledge, time, money or other resources.

Study area and methodology

The current study addresses the issue of non-responses at on site self registration boxes and possible biases in the follow-up questionnaire. Self registration boxes with follow-up mailed questionnaires have been used in several previous visitor surveys in the Swedish mountain region (Vuorio, 2003; Hörnsten & Fredman, 2002; Fredman & Emmelin, 2001; Hultman & Wallsten, 1988). The non-response study reported here is part of a visitor study at Fulufjället National Park in the county of Dalarna in the southern part of the Swedish mountain region (Fredman, 2004), financed by the Swedish Environmental Protection Agency. The park is 380 km² large with low alpine characteristics. Fulufjällets National Park features the highest waterfall in Sweden – Njupeškär. This is a major tourist attraction in the region and the access to the 90 meter high fall is by car or bus to the trail head followed by a three kilometer round trip hike. The waterfall, the trails to the fall and the major park entrance with car parking, cafeteria and a visitor center are located in the most devel-

oped zone of the park. There is a small fishing camp at Rösjön and a network of small cabins and marked trails throughout the park that provides good opportunities for backpacking. Most of the park is a designated wilderness area (Figure 1).

During the period June to September 2003 eight self-registration boxes were located at seven locations at the major entrances of the national park (Figure 1). Each box was placed clearly visible along the hiking trail together with a poster asking the visitors to fill out a registration card containing a few questions concerning the visit and the person’s name and address. The completed cards were placed in a locked section of the box. A sample of the visitors that registered at the self-registration boxes received a follow-up mailed questionnaire sent to their home address a few months after the visit to Fulufjället (Table 1). Two remainders were sent out including a new questionnaire in the second one.

In places with many visitors there is a risk of the box being “busy” so that following hikers do not notice it or do not have time to wait for their turn to register. This was periodically the case along the trail to Njupeskar waterfall (the most frequently used trail in the area). Other may refuse to fill in a registration card because personal or survey related reasons. From field observations at 13 different occasions between June 14 and July 5 it was estimated that 50-80 % of the hikers at the old trail to Njupeskar did not register voluntarily. As long as non-registrations occur randomly across the visitors (sample population in this case) it will not affect the results of a visitor survey. To ensure that non-registrations do not follow a specific pattern the self registration must be supplemented with a non-response study.

A sample of 286 individuals who did not voluntarily register at the Njupeskar old trail did fill in a registration card upon request from field staff. The registration boxes at the trail were observed from distance and individuals who did not register were kindly asked to do so at a registration card given to them by the field person. All of these on site non-respondents later received a mailed questionnaire that was answered by 206 individuals – 165 Swedish visitors and 41 German visitors (Table 1).

Table 1. Data collection statistics

Original registration cards	Completed	6,151
Original mail survey ¹	Completed	1,245
	Response rate	82.8%
Non-response registration cards	Completed	286
Non-response mail survey ²	Completed	206
	Response rate	72.0%

1) Includes 804 surveys completed by Swedish visitors and 441 surveys completed by German visitors; 2) Includes 165 surveys completed by Swedish visitors and 41 surveys completed by German visitors.

Results

A preliminary look at the data, comparing the answers of the respondents in the original mail survey with those of the non-response mail survey, show that answers to 31 out of 174 questions (17.8%) significantly differ between the two surveys. Assuming the questions in the survey are unrelated, we would expect at the most a five percent difference in the answers to not reject the hypothesis of no difference between the two groups. Since this is not the case – several items in the questionnaire focus on similar issues – the findings here should be interpreted accordingly, and the bias in the mailed questionnaire because of non-responses at the self registration boxes may not be as large as the figures above indicate.

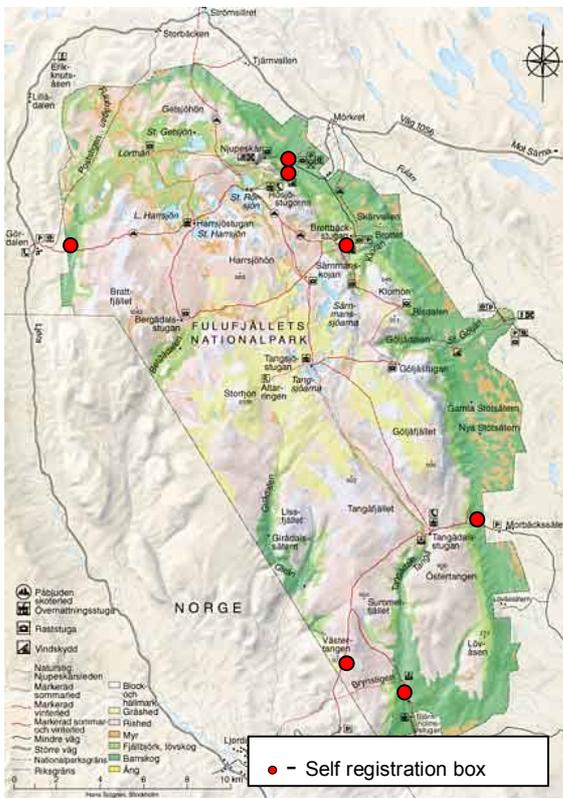


Table 2. Items in the mailed questionnaire with a significant difference ($p < 0.05$) between on site respondents and on site non-respondents

Item	Characteristics of on site non – respondents compared to on site respondents
Length of trip during which Fulufjället was visited	Shorter
Short hike	More
One day hike	Less
Multiple day hikes	More
Perceived encounters during hike to Njupeskar waterfall	More
More encounters than expected during hike to Njupeskar waterfall	More
Read information brochure about Fulufjället	Less
Expenditures in gateway area and Sweden	Less
Permanent resident in region (Northern Dalarna)	More
Age	Higher
Attitudes toward tourism development in Fulufjället National Park	More positive
Attitudes toward tourism development in the gateway area of Fulufjället National Park	More positive
Tourism development by means of more roads and a larger supply of housing	More important
The national park at Fulufjället limits human development	More agree

Table 2 features a selection of the 31 items that had answers that were significantly different between the two surveys. Hence, respondents to the non-response mail survey report a shorter trip during which Fulufjället National Park was visited compared to those who participated in the original mail survey (individuals who voluntarily did fill in a registration card). Respondents to the non-response mail survey also report more short hikes (1-3 hours) and multiple day hikes, but less one day hikes. They also perceived more actual encounters and perceived more encounters than expected during the hike to Njupeskar waterfall. On site non-respondents are less likely to read the information folder about the national park and they spend less money both in the gateway area and in Sweden outside the region (Northern Dalarna) compared to on site respondents. They are more likely to be permanent residents in the region and are of a higher age. On site non-respondents are more positive toward tourism development both in the national park and in the gateway area outside the park. They also consider it more important to develop tourism in the area by means of more roads and a larger supply of housing. However, they do to a larger extent agree with the statement that a national park at Fulufjället limits human development.

Since non-respondents to the self registration boxes report a higher degree of perceived crowding, there are reasons to believe that failure to register at the boxes is because they are busy. Because this is unrelated to the topics of the study, non-responses of this reason should be of less importance as long as they don't follow a systematic pattern related to other visitor characteristics. However, the results also indicate that non-

respondents to the on site self registration boxes are more positive to develop tourism in the park, while at the same time they think a national park at Fulufjället limits human development. This is probably congruent with the finding that non-respondents to a larger extent come from the region. And individuals living closer to the area are more likely to know the area (i.e. not read the information folder) and benefit more from investments in better roads and increased lodging supply. Consequently, the results indicate that non-responses in on-site registration may imply an under-representation of visitors living relatively close to the study area, and that these individuals hold different attitudes and behavior that has important implications for the interpretation of the results in the original mail survey. This will be subject to further examination in future research.

2.6 Experiences on Visitor Monitoring in Estonia

Anu Almik; RMK, Estonia

The State Forest Management Centre (RMK) is the agency responsible for the management of about a half (1.08 million hectares) of the total forested area in Estonia (2.2 million hectares). In addition to forest regeneration, silvicultural activities and timber production, RMK is also charged with the development, organization and provision of recreation opportunities in state forests. Since 1997, RMK has been developing diverse opportunities for outdoor activities in 10 recreational areas. In order to identify the development needs and provide tools for the optimum funding decisions, RMK has since 2002 conducted visitor surveys and monitored recreational areas.

Visitor surveys in 2002 and 2003

In 2002, a visitor survey was carried out on all 10 recreational areas of RMK to establish the motivation, preferences and needs of visitors in recreational areas and to determine whether the developed facilities meet the expectations of the users. The visitor survey was repeated in 2003 using a revised method. In 2002, the first visitor survey on recreational areas was carried out in cooperation with Tallinn Pedagogical University. A total of 3,433 questionnaires were obtained during the period from May 22 to September 30.

In the visitor survey of 2003, a total of 2,324 questionnaires were obtained during the period from June 15 to September 15. The survey period covers the peak of the recreational use season. The total number of survey dates was 614 and they were determined by drawing lots.

The survey of visitors in RMK recreational areas conducted in 2002 indicated that most of the visitors stay in these areas for a short period.

40% of the visitors are residents of Tallinn and Tartu, the two largest towns of Estonia. 80% of the respondents travel by car in the company of their family or friends. The findings indicate that the highest need was for fire areas and camping sites. The attitude of the majority of respondents concerning the arrangements and maintenance level of the recreation areas was positive.

However, the results of the visitor survey also indicated that the public is not aware of the opportunities offered for outdoor recreation in state forests and actually does not use the public information channels. The visitors also stressed the scarceness of on-site information – drawbacks in signage and maps of recreational areas. Following the analysis of the shortcomings, different measures were introduced to improve the provision of information and guidance to the public: information desks were established in recreational areas, the website was updated, leaflets and maps of the recreational areas were issued and events were organised to increase the awareness of the public of the present outdoor recreation opportunities. Principles for a uniform guidance and signage system was developed.

The visitor survey of 2003 indicated that 35% of the visitors to the recreational areas of RMK are residents of Tallinn and Tartu,.. 81% of the visitors travel by car in the company of their family (51%) and friends or relatives (47%). In general the attitude concerning the services (facilities) provided and the state of the surroundings was positive and the visit to the area met the expectations of the respondents.

The results of the visitor survey of 2003 indicated that the recreational areas of RMK are not the main destination. 41% of the visits are of short duration. Visiting of recreational areas of RMK is concentrated to a few sites. The estimations concerning kiosks, cafes and the level of provision of facilities for visitors with special needs were more moderate.

It is possible to identify the most often visited recreational sites on the basis of 2003 survey. The aforementioned findings will be used to specify the locations for the installation of electronic counter units for visitor volume studies.

An optimisation of the territories of recreational areas and a linking of separate sites into the trail network was undertaken in order to increase the attractiveness of the recreational areas of RMK and to prolong the duration of visits to these areas. The requirements of visitors with special needs will be taken into consideration in developing integrated solutions. The level of commercial services will be improved in close cooperation with businesses.

Monitoring of the ecological impact

The primary objective of the ecological impact monitoring was to determine the situation, direction and amount of changes in the ground vegetation, conditions of trees, natural regeneration and forest soils. The survey

was conducted by Estonian Centre of Forest Protection and Silviculture in 2002 and 2003. Based on the ecological impact assessment maintenance and repairing works are planned.

Attitudes and awareness of residents

Surveys carried out to assess the attitudes of the local residents are also significant in addition to the visitor surveys and ecological impact monitoring. The objective of the survey of the environmental awareness was to learn the opinion of the residents of Estonia of the state of the natural environment and to analyse the significance of forest to the public. The survey was conducted by TNS Emor in the spring of 2003. The sample is made up by 1,011 15 to 74 year-old permanent residents of Estonia. The survey indicated that about a half of the total population of Estonia visit forests at least once a month and considers forests an environment suitable for active recreation.

The primary objective of the study of outdoor recreation was to find out the level of awareness of the residents of Estonia concerning the opportunities developed by RMK for the outdoor recreation activities, the level of the demand for and use of offered opportunities and the volume of visitors. The study conducted by the Survey Research Centre Faktum in the autumn of 2003 was structured as a face-to-face interview of 969 residents of Estonia aged from 15 to 74. The results of the interview indicate that 82% of the 15-74 year-old population of Estonia is aware of the opportunities for outdoor recreation developed by RMK, 94% consider them essential and 55% use them.

The previous research forms an efficient basis for the further development of RMK recreational areas, taking account of the user needs and serves as a tool for the supporting funding plans concurrently ensuring the preservation of the recreational values of landscapes. The cooperation between various interest groups in the development of opportunities for outdoor recreation is increasing in importance. The key words include a clear distribution of roles, the specification of tasks and accomplishment of them. In addition to the constantly increasing ecological impact, social tolerance, support and interest by local residents and the ways to achieve it are increasing in significance.

2.7 Experiences on visitor flow modeling by a pattern recognition approach

Lasse Lovén

Finnish Forest Research Institute, Finland

The importance of visitor monitoring and flow modeling is increasing for the management and planning for sustainable use of national parks. The

need for valid information is recognised also among the stakeholders representing tourism marketing and investors.

The CCTV (Closed Circuit Tele Vision)-technique has given new tools for more efficient visitor monitoring. The normal video-technology does not include the recognition or selection modes like the new CCTV-programmes and uses lower resolution for images. In 2002, Koli National Park tested a modern version of CCTV together with a pattern recognition program, which uses digital data.

Three digital camera-points in different parts of the park's visitor service centre produced the data for models forecasting car-flow, outside-walkers-flow and visitor-flow entering into our heritage centre. The pattern recognition model, using fuzzy logic in recognising small and big people and small cars and busses, functioned with reasonable accuracy. We could remarkably save the costs of interpretation of patterns moving in the film with the interpreting program. We also gained valuable experience in the possible errors of the interpretation and on the vulnerability of the technology during a strong thunder storm.

2.8 The balance between nature protection and recreation use in the wet-lands of Skjern River

Marianne Linnemann,

Head of information and interpretation

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The wetland of Skjern River

The River Skjern's catchment area include 2500 km² in the western part of Denmark, with an outlet through Ringkøbing Fjord to the North Sea. 40 years ago the lower reach of Skjern River was completely drained and converted into intensive farmland and the river was dammed. Prior the drainage project, the area was a rich mosaic of streams, lakes, ponds, reed-beds and meadows.

In the downstream catchment the Danish State has carried out one of the largest river restoration projects in Northern Europe, following a decision by the Parliament in 1987. In June 1999 the restoration works were initiated with a budget of approximately 36,8 Mio Euro (of these about 3.3 Mio Euro from Life Environment and Life Nature) to land purchases, investigations, constructions work, recreation facilities and monitoring. The construction work started in 1999 and was finished by the end of 2002. The area of the restored river valley is 2200 ha. Of these, about 2000 ha have been purchased by the Danish Ministry of Environment from the private farmers.

Today the restored nature area is again a fantastic international wetland with meandering rivers, lakes, ponds and meadows. The project has

improved the natural habitat of plants and animals including the River Skjern salmon. It has also improved the water quality in the river system. For the local people and the tourism there are good possibilities for nature experiences and leisure activities. The National Forest and Nature Agency under the Ministry of Environment have carried out the project and are responsible for the nature management and administration of the area.

What priority is given to leisure and tourism in the wetland of Skjern River?

The two main objectives for the Skjern River restoration project were:

- To create a wetland habitat of international importance
- To develop the leisure and tourist potential of the nature area

In practice it means that the conditions for nature experiences and outdoor recreation have to be improved but take nature protection into account.

To find out the needs and expectations of the local people and the tourists, the Minister of Environment appointed a local public advisory board with representatives from the local authorities, the hunters, the anglers, the tourism enterprises, the local museum, the fjord-fishermen, the farmers, sport associations, the organisation for outdoor life, the birdwatchers, the nature protection organisation and the common man. The advisory board had to advise the minister and The Forest and Nature Agency what kind of outdoor recreation activities and nature experiences they expected in the new nature area. The recommendations to the minister have formed the basis for the departmental order of “ The public access and the recreation use of the Skjern River restoration project”.

Although there was a wide representation of different interest groups in the advisory board, nearly all of the representatives identified hunting, fishing and nature experiences as their main needs. It is easy to understand because most of the representatives were still farmers, grown up on a farm or had relatives living on a farm. In the western part of Denmark hunting in the Skjern River Valley and fishing in the Skjern River has been a part of the farmer's life. But there were also expectations of access into the area with possibilities for walking, bicycling, canoeing, birdwatching, and horseriding.

When we look at the investigations about needs and wishes of Danish and foreign tourists as regards nature experiences and outdoor recreation activities, many of the needs are the same as for the local people. An international nature area as the wetland of Skjern River which is famous for a rich birdlife, the atlantic salmon and sea trout attract of course anglers and professional birdwatchers. But most of the visitors who use and visit the nature area are people who have an interest in nature in general.

A special interest for many visitors is to see the famous and biggest river and wetland restoration project in Northern Europe.

What elements are important in an outdoor recreation activity plan?

Because the leisure and the tourism have a big priority in this nature restoration area, The Forest and Nature Agency has made an outdoor recreation plan for Skjern River and the wetland. The objective is to give the local people and tourists possibilities for good nature experiences and recreation activities taken nature protection into account. Following facts and considerations have been important for the plan:

- The objectives for the area (have been described above)
- The target groups and their needs and wishes (have been described above)
- The consideration between protection of the nature and the use
- Economy
- The geographic position
- The access possibilities to the area
- The nature and cultural history highlights in the area
- Recreation, information and interpretation facilities

The consideration between protection of the nature and the use

In Denmark we don't have “the every man's right”. But in the forest and nature areas, which are administered by the Forest and Nature Agency, the rules for outdoor recreation activities and nature experiences are not as strict as on private properties. During recent years more and more activities are allowed without asking, so in these forests and nature areas we are getting closer to a kind of “every man's right”. In vulnerable habitats as e.g. the wetland of Skjern River and the river itself the Agency still can choose to have more restrictive rules for access and activities.

The wetland of Skjern River could probably contain more birds if there was no access into the area and all experiences had to take place from the public roads. But it is important to remember that a good way to teach people to behave well and take care of the nature is to allow people to come out in the nature and create good nature experiences for them. It is important that the negative impact of outdoor recreation activities on the landscape and the wildlife is minimized. An outdoor recreation plan can help you to find a balance between use and protection, so you can consider the visitors needs and get a high protection of the wildlife.

The geographic position

The wetland of Skjern River separates the two towns of Skjern and Tarm from each other. For the citizens in the two towns the nature area is the ordinary recreation area. The area has a position very close to the Ring-

købing Fjord, The West Coast and The North Sea - areas with a lot of nature and a lot of tourists, who are looking for nature experiences and activities.

The Agency took into account that many people will visit the nature area and has established good access and facilities which provide possibilities for activities and experiences for the visitors and the local people. The entrances to the area and the visitor facilities are located at places where the disturbance on the wildlife and landscape is as little as possible.

Four roads cut the area into five pieces. All the former paths the farmers used stop at the border of the nature area. Motor vehicles are only allowed on public roads - not on the paths in the nature area. The infrastructure has provided a lot of possibilities for access to the nature area. By establishing parking areas at highlights along the public roads and at the end of most of the former trails the possibilities for nature experiences and leisure activities in the nature area have been improved. From here people can watch the birds, put the canoe in the river, walk on the marked trails along the river, bicycle and ride on the paths and trails, go fishing, sit on a bench etc. At all the parking areas there is information about the access into the nature area and about the recreation facilities.

The most important highlights are the wetlands and the meadows with all the birds, some elements from the drainage period, the Skjern River delta, Skjern River and the Atlantic salmon, the track from the historical roads over Skjern River and some historical buildings. Except the delta all the highlights have a position close to the public roads, the paths or the parking areas. The new recreation facilities – two suspension bridges and two small pulling – boats in the nature area have also been tourist highlights.

The outdoor recreation activity plan, recreation-, information- and interpretation facilities

Access into the area is provided through the public roads and the former paths. 27 new parking areas are connected with the existing public roads and paths. Most of the parking areas are connected to each other with a path for walkers, bicycles and visitors in wheelchairs. Beside this path there is a horse riding trail. By using the path and the horse-riding trail it is possible to go around almost the whole nature area - about 60 to 70 km. You pass Skjern River by the public roads or the suspension bridges and the pulling- boats.

There is almost a free access by foot in the whole area. In some part of the wetland area it is not allowed to go outside the paths or to walk into enclosures, where animals are grazing, especially in the migrating and breeding periods of the birds. To give the visitors the possibility to go for longer walks the Agency has established marked trails along Skjern River

where the visitors are allowed to walk all the year. A part of the year there will be too much water to walk at the marked trails.

For the sake of the plants and the animals the visitors are not allowed to camp or to light a fire outside the marked areas. The camps are very primitive – a toilet and a place for bonfire – but e.g. no water. In connection with many of the parking areas there are small picnic areas. For angling and hunting there are special rules. Angling and hunting are not free for the visitors.

At different level all visitors need information and interpretation about the recreation facilities and activities, possibilities for nature experiences and the history of the landscape.

On all parking areas the visitor can find information about the recreation facilities. In the nature area signs will tell you how you have to behave. At some of the highlights you can get “on site” interpretation. In two nature centres (the establishing has just started) there will be exhibitions about e.g. the nature restoration project, the history of the landscape, the plants and the animals and room for teaching, picnic, toilets, water etc.

Is there a balance between visitors use and nature protection in the wetlands of Skjern River?

It is impossible to know how high the biodiversity would have been in the area, if nothing had been done to improve the possibilities for outdoor recreation and tourism. Today the wetland of Skjern River is one of the two or three most important areas in Jutland (which is the biggest part of Denmark – the part there is connected with the rest of Europe) for ducks and geese. Before the Skjern River restoration project was started in 1999 the birdlife was investigated. 112 different species – but not many of each species – were observed at the fields, in the drainage canals, in small uncultivated areas and on the straightened Skjern River. During the first two years after the restoration project 212 different species of birds have been observed and several of them - also listed on the “Danish 1997 Red List” - bred in 2002. Many migratory species have got better conditions and were seen in 2001 and 2002 in a number of international importance. In the Skjern River the atlantic salmon and the otter have increased in number.

We don't have the possibilities to count the number of visitors. But we guess that 10 % of the visitors get a guided walk with one of the nature interpreters, who work in the area. In 2003, about seven thousand visitors got a guided walk. The close contact with this small part of visitors, the local people and an interest group for management, recreation facilities and interpretation set up by Oxbøl State Forest gives us continuously an impression of some of the visitor's needs.

2.9 Visitors, Conflicts and Sustainability in Recreational and Protected Areas – An example from the Northern Swedish Mountains

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Introduction

This research project focuses on tourism in national parks and in the Lapponian World Heritage Site in the mountains of Northern Sweden. The area is characterized by substantial nature preservation, reindeer herding and tourism. The aim of the project is to collect baseline information on visitor characteristics, motives, patterns of activities and visitors' attitudes and experiences within the area. With this information it will be possible to make comparisons with earlier research work on this area as well as with other studies in the Swedish Mountains (e.g. Bäck 1986, Vuorio 2002 and Fredman unpubl. 2004). The study has three principal focuses: 1) The most important issue is to look at tourism development and its changes over time and try to see what consequences those changes will have for the tourism industry and the landscape, as well as for the reindeer herding; 2) Another focus of the research is the conflict of interest that can arise in a landscape with both reindeer herding and tourism; 3) The study also analyses the importance of protected areas and the importance of the world heritage site for tourism development.

Research area

The Lapland Mountains have been inhabited by the Sami people since prehistoric times, and today reindeer herding is practiced in the whole area. Tourism in the Lapland Mountains began in the 1880's, although in a modest scale. Development of the communication network, maps, travel books and improvements of the infrastructure in the region (establishments for overnight stops, trail markings etc) were important factors behind the expansion of tourism at the end of the nineteenth century and the beginning of twentieth century. The Swedish Touring Club (Svenska Turistföreningen, STF) was of great importance to the development of mountain tourism (Bäck & Bäck, 1986).

The national parks were established during the beginning of last century. The national parks of Abisko, Sarek and Stora Sjöfallet were established in 1909, and Vadvetjåkka in the far northwest of the Lake Torne Area in 1920. The latest national park in the area is Padjelanta, established in 1963 (Naturvårdsverket, 1989). About half the size of the research area is protected as national parks and nature reserves. None of the national parks in the area are intentionally planned after a zoning model in

order to separate different types of recreation and protection requirements. Differences in management between the parks do, however, create a variety of recreation opportunities at a macro scale in the study area. While the Sarek National Park is extensively managed for tourism (i.e. no marked trails, huts or shelters etc.) other parts of the area have well developed tourism facilities.

In 1986 the Lake Torne Area (Torne Träsk) was designated by UNESCO as a Biosphere Reserve within the research programme; the Man and Biosphere Programme (MaB). On the south shore of the Lake Torne both the railway and the highway run, and several touristic establishments are located there. In the village of Abisko, about 200 people live permanently. The tourism activities are related to the establishments to a very high extent.

The World Heritage Site Laponia is located further to the south and has an area of 9,400 square kilometres. Laponia was inscribed on the World Heritage List in 1996 with regards of the natural and cultural qualities. The Kebnekaise area (with the highest mountain in Sweden) and the Laponian area are places relatively difficult of access; neither highways nor railways run through the areas. Though, it is possible to reach close to the areas by car and by bus in the summer time. The tourism activities are not at all to the same extent related to the tourist stations, as in the northern part. Several hiking trails and mountain lodges are to be found in the Lapland Mountains. Both during summer and spring time, the mountain lodges are being manned.

Visitor surveys

1. Addresses from hotel registration books and follow-up questionnaire by mail

The main data collection is from mail questionnaires to the area's visitors. A first survey was conducted in 2002 among people visiting the Lake Torne Area during both summer and wintertime. The respondents were selected from four hotel registration books and a questionnaire was sent to 721 Swedish visitors and 142 visitors from Norway, Finland, Great Britain and Germany. The response rate was 67.1% (Wall, 2003:6).

Positive aspects of the procedure:

- Using addresses from registers of hotels is a fast and easy (and cheap) way of reaching the visitors.
- In my case, this was the procedure of earlier research in the area, which I am going to use in my comparison over time analysis, and consequently I was required to use the same data collection method.

Negative aspects of the procedure:

- Apart from the four hotels, there are other accommodation possibilities in the area, e.g. youth hostels and caravan parking places. This study includes only visitors who were registered at one of the four selected hotels. It does neither include day visitors to the area, nor visitors passing through, nor people who began or completed their several-day hikes or several-day cross-country ski trips without staying at one of the selected hotels. This means a limitation to these establishments and many other groups or types of visitors will be missed (missing visitors).
- Only the person who made the reservation at the hotel is included in the register, this might mean that he or she in fact never was in the area.
- A person could just have stayed one night on a passing-through journey, without taking part in any activities or having any special attitudes or experiences towards the area.
- The addresses can be out of date. In my case, approximately 6% of the mailed questionnaires were returned.

2. Addresses from registration cards and follow-up questionnaire by mail

During the summer 2003, a number of registration cards (6 500) was distributed in the whole study area at 13 different mountain stations and mountain lodges, 2 422 registration cards from 12 places were filled in and were sent to me. These mountain stations and lodges were chosen because of their strategic location or because of their number of overnight guests. All visitors were requested by the staff to fill in the registration card with name, address and to answer three short questions. The staff at each station and lodge distributed registration cards every second week from the beginning of July to the middle of September. The questions were formulated in co-operation with the stakeholders within the area. Well before the hiking season begun, I contacted the responsible persons at the Swedish Touring Club (STF) and at the Bádjelánnda Laponia Tourism Association (BLT), who are managing the mountains stations and lodges, and informed them about the research project and about the importance of the registration cards. Afterwards STF and BLT informed their personnel and I also sent information and guidelines how to distribute and recollect the cards, to the staff working in the mountains. Each station and lodge got a wall chart in three languages; Swedish, English and German, to give information about the research to the visitors.

The co-operation with and information to the staff cannot be underestimated and my experience is that, if possible, a personal meeting is necessary. At one of the mountain lodges, the staff did not recollect the registration cards (he had not understood that he was supposed to do so), and

the cards never reached me, so finally I got 12 different mountain stations and lodges in the study.

Positive aspects of the procedure:

- One of the few ways to get addresses to hikers is to use registration cards.
- Registration cards will give you a relatively large research population.
- The questions at the registration card can afterwards be compared with the answers in the questionnaire.

Negative aspects of the procedure:

- Not all visitors at the 13 mountain stations and lodges filled in a card and this falling off is highly dependent on the staffs’ engagement, but after visiting or talking to half of the included places, the staff meant that very few of the visitors did not fill in a card at all. In this type of procedure, when the visitor voluntarily fills in the card, at least to some extent, you will likely get a biased sample of the population.
- Only visitors at the 12 mountain stations and lodges are included in the survey, missing visitors are people who spent time in other lodges, and people hiking off trails or sleeping in tent without paying the service fee to the station or lodge.
- In the registration card, some visitors left incomplete names or addresses (1.7% of total number of registration cards).
- Another problem was that some of the German visitors filled in the registration card twice (double registrations), and this could be a result of defective information from the staff.

Addresses from Sweden, Germany and Denmark were chosen to be included in the survey (nine out of ten addresses were from these three countries). After the incomplete addresses were taken away, a mailed questionnaire was sent to 2 117 persons. The response rate was 74.1%.

Table 1. Number of respondents and response rate in the 2003-2004 survey.

Country	Number of mailed questionnaires	Number of returned questionnaires (e.g. wrong address)	Number of respondents	Response rate
Sweden	1 690	35	1 218	73.6%
Germany	301	9	231	79.1%
Denmark	126	6	83	69.2%
Total	2 117	50	1 532	74.1%

Some comments on the response rate can be done, and it is noteworthy that there is a great difference between the response rate of the German and Danish respondents. One explanation can be that the questionnaire was sent to Germany in German, but in Swedish to the Danish visitors.

The response rates from Germany are known to be relatively high in Swedish surveys of this kind (Lundberg et al., 2000). Another comment is whether the length of the questionnaire (consists of 18 pages of questions and took about 30 to 60 minutes to fill in) affected the response rate negatively. The response rate might have been higher with a shorter questionnaire. The quality of the answers can also be discussed in this sort of comprehensive questionnaires. Because of the length of the survey, the concentration of the respondent can decrease.

Visitor counting

Data collection from digital counters was used as a method of counting visitors in the area from July to September in 2003. The two counters were put up in the north-western part of the Laponian area along two different trails. Both trails can be seen as access points or terminal points for hikers along the Padjelanta trail. Nearby the two places, you find Sami summer villages. The counters were put up on mountain birch. The counter consists of a radio transmitter and receiver, and operates by detecting the change in radio signal as a person walks between them. The results are satisfying, but further analysis must be done. During some days, considerable many more people passed the counters than other days. The result of the counters follows the same pattern, and there are some peaks; in the second half of July, in the beginning of August and September. The first peak can be explained by good summer weather and the Midnight sun. In the beginning of September, the hunting season for elk starts and for many hikers these days are the last days of the season to start the hike if you want to reach Kvikkjokk before the mountain lodges will be closed for the season. These results can be compared with overnight statistics in the nearby lodges and with reindeer herding activities in the area. The two digital counters will be used again (summer 2004).

Positive aspects:

- Digital counters will give a picture of how many people are moving in a certain area.
- It is possible to have time series to make comparison over time.

Negative aspects:

- The digital counter will obviously not count people not walking along trails, therefore not “breaking” the radio signal.
- There are possibilities that there can be technical problems with the counter.
- Animals or branches can be registered, but this can be avoided by putting the counter in the right place.
- There is a risk that people will destroy the counter if they see it.

- Using digital counters is expensive.

Finally, I would like to raise the question about more qualitative methods on visitor information, especially regarding visitors' motives, experiences, feelings or attitudes. How do we get a deeper understanding of what people in nature areas and recreational areas experience, and what meaning and importance does this experience give the visitor?

2.10 Regional Economic Impacts of Recreation: Measuring Visitor Expenditures in Pallas-Ounastunturi National Park

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In 2003 Finland's Council of State took a principal decision to develop the nature tourism and recreation in Finland. The accepted plan of action included 30 aims and actions. Among these was the demand-based development of nature recreation by increasing research on its welfare, social and economic impacts (Valtioneuvoston... 2003).

Economic impacts of tourism on conservation areas are seldom studied subjects in Finland, although many have investigated visitors and their spending in separate conservation areas. Sievänen (1993) studied visitors in Koli National Park, Yl-häisi & Nironen (1996) in Päijänne National Park and Ovaskainen et al. (1999) visitors in Nuuskio and Seitsemien National Parks. Recently, Eisto (2003) has studied visitors and their regional economic impacts on the Ruunaa hiking area.

All of these studies provide abundant information on recreation in conservation areas. However, data on the regional economic impacts of recreation on national parks and other conservation areas are lacking. Thus, in a substudy of the SUOVI project, we tested and developed methods suitable for estimating economic impacts of nature tourism and recreation in conservation areas. The focus of this presentation is on a case study of how best to measure visitor spending.

Measuring economic impacts

Economic impacts, such as income, taxes and number of jobs, can be measured via income generated to local companies or through visitor expenditures. The method chosen for evaluation in the substudy of SUOVI was a visitor survey/input-output model developed by Michigan State University. The model is based on visitor expenditures, and economic impacts are calculated by multiplying the average visitor spending by the annual number of visitors in the area and regional coefficients

based on regional input-output tables. The result indicates the income, taxes and jobs generated by visitor spending in the area.

Thus, the examined model includes three essential components: average spending per visitor, number of visitors and regional coefficients. This presentation disregards the two latter components, instead presenting a comparison of two methods for measuring visitor expenditures. The diary and survey methods presented here were both used in Pallas-Ounastunturi National Park in 2003 and 2004. Pallas-Ounastunturi National Park, located in Northern Finland, is one of the oldest and largest national parks in the country. Annual number of visits is 130 000.

Visitor survey and expenditure diary

The first method used for comparison was the visitor survey. Metsähallitus (Forest and Park Service) conducts these surveys regularly in nature conservation and recreation areas. Visitors respond to the survey on-site and return the questionnaire immediately to park personnel. The visitors are asked, among other things "How much money did you use during your visit to various purposes?" The various purposes are defined as meals, accommodation, travel costs, programme services and other expenses. Respondents can also choose to estimate their spending with one amount. However, visitors have found it problematic to remember all of their expenses from the beginning of their trip. They also have trouble predicting how much they will spend during the remainder of their stay. For these reasons Silberstein & Scott (1991) and Winter (2002) have concluded that expenditure estimates collected with either on-site or after-return surveys tend to be underestimates. The reliability of the sums reported is therefore questionable.

In Pallas-Ounastunturi National Park, a visitor survey was conducted in 2003. The data were collected in two parts, in the winter and in the summer/autumn season. The total sample size was 1052. To determine the reliability of survey-reported spending estimates, an expenditure diary survey was conducted in the same area in 2004, (at the time of this presentation, only the results of the winter season were available). In the diary surveys, randomly chosen respondents answer a few background questions and record all of their expenses during their stay in the research area. In Pallas-Ounastunturi National Park, the respondents wrote down all of their expenses according to some specific examples (Table 1). Respondents were advised to keep the diary from the moment on that they received the questionnaire until the time they left the area, thereby minimizing the recall errors. The research area was outlined on the questionnaire map. After leaving the area, respondents returned the diary in the enclosed envelope. As keeping the diary required some effort every day, we tried to motivate respondents with the possibility of winning accommodation packages when returning the questionnaire.

Table 1. Example of how to keep the diary.

Date	Object of the expense	Sum (€)
10.6.2004	Café	4
10.6.2004	Nature trip with a guide	20
10.6.2004	Groceries	10
11.6.2004	Ice-cream	1.5
11.6.2004	Souvenir	6
12.6.2004	Petrol	12
12.6.2004	Wilderness hut, reservation fee	5

Experiences and results

The response rate for the two surveys was impossible to compare, as visitors fill up the on-site survey under park personnel’s control and return them directly afterwards, whereas diaries are mailed back at the end of the trip. However, the response rate of the Pallas-Ounastunturi diary survey after the winter season was 64%, which is excellent with only one contact and also in comparison with other mail-back expenditure diary surveys (Mak et al. 1977).

In both surveys, respondents were asked to declare only their own expenses. However, we noticed that in the on-site survey people often announced the costs for their whole party. In the diary, we emphasized repeatedly that all expenses should be divided by the size of the travelling party. As a result, we noted that the respondents often divided accommodation and travel costs but forgot to divide gasoline costs and groceries.

Regarding background information, the respondents in both surveys were similar, and thus these results were comparable. However, comparison was hindered by the survey lacking some important information such as respondent’s length of stay and type of accommodation. Thus, only expenditures per trip were compared. Mean and median expenditures according to the survey and the diary are presented in Table 2. For package travellers only the price of the trip is shown.

Table 2. Wintertime visitor expenditures in Pallas-Ounastunturi National Park according to two survey methods.

	SURVEY		DIARY	
	Mean	Median	Mean	Median
Price of package trip, €	506 (n = 35)	380 (n = 35)	448 (n = 127)	400 (n = 127)
Price of package trip, €/day	—	—	71 (n = 127)	60 (n = 127)
Independent travellers (excl. travel costs), €	259 (n = 290)	150 (n = 290)	305 (n = 295)	252 (n = 295)
Independent travellers (excl. travel costs), €/day	—	—	43 (n = 288)	37 (n = 288)
Independent travellers (incl. travel costs), €	417 (n = 305)	300 (n = 305)	414 (n = 297)	334 (n = 297)

Results revealed that the mean expenditure per independent traveller’s trip and per person differed significantly between the two survey types in

the winter. As the distribution of the expenditures – especially in the survey – was great, the medians are notably smaller than the means, and the medians of the diary results are higher than those of the survey.

Conclusions

Based on these results, it seems the survey can estimate spending quite well. Independent travellers' spending tended, however, to be slightly underestimated, as previous studies have suggested.

Compared with the survey, the diary provided more exact information on the different types of visitor expenditures. In future, the diary method seems useful in the areas where visitor numbers are large and many consumption possibilities exist or when more specific information about visitor spending is needed. In less important (in the economic sense) areas, the general visitor survey with a question concerning spending is probably sufficient. When economic impacts are to be measured, we recommend using the diary survey.

2.11 Future Challenges for Customer Monitoring in Metsähallitus

Ms. Liisa Kajala

Senior Planning Officer, Metsähallitus,
Natural Heritage Services, Finland

This presentation builds on Joel Erkkonen's presentation "Standardisation of Visitor Surveys and Counts – Experiences from Finland". He presented the current status of visitor monitoring and I will focus on where we think the Natural Heritage Services of Metsähallitus should head from now on.

Visitor monitoring in Metsähallitus is now at a point where it has become part of the daily routines, incorporated in our work at various levels. The information produced is used e.g. in monitoring and planning of our own work, in monitoring the impacts of nature tourism, and in reporting of our work outside Metsähallitus. However, the present visitor survey application and guidelines for visitor monitoring need to be updated in such a way that they would provide more tools for Metsähallitus to further develop good practices relating to visitor information processes. Ideally, the visitor survey application and guidelines should allow e.g. for reliable comparisons of visitor information between areas and for drawing conclusions across the whole country, and help in marketing and developing environmental interpretation material. Therefore, Metsähallitus is about to launch a new development project in order to further develop methods and tools for customer monitoring.

The goal of this project would be to develop customer monitoring methods in such a manner that they would produce more reliable information that would be more easily accessible, comparable, and applicable. Achieving this goal requires at least the following:

- Combining the currently somewhat separate three processes of customer monitoring into one entity.
- Building a uniform data base and developing an application using the new data base. This will start with an analysis of the current situation and mapping of the development needs.
- Updating the Metsähallitus guidelines for customer monitoring
- Training the personnel to use the updated methods and the new application.

The most challenging part of the project is likely to be the development of the new data based application. There are numerous requirements to the application.

- It needs to be somewhat flexible, at the first step only the core is produced; it should be possible to add new elements to the application.
- All customer information collected with the old method should be transferred to the new application and thus applicable via the new system.
- The application needs to be compatible with other data bases and applications that are used in Metsähallitus

As the project is not set up yet, accurate schedule is not available. However, tentatively it has been estimated that all in all, the entire project would take one and a half years. So, if the project is launched in the fall of 2004, the application would be in use for the first time during the summer season of 2006.

In this presentation I am using customer monitoring as a collective word that draws together visitor counting, visitor surveys and customer surveys.

Sammenfatning

En nordisk-baltisk workshop med temat ”Visitor information needs and monitoring methods” ordnades i Rovaniemi, Finland, i juni 2004. Det främsta syftet med workshopen var att befrämja fortsatta nätverksaktiviteter mellan myndigheter och experter som arbetar med att ta fram information om besökare i skyddade områden och friluftsområden. Dessutom gav workshopen deltagarna en möjlighet att diskutera riktlinjer för framtida projekt i de nordiska och baltiska länderna, bl.a. vad gäller harmonisering av undersökningsmetoder. Workshopen var mycket framgångsrik och samlade totalt 28 deltagare från sju länder.

I workshopen noterade man att besöksundersökningar är ett aktuellt tema i alla nordiska och baltiska länder. Det finns ett behov av att veta mer om hur många som besöker de skyddade områdena, vad besökarna förväntar sig av vistelsen, vilka områden som besöks etc. Förutsättningarna gällande systematisk övervakning (monitoring) av besökare varierar dock avsevärt i de olika länderna. Behovet av gemensamma riktlinjer och utbyte av praktiska erfarenheter är därför stort. Det är även nödvändigt att eftersträva en harmonisering av undersökningsmetoder för att kunna erhålla samma typ av data från både de nordiska och baltiska länderna.

Deltagarna i workshopen beslutade att fortsätta samarbetet mellan de nordiska och baltiska länderna. Ett av de primära syftena är att utveckla och harmonisera metoder för att undersöka besökarnas förväntningar, erfarenheter och synpunkter på skyddade områden och friluftsområden. Viktigt är också att utveckla de nuvarande metoderna för uppskattning av antalet besökare i olika typer av områden. Som ett första steg ansåg deltagarna att de manualer för besöksundersökningar som utarbetats i Finland borde översättas och samtidigt uppdateras till engelska. Arrangörerna av workshopen fick i uppdrag att utveckla fortsatta aktiviteter som kunde genomföras i det nordiskt-baltiska samarbetet. En ny projektansökan tillställdes Nordiska ministerrådet i augusti 2004.

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Appendices

Appendix 1: Participants

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Appendix 2: Programme

Monday June 14th

07:55	Arrival to Rovaniemi railway station for those who travel by train (Night train: 13 June, 19:20 o'clock from Helsinki to Rovaniemi)	
08:30	Departure from hotels (those who stay overnight in Rovaniemi)	
09:15	Arrival to Rovaniemi airport for those who travel by airplane (14 June, 07:55 o'clock from Helsinki to Rovaniemi)	
09:40	Departure from airport	
09:55	Arrival to Vaattunki lodge-estate at the Arctic Circle Hiking Area Check in	
10:15	Welcoming words with coffee Introduce of participants	Joel Erkkonen and Tuija Sievänen
10:45	Introduction to the workshop	Tuija Sievänen
11:15	Guest lecture <i>Goals of Public Use Measurement and Reporting at Parks and Protected Areas</i>	Prof. Paul Eagles
12:15	Lunch	
13:00	Presentations I	Tuija Sievänen, chair
	<i>Standardisation of Visitor Surveys and Counts – Experiences from Finland</i>	Joel Erkkonen
	<i>The need for visitor management in protected areas of Sweden - current work and plans</i>	Per Wallsten
	<i>Visitor surveys and counting in Zemaitija National Park (Lithuania)</i>	Daiva Puplesyte
	Short break (5 min.)	
	<i>Experiences from visitor research at Fulufjället National Park, Sweden: Self registration and non-response bias</i>	Peter Fredman
	<i>Visitor monitoring problems and practice in Kursiu nerija (Curonian Spit) national park</i>	Lina Diksaite
	<i>Experiences on Visitor Monitoring in Estonia: Scientific Perspective</i>	Mart Reimann
	<i>Experiences on Visitor Monitoring in Estonia: Managers' Perspective</i>	Anu Almik
15:00	Coffee break	
15:15	Introduction to group working	
15:30	Introduction to the Arctic Circle Hiking Area: Multivision	
16:00	Outdoor adventure: Rapids shooting (10 km, 5 rapids)	Wild North
18:30	Traditional sauna and a smoke sauna	
21:00	Dinner	

Tuesday June 15th

07:30	Breakfast	
08:15	Visitor Counting Methods and Equipments (Outdoors)	Heikki Iisalo, Jere Rauhala and Ingemar Ahlström
09:15	Presentations II	
	<i>Experiences on visitor flow modelling by pattern recognition approach</i>	Lasse Lovén
	<i>The balance between nature protection and recreation use in The Wetlands of Skjern River</i>	Marianne Linnemann
	<i>Visitors, conflicts and sustainability in the northern Swedish mountains</i>	Sandra Wall
	Short break (5 min.)	
	<i>Regional Economic Impacts of Recreation: Measuring Visitor Expenditures in Pallas-Ounastunturi National Park</i>	Maija Huhtala
	<i>Recreational monitoring: Danish Experiences, towards a future Monitoring System</i>	Hans Skov-Petersen
	<i>Future Challenges for Customer Monitoring in Metsähallitus</i>	Liisa Kajala
10:45	Coffee break	
11:00	Guest lecture <i>The Limits of Acceptable Change Process – Theory and Practice</i>	Dr. David Cole
12:00	Lunch	
12:45	<i>Europarc Nordic-Baltic Section</i>	Bo Storrang
	<i>Environmental project funding</i>	Paula Mikkola
13:10	Group working	
14:45	Coffee break	
15:00	Results of group working	
	Short break (5 min.)	
16:15	Discussion Overview and Conclusions Closing of the workshop	Tuija Sievänen, Joel Erkkonen and Per Wallsten
16:45	Departure to Rovaniemi	
17:00	Airport	
17:15	Registration to MMV Conference, Arktikum	

Appendix 3: Summary of the NBW feedback

According to the feedback, the NBW was very successful and improved the co-operation and networking between the agencies and specialists who work with visitor monitoring in protected and recreational areas in the Nordic and Baltic countries. The means of the responses were high and the overall index of the NBW was as high as 4,68 with the scale from 1-5.

How well do you think the organizers have succeeded in the following areas?(5 = very well...1 = very poorly)

Figure 1. Means of the NBW feedback

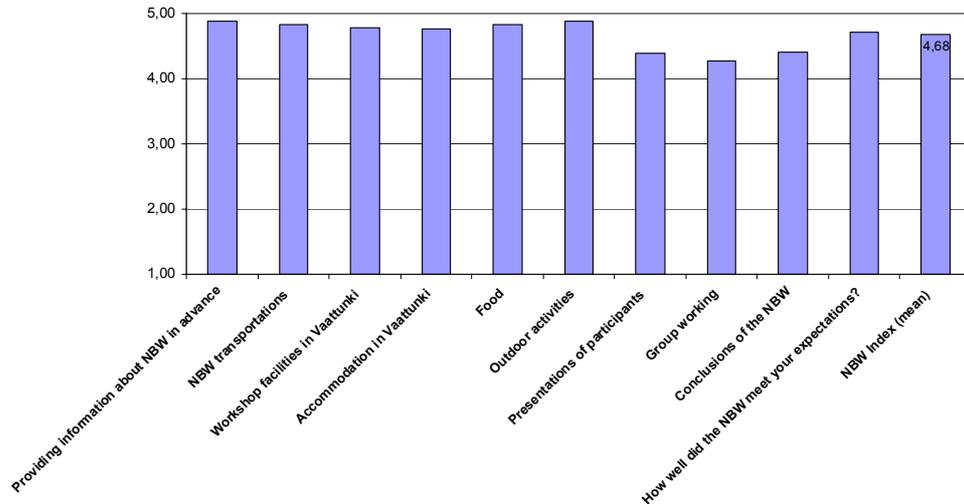


Figure 2. Frequencies of the NBW feedback

