

# NORDIC OUTDOOR RECREATION

## International Comparative Studies

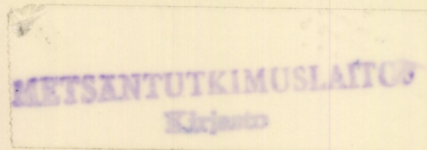


Proceedings of the Workshop Held in Siuntio, Finland  
9.-10.9.1992

Edited by Tuija Sievänen



METSÄNTUTKIMUSLAITOKSEN TIEDONANTOJA 439





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Finnish Forest Research Institute  
Department of Forest Resources



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This proceedings is a collection of papers that were presented in the workshop of Nordic Outdoor Recreation - International Comparative Studies focusing on long-distance trail studies. One group of papers presents studies concerning concepts, methods and empirical results of comparative trails studies. Another group of papers introduce and discuss many problems of planning and administration of long-distance trails. Two last papers discuss issues of Environmental Impact Assessment related to outdoor recreation and cultural values related to recreation settings.

Key words: recreation, long-distance trails, comparative research, methodology, planning

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**Dedicated to Timothy B. Knopp**

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## Introduction

It is my pleasure to introduce the Proceedings of Workshop on Nordic Outdoor Recreation - International Comparative Studies. This volume contains most of the presentations given in the workshop held at Further Education Centre of Länsi-Uusimaa (University of Helsinki) in Siuntio, Finland in September 1992.

The workshop was initiated by Jon Teigland (Norway) and Tuija Sievänen (Finland) as a forum to gather Nordic scientists to discuss studies focusing on long-distance trails and trail activities. In practice, the workshop was organized by the Finnish Forest Research Institute and sponsored by NorFa (Nordisk forskerutdanningsakademi), a foundation supporting Nordic scientific cooperation.

An important background to the workshop has been a cross-cultural research project, where the research group, Tuija Sievänen (Finland), Jon Teigland (Norway), and Dorothy Anderson and David Lime (Minnesota) have studied long-distance trail activities and trail use in each country.

The comparative long-distance trail study started already in 1986-1988 when Tuija Sievänen and prof. Timothy B. Knopp worked together at the University of Minnesota. The first paper in this proceedings (Sievänen and Knopp) is a result of the discussions and work leading to the trail study in the beginning. The idea was to invite researchers from other countries to join the project as it is documented in the project plan (Knopp and Sievänen). Many recreation scientists were contacted, and Jon Teigland from Norway was willing to cooperate. The unfortunate death of Timothy B. Knopp in March 1989 delayed the project. His colleagues, Dr. Dorothy Anderson and Dr. David Lime, kindly took over the responsibility of the American part of the project.

This workshop in Finland gave a valuable chance to inform other recreation scientist about the cross-cultural trail study, and gave important feedback and inspiration to continue the common project. Three papers in this proceedings (Teigland et al., Sievänen et al. and Lime et al.) describe some of the discussions and conclusions made in the process of the comparative study.

The intensive and informative discussions along the programme were very rewarding. The excitement of learning to know what other researchers and specialists do was remarkable. Many interesting and actual topics were discussed. Two papers here give an example of the universal nature of scientific methodology. Two papers (Anderson et al., and Karjalainen and Sievänen) suggest very similar ideas to assess scenic

quality although the authors did not know about each others' work before the workshop.

Four papers (Jørgensen, Herva and Kankainen, Kyöstiö and Sievänen, and Veijola) discuss the problems of planning and administration of long-distance trails. The discussions inspired by these presentations gave an important perspective of 'real world' problems, and gave many ideas how research on trail issues should be developed in future.

Finally, two last papers in the proceedings address special issues of recreation research. Teigland's paper discusses the new field of environmental impact studies as a part of planning process of large development project. It is important to analyze linkages and strategies of Environmental Impact Assessment processes on outdoor recreation. Another issue is to learn more about the cultural values in recreation settings. Grimstad's paper introduces a new approach in recreation research in Nordic countries. The study plan opens an interesting view to a more deep understanding of why people participate in outdoor recreation.

I hope that the spirit of the Siuntio workshop and these papers will stimulate more comparative recreation research between the Nordic and other countries. Especially, I hope that this kind of workshops could be held more often in different Nordic countries to improve the possibilities for contacts and common discussions. This workshop was a very good experience.

My Norwegian colleague Jon Tiegland offered a well working partnership in planning the workshop. He and our American colleagues Dorothy Anderson and David Lime created an stimulating and fruitful working atmosphere in Saariselkä where the paper preparations for the Siuntio workshop were made. The heavy burden of many practical duties of organizing the workshop, and the lay out and technical help finishing the proceedings was carried out by Kauko Kyöstiö. Project secretary Helena Ahola was to great help as well. My special thanks go to all of them. Last, I wish to thank all participants and authors of the proceedings for productive cooperation.

*Helsinki 14.11.1992*

*Tuija Sievänen*

*Finnish Forest Research Institute*

# **Outdoor Recreation in Finland and in Minnesota: Integration vs Designation**

*Tuija Sievänen and Timothy B. Knopp* \*)

## **Abstract**

The aim of the study is to compare outdoor recreation, especially forest recreation in two countries, Finland and Minnesota, U.S.A.. Components of comparison are: outdoor recreational behavior, recreational areas, and multiple use of forests. Both countries have an abundance of resources for recreation. Differences occur in land use rights and in the state of development of recreational areas. The differences of recreational land systems can be described by two concepts: integration (Finland) and designation (Minnesota). Both systems have advantages from which the other may learn when developing one's own system.

## **1 Introduction**

Forests and lakes that provide a good natural environment for outdoor recreation are plentiful both in Finland and in Minnesota, U.S.A. Large numbers of settlers came from Scandinavian countries, including Finland, to Minnesota. The similarities in natural environment and cultural heritage provide a good basis for a comparison of outdoor recreation between Finland and Minnesota.

Outdoor recreation is often defined in terms of activities that people participate in while being out of doors during their leisure time. The natural environment and climate are essential to these activities. The same outdoor activities seem to be appropriate in the similar physical conditions found in both Minnesota and Finland.

There is some differences in the American and Finnish literature concerning what outdoor activities should be included to the concept of outdoor recreation. In Finnish literature, outdoor recreation (*ulkoilu*) means a leisure activity which is physically oriented to a relatively undeveloped environment. In United States, outdoor recreation is a broader concept, which refers to any leisure activity taking place out of doors.

\*) † 23.3.1989

For example, driving for pleasure or off-road-vehicles are not considered outdoor activities in Finnish literature (Virkistysaluekomitean mietintö). Also sport activities such as baseball or golf are separated and classified as physical exercise and not as an outdoor activity as it is in America.

The major similarities are the common activities pursued, especially winter activities that are characteristic of the Nordic countries. Winter activities are much the same: cross-country skiing, downhill skiing, snowmobiling, ice-fishing, ice skating and sledding. There are some differences: snow shoeing is not known in Finland, and snow tubing, trapping, dog sledding are rarely pursued. Common summer activities are: backpacking, bicycling, bird watching, nature studies, boating, camping, fishing, hunting, canoeing, hiking, horseback riding and swimming.

The aim of the study is to compare outdoor recreation and especially forest recreation between Finland and Minnesota. Components of comparison are: outdoor recreational behavior, recreational areas and multiple use of forests. The data was collected by Tuija Sievänen from different statistical sources, and by interviewing outdoor recreation professionals in Minnesota and Finland. Most of the conclusions of comparison were formulated in discussions between Tuija Sievänen and Timothy B. Knopp during 1986 and 1988 when Tuija Sievänen visited University of Minnesota, College of Forestry (now College of Natural Resources). \*)

## **2 Natural resources and land use rights related to outdoor recreation**

### **2.1 Natural environment**

Both Minnesota and Finland are northern countries. Both have much forested land, lakes, and rivers. Forests are an important economic factor. The forest industry is the third largest industry in Minnesota (MNDNR 1982), and one of the two largest industries and the most important exporter in Finland (Sukselainen 1986, Focus on Finland 1984). Finland is more dominated by conifer forests. Minnesota has conifer forests in the northern parts of the state and hardwood forests in the southern parts of the state.

Climate is very comparable. Winter last 4-5 months in both countries, but summer is longer and warmer in Minnesota. Climate is perhaps more extreme, at least in terms of temperatures, in Minnesota.

\*) The manuscript was finished, and waiting for publishing when prof. Timothy B. Knopp suddenly died in spring 1989. This version is shortened from the original, but the main points remain the same. Tuija Sievänen 13.11.1992.

The amount of land resources per capita is rather comparable. Scandinavia differs from central and southern European countries because there is more land per capita than in most of Europe. Finland's area is about 338 000 sq. km, (130 502 sq.mi) which is about 7 ha (17.3 acres) per capita. 76 percent of the land is covered by forest, 10 percent is water areas and only 8 percent is agricultural land.

In Minnesota there are 79 548 sq. km of land, and 12.4 acres (5 ha) per capita. There are a lot of forests and lakes in Minnesota, also: 40 per cent of land is forested, and 6.2 percent of state's total area is water areas, lakes and rivers. An agricultural landscape is dominant in southern and western Minnesota.

## **2.2 The land use rights and the access to land**

The supply of areas and facilities, and the entire land use system seems to determine to a great extent what opportunities are available for outdoor recreation. In Finland, the common right of access to all natural (undeveloped) areas allows Finnish people access to all forest areas, to fields and meadows during non-crop season, to non-developed sea and lake shores and riverbanks as well as to use water areas for boating, swimming and water for drinking and household needs. The only restriction is that the user of the common right does not damage to growing trees or crops, and does not remove soil material. Picking berries, mushrooms and flowers is allowed. This right includes only nonmotorized use.

The concept of multiple use of natural resources is important in the connection of outdoor recreation. In Finland, the different uses of forest take place simultaneously in the same area (a joint multiple use). In Minnesota, the multiple use of forest is often interpreted as the use of different forest areas for different purposes (segregation of multiple use).

In Finland the principle of "multiple use" is common in all forest areas. Even in urban areas, timber harvesting and recreation uses may coexist in the same area. A major conflict issue in Finland seems to be that the land management such as intensive forestry discriminate against common rights toward the land. The land owner is not responsible to keep the land and the forest favorable for recreation. The common right includes the right to access the land, but does not guarantee the quality of the environment.

Fishing rights are limited. Angling and ice-fishing are free for residents inside the boundaries of the township. For all other kinds of fishing, a licence from the state and

a permit from local fishing association is demanded. The association is organized by landowners surrounding the particular body of water. The fishing association authorizes the water area, maintains the fish populations and controls the permits.

Hunting is regulated as well. The hunting rights belong to the landowner, but the state regulates the annual number of animals killed, especially big game (moose, bear). A person needs a hunting licence, which require a test of hunting skills. Hunters have organized hunting clubs which arrange permits and rent hunting areas for their members.

In Minnesota, the land rights allow unlimited access only to public lands (primarily State and Federal forests, and State Wildlife Management Areas). Right to access private lands is limited. A landowner has the right to deny access to the land. On most public lands, motorized use is allowed, if the area is not specifically designated for nonmotorized use. Most water areas are in public ownership, and all fish and game belong to the state. Private lands may restrict access to water areas or to hunting areas.

The main conflicts in Minnesota concern the limited rights to access private land, and the relatively unrestricted motorized use on public lands, which imply conflict between different recreational groups. Even in multiple use areas, there is tendency to separate user groups and other activities from each other (e.g. recreation may not be allowed in some timber harvesting or planted areas and separate trails often exist for skiers and snowmobilers).

For fishing, one needs a Minnesota fishing licence, but otherwise fishing is allowed in nearly all water areas. Hunting rights are regulated. Rights to pick berries, mushrooms etc. seems to vary in different areas of public land. In State Parks, the public is not allowed to take any parts of trees or vegetation out from the area.

In Minnesota, the liability of landowner for all activity occurring on the land, decreases the willingness to supply private lands for recreation. Because of the liability, the landowner usually has insurance to cover claims due to accident or injury. Because of the many cases taken to the courts in which recreationists have sued the landowner, insurance rates have risen very high. The landowners liability is reduced if they post their land against trespassing. Thus, the amount of private lands for recreation has even diminished recently. This apply to many small organizations, foundations and small communities, too.

The American way of organizing land use is different from the Finnish one. The philosophy seems to encourage more separation of different kinds of uses. This might

stem from the different histories of land use. Americans have been used to having a lot of resources available. Also, there is less tolerance for other users of the same natural areas.

### **2.3 Natural resources management policy related to outdoor recreation**

There is much land available for recreation in Finland. Even in bigger cities (Helsinki, Tampere) it is a relatively short distance from one's residence to the forest or forest park. Recreational areas designated and managed by municipalities, and located inside town boundaries or close to urban fringes, provide an option (though an important one) for recreationists. Multiple use areas, usually private lands, are the most common type of recreational environment. Often in small towns, there are no special areas for recreation.

In the multiple use areas, municipalities have constructed<sup>1</sup> trails for hiking and cross-country skiing. In most towns, some trails are illuminated. Often, only little or no other recreational facilities are provided and maintained by municipalities. People just make their own paths or ski tracks.

In Minnesota, outdoor recreation is concentrated in parks and other areas designated for recreation. Parks are well organized and maintained. Often a big variety of facilities - picnic areas, trails, camping facilities, boat launching areas etc. - are provided for visitors. There are public multiple use forest areas, but in general, outdoor recreation is separated from other types of resource use.

Management policies of park lands are adopted to provide the best environment for recreation. The quality of the natural environment, especially on public lands, gets a lot of attention from the public. On public lands, the authorized government agency is responsible of management and policy implementations. In Finland, there is a number of private landowners, who make decisions independently concerning the management of multiple use land. That makes the management policy issues much more complicated.

<sup>1</sup> There is a law which allows the construction of trails on private land when there is an agreement or/and compensation of expenses and losses for landowner.

### 3 Outdoor recreational behavior

#### 3.1 Socio-economic factors related to participation in outdoor recreation

Behavior is a result of our personal commitment in the limits of the social and physical environment. The physical environment is a major determinant of what outdoor recreation activities are interesting and available for population. The societal and cultural environment encourages or discourages people to participate in certain activities. Personal capability, skills and preferences also influence what activities are chosen by an individual.

Minnesota and Finland are comparable in respect to the natural environment. The peoples are comparable in the variety of individual capabilities and preferences. The differences in recreation behavior in Minnesota and Finland, are here supposed to be due to societal and cultural differences.

First of all, Minnesotans seem to represent a much more heterogeneous society than the Finns. That is mainly a result of ethnic diversity in American society in general. Ethnic differences are obvious even in communities that have been American for many generations. In Minnesota, there are Scandinavian communities as well as Italian, Polish, German etc., and lately, a large number of Asians and Hispanics have moved into the state. There are Black and Native Americans with their own, ethnic and cultural communities. Finns have, in contrast, rather homogeneous Finnish culture, even though with the Swedish speaking and the Lappish minorities.

When studying overall behavioral patterns of a population, the framework of "way of life" has been found helpful to organize the different explaining factors (Sievänen 1986). There are no empirical studies how the way of life differs between Finns and Minnesotans. Both societies under study are highly industrialized and developed. In Finland, working class represents a larger portion of all employees, but in U.S.A. middle class constitute the majority of all employees (Kivinen 1987).

In Finland, it has been found that the middle-class and working class people are in focus when studying outdoor recreation (Sievänen 1985). Many studies of American recreationists suggest that people who participate the most in outdoor recreation belong to the white middle class. When comparing these two cultures the limitations of knowledge of the socioeconomic structures of populations have to be kept in mind. The focus of the studies is usually on the population that participates in outdoor recreation.

The American white middle class and working class seems to be much more heterogeneous than the Finnish counterparts. There are great differences in behavioral patterns expressed by different ethnic groups (Woehrer 1986). This is especially true of behavior related to family and friendship relationships. Leisure and recreation are found to be family oriented to a very great extent (Kelly 1978).

One can assume that the ethnic differences may have a significant influence on participation in different outdoor activities and involvement in each ethnic group. according to Woehrer (1986) Scandinavians are very much society oriented in their social identification; they seem to prefer social group activities related to organizations and interest groups. Italian and Polish people are described to be very family oriented. German people are individualistic. These national features may imply behavioral differences: Italians like picnicking, Germans hiking, and Scandinavians mass events of jogging, skiing and walking. These are very hypothetical assumptions, but the point is to recognize the diversity of American society. The Finnish society does not have such diversity of social and cultural values.

The two populations are very difficult to compare because of the diversity even in each population. It would be more reliable and valid to compare some matching groups of people: upper middle class, lower middle class and working class or an approach of life cycle - matching groups of children, young, middle-aged and old - could provide a universal basis for comparison. Both approaches are difficult to work out in this paper. Thus, the comparison of outdoor recreational patterns is made on population level.

The comparison is looking at some components of life (socioeconomic factors): the amount and distribution of leisure time among recreationists, family structures, education and car ownership. Participation in outdoor recreation is described by the frequency of participation in different activities and by recreation travel. Some notions of socializing into outdoor recreation and differing behavioral patterns are presented.

### Leisure time

The amount and distribution of leisure time influences participation patterns in leisure activities. In both countries, people generally have five day work week, and regular vacations. It is interesting to compare the portion of leisure time spent in outdoor recreation. Americans have 42 hours per week leisure time on the average (Robinson 1986). From that about 4 per cent (about 85 hours annually) is used for outdoor recreation.

Finns use 40 hours per week for leisure activities, of which about 10 per cent, 200 hours annually is spent in outdoor activities and physical exercise (Niemi, etc. 1981). Finns spend more time for outdoor recreation.

### Family structure

Family has been found to be the most important reference group in outdoor recreation (Kelly, J. 1978). It appears to be both a supportive and a restrictive factor for participation. The increase of participation in outdoor recreation is relative to the number of family members. Single person households have significantly less participation days than the other groups (Table 1A). One explanation is that many of the households of one or two consist of older persons who tend to be much less active (U.S.D.I. 1986). In Minnesota, it was found that children have a small effect on recreation patterns of parents. Adults with children spent 10 per cent less time in outdoor recreation than adults without children (MNDNR 1986).

In Finland, it has been found that married people use less time for outdoor recreation on the average than do single persons (Table 1B, Niemi 1981). In other studies, the opposite results have been found (Ulkoilututkimus 1980, Jaatinen 1973, Karjula 1984). It may be that Minnesotans are more family oriented in their recreation participation.

*Table 1A. Number of persons in household and participation in outdoor recreation in the United States. Source: U.S.D.I. 1986.*

number of persons in household	participation days per year
1	23
2	31
3	39
4	47
5	42

*Table 1B. The marital status and participation in outdoor recreation in Finland;  
Source: Niemi etc. 1981.*

marital status	participation minutes per day <sup>*)</sup>	
	women	men
young single, live with parent	.31	.54
single	.23	.39
single parent	.19	...
married without children	.22	.43
married with children	.19	.32

<sup>\*)</sup>these numbers should be interpreted to describe the relative activeness of different marital groups, the number itself tells participation time in average per one day (in October).

### Education

Tables 2A and 2B show how the level of education affects involvement in outdoor recreation in both countries. The school system differs, but the comparison is based on the length of education in years.

*Table 2A. The involvement in outdoor recreation by education in United States  
(persons 12 and over); Source: U.S.D.I.1986.*

The level of education (number of years)	participation days per year
less than high school (12)	13
high school (12)	30
less than 4 years of college (12-15)	40
4 or more years of college ( 16)	44

*Table 2B. The involvement in outdoor recreation by education in Finland (per-  
sons 15 and over). Source: Karjula 1984.*

The level of education (number of years)	participation hours per week
elementary school (8)	5.5
secondary school (9-10)	7.6
lower vocational school (10-13)	5.5
higher vocational school or high school (12-16)	6.3
university (>16)	5.0

In United States, the relationship between the level of education and participation in outdoor recreation is clear: an increasing level of education leads to a higher level of participation. It seems that the amount of formal education does not affect outdoor recreation participation to the same extent in Finland that it does in Minnesota (Table 2B).

#### Ownership of car related to participation in outdoor recreation

The majority of recreation travel is done by private automobiles in United States. Some 90 % to 95 % of all visitors to recreation sites use private vehicles. Fully 57 % of the adult population participates in driving for pleasure five or more times per year (U.S.D.I. 1979).

In the United States, the number of cars and similar motor vehicles in a household is strongly associated with participation in outdoor recreation. Especially dramatic is the drop in activity in the non-car category (Table 3A) (U.S.D.I. 1986).

*Table 3A. Involvement in outdoor recreation, by number of cars owned household in United States. Source: U.S.D.I. 1986.*

number of cars	average number of activities/person
none	4
one	6
two	8
three	8
four or more	9

In Finland, the ownership of a car does not necessarily have much influence on participation in outdoor activities (Sievänen 1980). It may have more influence on the choice of recreational area (Jaatinen 1976). 40 per cent of recreationists use private car for transportation in order to visit a recreation area (Table 3B).

*Table 3B. The means of transportation when visiting recreational area among town dwellers in Finland. Source: Ulkoilututkimus 1979.*

activity	percent of visits
walk	32.2
bicycle	12.6
private vehicle	40.3
public transportation	6.3
other means	3.3
can't say	5.3

The use of private cars is mainly related to activities such as swimming, boating, picking berries and mushrooms and fishing. For walking, 91.2 per cent of people go on foot from their place of residence (Ulkoilututkimus 1980).

#### Summary of socioeconomic factors

The comparison of the involvement in outdoor recreation related to socioeconomic factors is not particularly reliable on the basis of few separately processed statistics. Marital status in Minnesota seems to suggest that families with two or more children are the most active group, but in Finland the relationship is opposite: single persons seem to use more time in outdoor recreation.

Education is found to be an important determinant in involvement in outdoor recreation in Minnesota. In Finland, the relationship between education and participation activity is not clear. More research is needed before it is possible to conclude whether the apparent differences between the two cultures are because of real cultural differences, or as the result of differences in data.

### **3.2. Socialization into outdoor recreation**

Most studies of socialization into leisure activities emphasize the importance of childhood socialization (Brooks and Elliott 1971, Cheek et al. 1976, Yoesting and Christensen 1978), though the socialization is seen more like a life long process (Iso-Alhola 1980). Some interesting differences in childhood socialization can be observed between Finland and Minnesota.

In Finland, the family has an important role in socializing children into outdoor activities. Children are encouraged to be out of doors from an early age. New born babies start to take out of door naps at age of 2-3 weeks even in winter time. Toddlers and older children play out of doors daily year around. Finnish children are introduced to many winter activities, such as skiing, as soon as they learn to walk. There is not much difference in level of participation between seasons: of all outdoor recreation participation 41 % occurs in summer (May- Aug), 32 % in winter (Jan-Apr) and 27 % in fall (Sept-Dec) (Sievänen 1980).

In Minnesota, parents seem to be more concerned about the cold weather, and because of that it seems that winter is not considered as active season for outdoor recreation as summer. The participation drops in winter: summer participation is 74 % of total number of annual recreation days, while winter participation is 26 % (MNDNR 1986).

Socialization into winter activities may vary a lot depending on the background of parents. Families that have recently moved to Minnesota from more mild climatological conditions, may not be familiar with winter activities, and because of that parents do not introduce their children to such activities. Also, different ethnic groups have varied interest on skiing. School children may be introduced to winter activities in recreation clubs.

Another age group, the elderly, are interesting to compare in respect of socialization into leisure and outdoor activities. The development of special retirement communities in the southern parts of the United States is a typical product of American culture. In those communities, life and the use of time is very leisure oriented, and both social and physical environment are favorable for recreation. This environment can offer much advantage for elderly to fill their expanded leisure time, and even, to socialize them into new leisure activities (Morgan and Godbey 1978).

In Finland, special communities of elderly are rare, except for the ordinary type of nursing homes. The leisurely oriented atmosphere to support the retirees is seldom found. Recreational services and programs for the elderly are offered by municipalities. Those services are free of charge or charged low fees. In comparison to Minnesota, there might be less emphasis to expand elderly's recreational participation in Finland.

### 3.3 Participation in outdoor recreation

Recreational patterns or profiles summarize nicely the main aspects of recreation participation. Some studies present typologies of recreationists (Lindsay and Ogle 1972, Ditton et al. 1975, Sievänen 1984), but there are not comparable typologies of Minnesotans and Finns. Here, only a few characteristics of recreational patterns are described and compared.

#### Frequency of participation

The outdoor activities that are ranked high in popularity in each country are shown in Tables 4A and 4B.

*Table 4A. Popular outdoor recreation activities in Minnesota. Source: MNDNR 1986.*

activity	% of annual hours*)	activity	% of annual hours*)
bicycling	13.6	snowmobiling	5.0
summer fishing	9.4	skiing	4.7
swimming	8.2	ice fishing	4.7
boating	8.1	picnicking	4.6
hunting	7.5	skating	4.5
camping	6.7	driving	3.5
baseball/softball	5.1	golfing	3.0

\*) portion of annual hours used for outdoor recreation

A majority of the activities are common to the two cultures, but differences are obvious. In Minnesota, picnicking is one of the most popular activities, but in Finland it is not even defined as an independent activity in user studies. Picking berries and mushrooms are important activities for a majority of people in Finland, but they are not common in Minnesota.

*Table 4B. Popular outdoor recreation activities in Finland. The frequency of participation during the season when the activity is available. Source: Ulkoilututkimus 1979.*

activity	% of participants in population	participation frequency (times per week*)
walking	87.1	4.6
picking berries and mushrooms	71.6	1.7
swimming	58.9	2.5
bicycling	54.6	3.8
skiing	47.1	1.7
fishing	43.6	1.3
boating	31.8	2.0
jogging	29.4	1.9
hiking	23.0	1.1

\*) during the season when the activity is available

### 3.4 Use of recreational areas and the travelling distances

The use of recreational areas is very different. While Finns recreate in their close-to-home forest and natural areas, Minnesotans typically drive to their favorite parks or other places. For example, in a small Finnish town, most visits are paid to the neighborhood forest, not more than 2-3 km (1-2 mil) from the residence (Sievänen 1984). In Table 5A some average distances in Minnesota between recreation site and residence are given.

In Minnesota, seventy per cent of time used for recreation is spent within 30 road miles of a person's residence, while only seventeen per cent occur over 100 miles from home. This is interpreted to mean that most Minnesotans' outdoor recreation activity is spent close to home (MNDNR 1986). For example, the average travel distance in cross-country skiing, is less than 30 miles (42 km), but in fishing 52 per cent of recreation time occurs further than 30 miles from home (MNDNR 1986) (see Table 5A).

When compared to Finland, travel distances are relatively long in Minnesota. Here is a question of a different sense of distance and use of a vehicle. A half an hours' drive is a small distance to a Minnesotan while to a Finn it is a long distance (Table 5B).

*Table 5A. Participation in outdoor recreation by residents at various travel distances from home in Minnesota. Source: MNDNR 1985.*

activity	% of participation greater than 100 mil	participation frequency less than or equal to 30 mil
camping	47.1	22.3
fishing	33.0	48.1
boating	31.3	54.6
swimming	11.6	80.3
picnicking	11.0	74.5
bicycling	1.0	95.9
cross-country skiing	6.1	86.9
hunting (waterfowl)	37.2	43.5

*Table 5b. The average distance between the recreation site and residence in Finnish towns and other communities. Source: Ulkoilututkimus 1979, 1980).*

Activity	in towns (km)	in rural communities (km)
walking	0.2	0.1
bicycling	0.3	0.1
jogging	0.5	0.2
skiing	1.0	0.3
hiking	3.4	0.8
swimming	5.1	4.5
boating	9.1	5.3
picking berries and mushrooms	10.4	2.9
fishing	10.9	5.6

### 3.5 Some comparisons in participation patterns

**Fishing** is very popular in both countries. The behavioral pattern in terms of resource use differs because of fishing rights. In Minnesota, the state owns the fishing rights. Many fishermen store their boats in the backyard. They have a trailer to pull the boat to any lake in Minnesota, where they can fish.

In Finland, fishermen usually fish in a certain body of water, where they have acquired a permit. A person may have permits to several fishing areas, e.g., in a resort area, on public land or where he/she owns a summer cottage. In Finland, it is easy to predict where people fish. In Minnesota, it is more difficult to keep track of where people like to go fishing.

**Hunting** is regulated by the government in both countries. In Minnesota, the game belongs to the state, but the right to access private land belongs to the landowner. Thus, public lands are essential for other than landowner hunters in Minnesota. Public lands are located mainly in northern Minnesota. Travelling distances for hunting are relatively long.

In Minnesota, trespassing causes some problems between hunters and landowners. Sometimes private lands are located in such a way that it is difficult to avoid trespassing in order to enter public land. Also, in remote areas, it is difficult to control hunters who enter private land to follow game.

In Finland, hunting club membership is essential for non-landowner hunters, but it is relatively easy to get. Hunting is possible only in the areas where the club has rented hunting rights.

**A walk** to the neighborhood forest or on city streets is a typical outing for a Finn. Because of the proximity of urban forests in Finland, outings are short and spontaneous.

In Minnesota, walking is also one of the most popular activities, but to walk in a natural area one usually needs to drive to a park. This makes a big difference in the behavioral patterns. A Minnesotan's outing usually includes a drive to the park, recreating there, and then driving home. That requires planning where to go, what to do and when to have the time.

**Bicycling** may have stronger traditions as a recreational activity in Finland. Bicycling is also considered rather important means of transportation in the summer time in cities and towns. The road system has been planned to include relatively advanced bikeroute system (developed mainly during the last few years).

In Minnesota, bicycling has just recently become a popular adult activity, and is still considered mainly as a recreational activity, for which trails and routes are provided in the parks and to a lesser extent along roads and city streets. There are only a few trails which have been developed to connect one park to another, or trail corridors

for bicycling. Bicycling is less considered as a means of transportation, and thus there are fewer bikeroutes in the road system.

**Cross-country skiing** is one of the most important outdoor activities in Finland. In all cities and towns, the municipal agency provides and maintains ski trails in winter season. Often, there is at least one illuminated trail in the town or suburb.

In Minnesota, cross-country skiing does not have a long tradition, though it has become very popular in recent years. Downhill skiing is well established in Minnesota. Cross-country skiing has developed in a similar pattern. Most of groomed trails are confined to small, isolated areas and skiers must drive considerable distances in order to use them.

**Snowmobiling** has a strong position among winter activities in Minnesota. Special snowmobile trails have been developed throughout the state. In some areas there are conflicts between cross-country skiers and snowmobilers. In Finland, snowmobiling is an important winter activity in Northern Finland. Restricted access to private lands have slowed down the increase of participation in Finland.

**Canoeing and kayaking** are popular activities in Minnesota (known as "canoe country" in the United States). The history of the voyageurs<sup>\*)</sup>, the development of the canoe by native Americans and the excellent resources for the activity, have all contributed to their popularity. Canoeing does not own the same tradition in Finland despite the many lakes and rivers. In recent years, canoeing has increased its popularity. Rowing boats are traditional for fishermen and a means of waterway transportation.

**Picnicking** seems to be a part of American way of life. All recreational areas provide facilities for picnicking. People participate in picnicking with big groups of workmates, extended families or friends, as well as in small groups of one nuclear family or a couple of friends. From early spring to late fall people are eager for a picnic. People carry a lot of food and other things with them. Because of this it is important that they get as close as possible to the picnic site with their car.

In Finnish culture picnicking is not done per se. People may take some lunch with them when they take a whole day outing to the forest or swimming beach. There are no formal picnic areas in Finnish parks.

\*) Voyageurs were fur traders that canoed along rivers and lakes before permanent white settlement in Minnesota.

## **4 Planning philosophies toward recreational land system**

### **4.1 Recreational experience as a planning goal**

In United States, the recreational literature discusses that the managers' mission is to provide a good recreation experience for visitors in recreational areas. If a visitor looks for an opportunity for socializing with friends, they should be offered a place for picnicking and, perhaps, baseball field in the park. If the visitor is looking for solitude, there must be an opportunity for a wilderness experience. The quality of the experience is in focus for planning the use of recreational resources. This goal is reasonable because recreation takes place on designated park land.

In Finland, the concept and understanding of recreational experience is not developed as far. Basically it is more difficult to offer specified experiences: recreation is too spread out to be controlled by any governmental agency. This is a controversial issue. "Everyman's right" includes the right of access to the land, but not the right for the quality of the environment favorable for recreation. Only in areas, which are designated and managed for recreation, there are concerns for the quality of the environment. Only recently public opinion has paid attention to the landscape issues of natural areas.

### **4.2 The idea of recreational land system**

The philosophy of a recreational land system seems to differ, and here it is compared between Helsinki metro area and the Twin Cities metro area. In Helsinki, the location of parks is planned in order the distance from one's residence to a park is minimized and kept to walking distance. One goal is to develop a network of parks, a kind of green corridor or zone system so that there is an easy and safe pedestrian route to get from a small neighborhood park to a larger one (with more facilities and opportunities). That does not necessarily mean that the whole route is on park land, but sidewalks along quiet streets in residential areas are used partly as a trail base.

In Finland, use of motor vehicles (also off-road-vehicles) is limited or prohibited in recreational areas. One component of environmental quality is an opportunity to get away from cars and the noise of cars. All services and facilities are usually located very close to the park boundaries.

In the Twin cities metro area, the park system is based on rather isolated parks, which are accessible primarily by private car. All facilities are inside the park boundaries, and there are few opportunities to move from one park to another along bike or pedestrian corridors. There are recent efforts to establish more connecting paths. Often these are in conjunction with "parkways" or scenic roadways for automobiles. The park is typically developed as an independent unit. Often, the park design makes it necessary to drive even inside the park in order to use facilities and services.

In fact, the land use structure in Minnesota is based on the use of private transportation. The role of a private car is an essential component in all assessments of accessibility to the park system. Only very local, small neighborhood parks are planned for walking distance.

In Helsinki, the criteria of accessibility are, how to get to the area on foot, by bicycle or by public transportation, and least important by private car. Parking lots are considered a minor problem, and offered mainly in week-end use areas, and at more remote trail head areas in urban forest areas.

### **4.3 The facilities and services in recreational areas**

In Minnesota, parks always have a relatively high level of services and facilities. A minimum standard is to offer a weather shelter and toilets, a parking lot, trail guides and a maintained trail. At the other end of the spectrum, the park has a nature or/and visitor center, camping facilities, picnic areas with shelters, toilets, fire rings, and concessioners to provide food and beverages.

In Finland, the idea of a recreational area is less development oriented. The level of development depends on the location and type of the area. Some recreational areas are developed with weather shelters, toilets, trails and parking lots, but most areas are developed to a minimum extent, only trails and signage. Timber production areas used for recreation do not have facilities.

### **4.4 Governmental responsibility to supply outdoor recreational opportunities**

In Minnesota, there are several governmental agencies that are in charge of providing recreational opportunities. There are federal, state, regional (metroarea), county and local community agencies that share the responsibility. On all those levels, there are parks provided for recreation. Further, at a federal level there are several different

agencies: National Park Service, Forest Service, Corps of Engineers, Bureau of Land Management, Fish and Wildlife and some others that each manage land for recreation.

In Finland, the local community is the authority which has the primary responsibility to provide land for recreation. The National Board of Forestry manage national hiking areas, and it is the agency for administering the national parks together with the Finnish Forest Research Institute. The Ministry of Environment and the Ministry of Education both finance community parks, recreational areas and trail systems.

In Finland, the community (township) has the authority over the land use in its area. In general, there is a master plan for all land use in every community. In that plan, the recreation area system is described at local level. In practise, recreation areas are not developed as planned in most cases. When the community decides to reserve an area for park use, but the landowner disagrees, the community has the responsibility to purchase the land. This causes financing difficulties especially for small communities. In many cases, the land may be acquired but there are not funds to build the site.

One difficulty is the cooperation between two or more municipalities. Close to larger cities, the best areas and resources for recreation are located in the neighborhood small community. A model of a new agency for acquiring and managing regional recreation areas is under development.

#### **4.5 The planning system and the public involvement**

Land use planning processes differ in the two countries. In Minnesota, plans for recreation on public land are done by several agencies, and each agency has their own planning system. Minnesota legislation recommend an outline for public involvement in the planning process. There are several different formats to offering the public the opportunity to participate in the planning process. The most used ones are a public hearing, a citizen advisory committee, and a workshop for citizen groups.

In Finland, there is lack of public involvement in the planning processes. A land-use plan is set to public exhibition, but only citizen groups and private community members which live or own property in the commune have the legal right to complain.

## 5 Conclusions

In a cross-cultural study, the goal is to look for similarities and differences between cultures, to learn more about each culture, and to find new ways to think and to solve problems. Minnesota and Finland have many common features that make the comparison possible and fruitful. There are things that we can learn from each other.

Outdoor recreation is an important part of way of life in both cultures. Both countries have an abundance of resources for recreation. Differences occur in land use rights and in the level of development of recreational areas.

The main behavioral differences are caused by the land use structures. In Minnesota, parks and areas available for recreation are accessible mainly by automobile, but not by bicycle or on foot for a majority of visitors. In Finland, people typically recreate within walking distance from their residence.

The differences in land use of the two countries could be described by attributes such as integration (Finland) and designation (Minnesota). Both systems have advantages and disadvantages in terms of providing recreational opportunities. The different characteristics of each type of recreational land use is discussed in the paper. In table 6 some of the most essential differences are summarized.

*Table 6. The characteristics of recreational land systems in Finland and Minnesota.*

	INTEGRATION (Finland)	DESIGNATION (Minnesota)
ADVANTAGES	proximity spontaneity efficiency	control, design for experience
DISADVANTAGES	difficult to develop or guarantee the quality of recreational environment	isolated, less efficient use of resources

Finns are used to having a lot of outdoor recreational opportunities and take them for granted. The changes in economy, and the effects of modern technology have also changed the supply of recreational environments, and especially the quality of the environment. The need to establish and manage areas specifically for recreation is growing in Finland. The recreational experience that people desire should be the goal

in recreation planning. The experience that recreation professionals in Minnesota have had in planning and managing recreational areas can offer valuable help for developing ideas in Finland.

With the help of the facilities such as nature centers and visitor centers that are well developed in Minnesota it is possible to contact visitors, to educate people to recognize and to appreciate recreation resources and to concern other visitor. American experiences could be a good basis to organize nature centers and to develop interpretation methods in Finland.

The proximity of recreational areas for Finns is an important value in Finnish society. Proximity makes it possible to recreate spontaneously. Outdoor recreation is part of daily routines. Land use planning has a goal to develop an infrastructure of recreational areas, green zones and corridors. It may be possible to find solutions that could allow people to make better use of privately owned natural areas in Minnesota. Perhaps, a vast trail system partly located on private land could open close-to-home areas or otherwise attractive areas for recreation. In Minnesota, long run planning policy include an idea of developing a trail system connecting smaller parks to larger ones.

## References

- Brooks, J.B. and Elliott, D.M. 1971. Prediction of psychological adjustment at age thirty from leisure activities and satisfaction in childhood. *Human Development* 1971 (14), p. 51-61.
- Cheek, N.H., Field, D.R. and Burdge, R.J. 1976. *Leisure and Recreation Places*. Ann Arbor, Mich.: Ann Arbor Science.
- Ditton, R.B., Goodale, T.L. and Johnsen, P.K. 1975. A Cluster analysis of activity, frequency, and environment variables to identify water-based recreation types. *Journal of Leisure Research* 7 (4): 282-295.
- Focus on Finland 1984. Published by the Ministry for Foreign Affairs, Helsinki.
- Iso-Ahola, S. 1980. *The Social psychology of leisure and recreation*. Wm. Brown Company Published, Dubuque, Iowa.
- Jaatinen, E. 1973. Recreation utilization of Helsinki's forests. *Folia Forestalia* 186:1-45.
- Jaatinen, E., 1976. Helsingin ulkoilualueiden virkistyskäyttäjien aluekohtaiset mielipiteet. Summary: Visitors' opinions concerning the forest recreation areas of Helsinki. *Toiminnallisia selvityksiä* 31. Helsinki, Kaupunkisuunnitteluvirasto, Yleiskaavaosasto. Julkaisu YB:7/76.
- Karjula, M. 1984. Kaupunkiväestön ulkoilukäyttämiseen vaikuttavat tekijät. *Maankäytön ekologian pro gradu -tutkielma*. Helsingin yliopisto. 89 s.
- Kelly, J. 1978. Family Leisure in Three Communities. *Journal of Leisure Research* 10(1):47-60.

- Kivinen, M. 1987. Parempien piirien ihmisiä. Tutkijaliiton julkaisusarja 46. Gummerus Oy, Jyväskylä.
- Lindsay, J.J. and Ogle, R.A. 1972. Socioeconomic patterns of outdoor recreation use near urban areas. *Journal of Leisure Research* 4(1):19-24.
- Minnesota Department of Natural Resources (MNDNR). Minnesota forest resources. 1982.
- Minnesota Department of Natural Resources (MNDNR). Minnesota State Comprehensive Outdoor Recreation Plan. 1985 draft. Volume I. 1985.
- Minnesota Department of Natural Resources (MNDNR). Outdoor Recreation Briefing Papers. Prepared for the Commission on Minnesotans Outdoors in conjunction with a state-wide reassessment of future outdoor recreation needs. 1986.
- Morgan, A. and Gidbey, G. 1978. The effect of Entering an Age-Segregated Environment Upon the Leisure Activity Patterns of Older Adults. *Journal of Leisure Research* 10(3): 177-190.
- Niemi, I., Kiiski, S., ja Liikkanen, M. 1981. Suomalaisten ajankäyttö 1979. Tilastokeskus (Central Statistical Office in Finland). Tutkimuksia N:o 65.
- Robinson, J.P. 1986. Time use and outdoor recreation. In The President's Commission On Americans Outdoors. A Literature Review. U.S. Government Printing Office.
- Sievänen, T. 1980. Metsien virkistyskäyttö Keravalla. Maankäytön ekonomian pro gradu-tutkielma. Helsingin yliopisto, 100 s.
- Sievänen, T. 1984. Outdoor recreation and the Finnish way of life. In proceeding: World Leisure and Recreation Association. *Le Temps Libre et le Loisir. Actes du Congress Mondial de Recherche de Marly-le-Roi, 24 - 28.9.1984.* Association pour la Diffusion de la Recherche sur l'Action Culturelle.
- Sievänen, T. 1985. Outdoor recreational behavior. A theoretical framework and analysis of future trends. Working paper. Metsäntutkimuslaitos. 34 s.
- Sievänen, T. 1986. Forest recreation and the Finnish way of life. In proceeding: IUFRO S 6.01. Report on the third intercongress meeting 1984 in the Netherlands, Denmark and Sweden. State Forest Service in the Netherlands. Utrecht.
- Sukselainen, T. 1986. Hinnanmuodostus Suomen teollisuudessa v. 1969-1981. Suomen Pankki B:42.
- Ulkoilututkimus 1979. Sisäasiainministeriön ympäristönsuojeluosaston julkaisu C1 n:o 5. Helsinki 1980.
- U.S.D.I. 1979. Department of the Interior. Heritage Conservation and Recreation Service. The Third Nationwide Outdoor Recreation Plan. The Assessment. Washington D.C. 1979.
- U.S.D.I. 1986. Department of the Interior. National Park Service. 1982-1983 Nationwide Recreation Survey. 1986.
- Virkistysaluekomitean mietintö. 1973. Komiteamietintö 1971:143. Helsinki 417 s.
- Woehrer, C. 1986. Ethnicity and the social integration of older americans. Lecture material given at University of Minnesota, 3/3 1986.
- Yoesting, D.R. and Christensen, J.E. 1978. Reexamining the significance of childhood recreation patterns on adult leisure behavior. *Leisure studies* 1(3):219-229.

# **Project Plan for International Investigation of Long-Distance Hiking and Skiing Trails**

*Timothy B. Knopp and Tuija Sievänen*

## **1 Introduction**

Travelling along trails is an ancient means of transportation. Today, trails often serve as recreation resources and major tourist destinations in many countries of the world. Walking, hiking and cross-country skiing are becoming more and more popular as the appropriate modes of travel on these trails. Most people prefer the use of trails to the risk and uncertainties associated with making one's way across an area without a cleared and marked route. Long-distance trails have a special appeal that distinguishes them from the shorter, more confined trail systems.

An interest in long-distance trails as a recreation resource has developed worldwide. In Europe, there exists a long history of trails and trail uses. Recently, a common effort to develop a system of Trans European Trails has emerged. In United States, the National Trail System Act of 1968 set forth the goal of establishing a nationwide network of scenic, recreational and historic trails. The Appalachian Trail, created much earlier, and secured by the Act, serves as a model. In many other countries throughout the world, one or more long-distance trails are well known and serve to attract hikers and skiers who wish to have a special experience that brings them into more intimate contact with the natural and cultural environment of a country or region.

The importance of long-distance trails should continue to grow along with participation in outdoor activities that lend themselves to the use of these trails. Many activities, such as backpacking and cross-country skiing, have developed with the assumption of long-distance trail opportunities. Hiking in wilderness areas, where trails are the only means of access, is a traditional type of trail use.

Long-distance trails differ from outdoor recreation resources in a number of ways. Although they provide access to large areas, physically, they occupy a very small amount of land. This characteristic offers a promising approach to solving the problem of resource supply for outdoor recreation. That is, people can be allowed access, under controlled conditions, to large areas that might otherwise be very

restricted in their use for recreation. The non-motorized uses that are the subject of this investigation, are especially appealing in this regard.

But, questions remain. What is the special appeal of long distance trails for hiking and skiing? They are not the quickest or easiest way of getting from point to point. For most recreational users it is obviously not a matter of cost. What makes some trails more popular or more appealing than others? If we are to plan and develop new long-distance trails it would be helpful to know where best to invest our efforts. How do we establish the institutional framework to make these decisions, and construct, maintain and manage the trails? Long-distance trails, along with their special appeal, have special problems. Benefits are more difficult to capture and therefore financing more difficult to secure. Complex land ownership patterns make it difficult to have the continuity that is very essence of a long-distance trail. These and other questions that arise during the course of the study, will be the primary focus of this investigation.

## **2 Definition of long-distance trail**

For the purpose of this study a long-distance trail is defined as: " A trail or contiguous trail system including two points at least 50 km apart. Most of the trail we will be dealing with are much more longer than this, several are more than a thousand kilometers in length. The length of a trail often contributes much to its visibility; thus the importance of the trail as a recreation resource is regionwide, national or international.

## **3 Research objectives**

The research project will focus on different aspects of long-distance trails, their appeal, their use, management and administration.

The objectives are:

1. to examine long-distance hiking and skiing trails with the purpose of ascertaining their unique appeal and special problems.
2. to develop a systematic approach to evaluating proposals for future trail development.

3. to develop an instrument to aid in soliciting preferences for various types of trails in different locations, and to provide better estimates of potential use.
4. to compare a number of organizational frameworks for the development and operation of long-distance trails with the view of suggesting institutional arrangements that would optimize efficiency and benefits.
5. to evaluate land use and ownership patterns as factors in the establishment of long-distance trails.
6. to make an international comparison of long-distance trails as they are influenced in objectives one through five.

## **4 The work plan**

### **4.1 History of trails**

A brief history of long-distance trails will be prepared. The points of view are: the use of trails as a means of transportation, the tradition of hiking and cross-country skiing as outdoor activities, the changes in land use rights as they affect trails. Case studies of specific trails will be included.

### **4.2 Planning and management of long-distance trails**

Some case studies will address the following issues:

- 1) What patterns ( shape, length, road/water access, and location) are there, and how do the trails relate to the environment in which they are found? In the context of the environment what impact(s) does the trail have and how does it make use of the environment in which it is located.
- 2) What kind of experiences does the trail provide and what are the major features that make the trail attractive? How where (are) these factors taken into account in trail planning?
- 3) What kind of use ( quantity, type and distribution over time and space) does the trail receive? What is the origin of those who use the trail?

- 4) What is the level of development: facilities, services, guiding, interpretation and marketing?
- 5) What are costs of trails and how do they compare with other kinds of recreational opportunities?

### **4.3 User studies**

The trail users will be asked about their preferences for landscapes and their need for services and facilities.

At least two different user groups will be surveyed:

- 1) Unorganized trail users contacted in the field or identified registration and permit lists.
- 2) Organized trail users identified from membership lists.

A third group, the entire population of a state, country or other geographical area, may be sampled in order to ascertain potential use, barriers to use and expectations of potential trail users.

### **4.4 Institutional arrangements of long-distance trails**

This topic includes the patterns of outdoor recreational resources: the effectiveness of resource use, the influence of ownership on land use patterns, and the question of how the private landowners are integrated into the recreational resource system (e.g. agreements, easements, compensations). Also included are the procedures for the establishment of long-distance trails and the arrangements for maintenance and management (e.g. government agency responsibilities, volunteer groups, foundation).

## **5 Methodology**

An important part of the project is to develop methodology that can be applied internationally. The cross-cultural approach requires survey instrument that keeps ambiguities, and difficulties of translation and interpretation to a minimum. The use

of graphics should help to achieve this goal. The analysis, inferences and conclusions must also be consistent with this goal.

## **6 Results and benefits of the investigation**

The study should aid all the participants in their efforts to better understand and development of long-distance trails in their own country. The comparison will offer new information and alternative solutions to each country.

Specifically, the project may produce standards and/or recommendations for trail development, and will suggest alternative institutional arrangements.

## **7 The project organization**

The international group of researchers could include participants from following countries: U.S.A., Finland, Norway, Sweden, United Kingdom, West Germany, Austria, Taiwan and Japan. These countries have individuals who have already expressed an interest. Others are welcome to join the project. The process of contacting potential investigators in each of these countries has begun.

## **8 Time Schedule**

Initially, the duration of the project will be planned for at least three years. The volume of work anticipated and the logistical problems associated with an international study may necessitate extending the period. The preliminary time frame is as follows:

1. July 1989-June 1990.

- a) Conduct the first workshop for researchers in order to firm the organization of the project and set more definite goals and work plans. (Possibly during summer 1989 in Finland).
- b) Develop survey instrument(s) and selection of target populations
- c) Begin data collection

2. July 1990- June 1991

- a) Complete data analysis and preliminary drafts of reports.
- b) Conduct second workshop to compare of results of the studies from various participants. ( Possibly in connections of IUFRO World congress in Montreal Canada or in Minnesota).

3. July 1991-June 1992

Preparation of final reports and final workshop. An integrated report will be written and published on a cooperative basis. Additional articles and reports may be submitted to professional journals and popular outlets by individual investigators or groups of investigators.

## **9 Financing**

Financing of the project will be on the basis of funds obtained by each investigator or team of investigators in their own country.

*St. Paul and Helsinki*

*23.1.1989*

# Long Distance Trails and Trail Systems: Basic Concepts

*Jon Teigland, Dorothy H. Anderson, David Lime and Tuija Sievänen*

## 1 Introduction

A trail is usually a **linear connection** between two points used for walking, hiking, bicycling, cross-country skiing and snowscooters or snowmobiles. Most of these trails are visible and continuous tracks through an area dominated by natural scenery. But, in cases where a trail goes through lake areas and along rivers, the linear connection can be partly non-visible when the connection leaves land and continues through water areas. In some water recreation areas the trail is visible mainly on land where the users are moving overland, carrying their canoes, kayaks or boats on portages.

Travelling along trails is an ancient means of transportation. Trails are still heavily used for all kinds of transportation in many developing countries. Some trails in developing countries, which have high environmental qualities, also have visitors coming from industrial countries to experience the nature and local life styles along the trails, as in the Himalayas.

In the developed industrial countries, trails today serve mainly as **recreation resources**. Some of these are historical trails used for other purposes earlier and managed today partly to protect the historical values. The pilgrimage routes through many countries in Europe and Middle East, and the old settling and trading routes in North America are examples of those trails.

Some recently developed trails are, however, planned for recreational purposes or for combinations of recreational and commuting purposes. These new developments have a large variety of purposes and serve often as multiple use trails. Some trails are more for special use or purposes. Trails have, for example, been developed as means to learn about nature (**nature trails**), by help of guides or self instructional means. And some trails are developed for training, fitness or health purposes. Other trails are designed to give the users access to special experiences or activities (**theme trails**); such as "fishing trails for handicapped", "illuminated cross country ski trails", "trails for training hunting dogs", or "war-game-trails/survival trails".

Such trails designated for historical, recreational or other purposes are most often permanent, having got their recognition by local, regional, national or even international authorities. Many old trails are, however, not permanent constructions but can vanish when the old use disappears and reforestation and nature processes change the environment. New constructions as highways or housing developments can also very quickly make old trails inaccessible or nonexistent.

## 2 Trail networks and trail systems

Linear connections between two points are often tied to other trails between other locations, creating networks of trail. Such networks may have many geographical forms, giving opportunities to users both to follow a combination of linear trails to other points or to make loops coming back to the same starting point through triangular, quadrangular or other forms of trail networks.

In cases, where linear trails or trail networks consists of several **units tied together in a systematic way** by common ideas, plans or management, then the trails are parts of a **trail system**. The different units in the system can then be **trail segments** or **types of services** supplied along the trails; for example, accommodation possibilities, resthouses, camping sites, service centers at trailheads or junctions, or signs and guides.

The development of trail systems is not a new idea, even if it seems to be the most recent advancement in recreational developments of trails. Trail systems have been developed many years ago on many continents; by the incas in South America to link their empire together, in the Middle East to link major capitals to the religious centers in Mecca and Medina. And in Northern Europe when trail systems was developed, fore example, by the first Norwegian Kings to make it possible for travellers to pass the major mountains.

All of these historical trailsystems supplied accomodation, water and food within one day travel distance or shorter, by constructing special rest houses systematically along the route or by giving farmers along the trail privileges and/or duties for serving travellers.

### 3 Trail corridors and service facilities

The historical trail systems were often developed to give connections through less developed areas or wilderness and deserts, which otherwise would be difficult or dangerous to pass. The modern trail systems can have the same objectives, but the main purpose of modern trail systems is often to give the users the possibility to experience environment with high or unique qualities along the trails, and having services along the trail. Modern trailsystems also include trails through very densely developed areas where the problem for the travellers and the providers often is to find passages through such areas along corridors with an environment with nature qualities. The nature and cultural qualities in the corridor along the trail are, therefore, more important today than earlier.

The proposed Norwegian National Trail Plan, for example, which so far covers only the mountain areas, is based on the philosophy that there should be minimum impacts on the natural environment in the trail corridors, but a spectrum of overnight accommodations to serve visitors (Direktoratet for naturforvaltning 1991).

That trail system is based on a distinction between three kinds of trail environments and services in the corridors along the trails. One type of proposed trails are following trail corridors where the nature environment is undeveloped without facilities for the users (no signs, bridges, organized campsites or huts). This "wilderness trails" will follow tracks established by earlier users. Another of the proposed types of Norwegian trails goes through trail corridors with near-natural qualities; small or moderate supply of service facilities, as self-service accommodation facilities, signs and bridges, but no other modern development in the nature environment. The third type of trails, according to the proposed Norwegian trail plan, are trails with more supply of service facilities, as accommodation with full-service staff (bed and bedding, prepared food, hot shower), and with acceptance of a few minor man-made impacts in the landscape (small powerlines) of the trail corridor.

This trail system has been proposed for hiking and cross country skiing through nature environment, with emphasis is on "a near minimum impact" on nature including no groomed ski trails or development of trail surfaces. Trail systems developed for other activities, as bicycling or cross country skiing close to urban areas and tourist resorts, have included development of the trail surface and shape as a major issue. Asphalt paving, smooth surface, groomed trails and no sharp curves and steepness according to the skills of the users, have been among requirements to such new trail developments.

Large developments with well **prepared trail surfaces** and many tracks along the same trail have especially been demanded in connection with urban areas and larger tourist resorts generating many users. Large trail developments have, however, also emerged in connections with mass events to supply, for example, some of the major cross-country ski competitions in Northern Europe with 10 000 participants and more. Mountain bikes and deep snow skies have, at the other hand, been developed for users who do not want well prepared trail surfaces, but are looking for the rough or off-trail opportunities.

#### **4 Day-use and long distance trails**

Most trails are short linear linkages or networks which are used for shorter trips. Some trails are, however, developed or designated as long distance trails (LDT's) for users on longer hiking, skiing and bicycling trips or who are travelling longer distances by other recreational means. Many of these long distance trails are giving opportunities for trips lasting one or more days following linear trail corridors.

The definition of long distance trails (LDT's) is often tied to the distance between two points, or the distances inside a network (the supply perspective). But some definitions are also functional oriented and based on what the users are looking for (the demand perspective). These two perspectives give sometimes very different criteria for what should be included in the long distance trail concept, ranging in distance and time-frame from trails longer than 10 kilometer to trails at least 400 kilometer long, or trails for day use or for long holidays.

The large differences among definitions are most often tied to very different perspectives on what type of experiences are important to the users. And what time unit the users are planning according to; day use, weekend use, use during short holidays of up to one week, or use on longer holidays with several weeks hiking, skiing, bicycling or canoeing.

The planners of the Danish national bicycle trail plan refer to long distance trails as trails not planned for day use or weekend use, but for holidays on bicycles; trips lasting 3-4 days and more. (Jørgensen. Personal statement on LDT-workshop in Helsinki 1992). An American paper on long distance trails (Lehman 1988) define, however, long distance hiking trails as trails which a person will use at least two days to cover in its entirety. A Swedish scientist states that a long distance trail should be longer than the users can cover in one day. The main criteria then is that the length

makes it necessary for the users to stay overnight along the trail (Hedlund. Personal statement during the LDT-workshop in Helsinki 1992).

All of these LDT-definitions have been based on a time frame of more than one day hiking. But other scientists have included also trails for day use, based on the philosophy that long distance trails should include trails also for a normal day family hiking, skiing or bicycling for recreational users, and not according to the much faster competitive users.

The length of such day use long distance trails was, therefore, in a Finnish study decided to be down to but not less than 10 km for hiking, 20 km for skiing and 30 km for bicycling (Tuija Sievänen. 1991). At the other end of the scale is the definition of Burch (1979), who in a guide to future trail research, concluded that trails with a length of 250 miles (400 km) or more should be considered as long distance trails.

The variety in scientific definitions reflects in one way that LDT is not an often used concept. When the LDT-concept was used in connection with state wide planning in Minnesota, then LDT was described to the public (in questionnaires) as pathways that connected towns to towns, neighbourhood to neighbourhood, and recreational facilities to neighbourhood. In addition, a long distance trail then was characterized by multiple access points and multiple use. And at least some of the trails had to be separated from roadways that allow heavy concentrations of motorized street vehicles (Anderson et al. 1991).

In this later descriptive definition of LDT, criteria about distance is not included. Time or distance limits for long distance trails also are seldomly defined in Northern Europe. In England, the National Parks Commission suggests, however, that long distance routes should in general have a minimum length of 70 miles or 120 km and pass through areas of outstanding scenery.

The authors of this paper have earlier suggested that day outings for hiking of about 25-30 km or 15-20 miles, and for cross-country skiing of about 40-45 km or 25-30 miles would be considered "long" and could define long distance trails (Lime et al. 1991). Trips of several days duration where the traveller uses trail side or nearby accomodation would exceed such limits.

The large variety in definitions makes it important to clarify the LDT-concept for later use and to get a better empirical base for the selection of criteria and time/length-operationalization. If the LDT concept is including trails for day outings, for example, then recent studies from Norway, at least, show that distance criteria of 25-30 km

hiking and 40-45 km skiing perhaps are too exclusive. The Norwegian studies, at least, show that very few inhabitants are taking day outings hiking or cross country skiing trips as long as 30 km (Scan-Fact 1989 and 1990). Only 5-10 percent of the inhabitants of Norway hike or cross country ski distances of that length during their longest day hike/skitrip during one year.

If the LDT-concept not only are used about trails for overnight trips, then day-use trails for trips of 20-25 km (12-15 miles) or more can be included. Most Norwegians would, at least, accept that hiking and cross-country ski trails longer than 20-25 km are long trails, and can be looked at as parts of a LDT-system.

## **5 Different long-distance day-use trail systems**

The variety in LDT definitions is in some cases related to the differences between two types of "day-use networks"; trail networks close to urban areas and networks around larger tourist resorts. Both of these types of networks are developed for day users staying at the same accommodation base (the permanent residence or the non-permanent tourist residence), having most often a "loop-form". One difference between these two types of networks is the relatively stronger need for a variety of high quality trails around a nature based tourist resorts than around a residence area in a town or a city.

If the economical base for a tourist resort is the attractiveness of the trail system, then the trail system has to supply a variety of day use trail opportunities to make a longer stay enjoyable for the tourists. Such a day use trail system linking the non-permanent accommodation base with the attractions in the environment around the resort, gives the visitors a choice among several high quality trails with different experiences, services and length. And in such cases, the combined length of the different day use trails can be a good indicator of the volume of trail opportunities in a tourist resort.

Many tourist resorts in the Alps and in the Nordic countries are, therefore, marketing themselves as having "long distances of trails". That does not necessarily say that they have "long distance trails". But most often it does mean that the resorts have a network with possibilities for many days of trail use and that the trails are connected with a long distance trail system.

## 6 Internal relationships in long-distance trail systems

Long distance trails consist nearly always of several shorter **segments** which can be used also for shorter day trips. Day users of longer trails then often choose to use the segments which have higher qualities (high points of experience and services), leaving the "**transit-segments**" of the long distance trail less used.

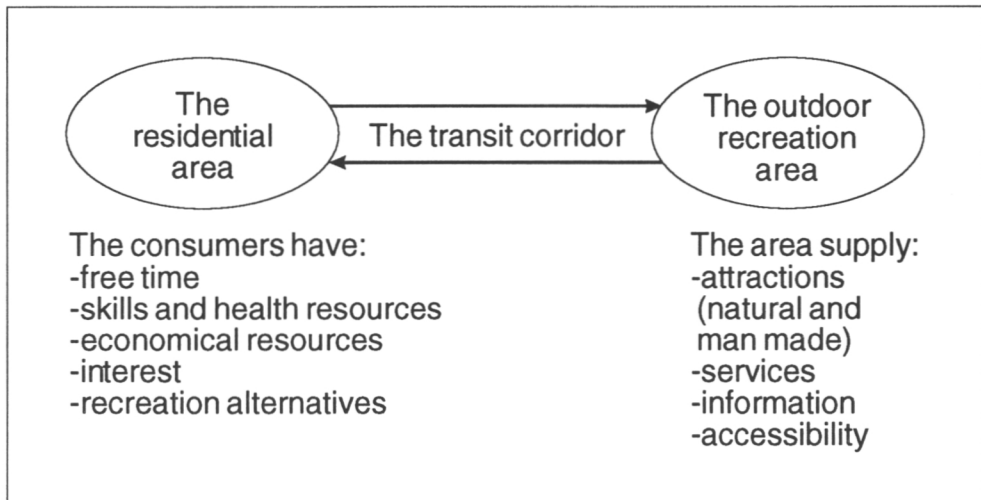
Linear long distance trails are most often connected to **side trails** which provide additional points of public access, **linkages** to other designated long distance trails, or **detour** trails giving possibilities to places worth seeing along the trail corridor (as view points, historical monuments or cultural events).

The use of the entire long distance trail and the different segments are, however, linked to the cumulative attractions along the trail, which are the combined attractions of nature and man-made cultural and social experiences along the trail. The use of long distance trails will also depend on the quality of services delivered at trailheads and along the trail, the information the users have about the trail and the internal and external accessibility. The internal accessibility refers then to the access and easiness to travel inside the trail system, the external accessibility to the easiness of getting to the trails from the users' residential areas.

## 7 External relationships: the recreation system

The volume of use of a trail or a trail system will not only depend on the qualities connected with the trail or trail system itself or the recreation area where the trail activity takes place. In addition the use of a trail is depending on many factors outside of the trail system and recreation area, which are linked together in a recreation system consisting of three main types of geographical areas (Teigland 1986). (Included in the system are also at least four social groups with common interests, which will not be commented here because of limited space).

The use of a trail is, for example, also depending on structures and processes in the areas where potential users have their permanent residence and work. The trail users need freedom from obligations on the workplace (free time or leisure time), economical and physical resources, recreation equipments and skills, access to transportation means if the trail is located outside of walking distance and access to family and friends with the same trail use interest if the users of trails want to have companions. The supply of alternative recreation possibilities in the residential areas will also influence the volume of use which a trail system will have.



*Figure 1.*

In addition, the use of a trail system will depend on factors linked to the transit corridors between the recreation and residence areas; the distance between the trail system and the residence areas, the intervening opportunities in the transit corridors and the services supplied there.

The use of a trail depends, therefore, on many factors linked together in a dynamic recreation system, where the trail is only one part. Changes in one or a few factors in the residential areas or along the travel corridor can affect the volume of trail use. An increase, for example, in the annual holiday from 4 to 5 week holiday with pay - as Denmark, Finland and Sweden introduced in the 1980s - can change the demand for some types of trails. Changes in national economy and transportation systems are among many other important factors taking place outside of the trail system. Such structural changes outside the recreation area can be more important for the volume and structure of trail use than changes in management and services.

**References:**

- Anderson, D.H., Thompson, J. L., Lime, D.W., Schleicher, T.D., Penney, C.A., and Woodrich, S. M. 1991. Long-distance trails in Minnesota: Planning and management concerns. University of Minnesota. St. Paul. 64p.
- Burch, W. R. jr. (ed) 1979. Long distance trails: The Appalachian Trail as a guide to future Research and Management Needs. Yale University School of Forestry and Environmental Studies. New Haven.
- Direktoratet for naturforvaltning. 1991. Norsk Stiplan, utkast. Trondheim.
- Lehman, D.: "Long distance trails". Unpublished paper. University of Minnesota. 1988.
- Lime, D., Anderson, D., Teigland, J., Sievänen, T., Jensen, F. and Thompson, J. L. An exploratory international investigation of long-distance trails: Ideas for consideration in Minnesota. University of Minnesota, St. Paul.
- Scanfact 1989 & 1990. Oslo.
- Sievänen, T. 1991. Suomalaisten ulkoiluharrastukset. Retkeilyreittitutkimuksen kyselylomakkeet. Metsäntutkimuslaitos, Metsien käytön osasto. [Long-Distance Trail Study in Finland]
- Teigland, J. 1986. Nordmenns Ferievaner 1970-1982. [The Norwegian Holiday Habits 1970-1982. Central Bureau of Statistics of Norway.] Rapport 86/4. Oslo.

# Comparative Recreation Research and Experiences of Long-Distance Trail Studies

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## Abstract

The paper presents some comments on benefits and difficulties of comparative recreation research. The issues common to cross-cultural research projects are discussed by a case study. An international investigation of long-distance trails is participated by three countries, Finland, Norway and Minnesota (U.S.A.). The data-based comparisons concern cross-country skiing.

## 1 Cross-cultural comparisons

### 1.1 Some general concerns of cross-cultural research

Comparative studies of long-distance trail users in three countries, Finland, Norway and Minnesota (USA) were focused on trail use patterns, and preferences for long-distance trail opportunities. The growing interest of trail based recreation opportunities in all participating countries was the reason to start a common research project. Also, an interest for nature tourism on international level has given a new perspective to compare recreation use patterns and trends in different countries.

Cross-cultural research is often justified by the recognition of growing internationalization. At our historical time, some cultural differences are diminishing and others are becoming more salient (Øyen 1990). This is the case also in the field of outdoor recreation. Many outdoor activities are international in nature, and fashions of new activities spread out rapidly. Good examples of this are snowmobiling and wind surfing.

When trying to build a cross-cultural research project there are many difficulties to face. First of all, differences between the social structure of societies and the forms of symbolic classification (terminology) can be critical to the comparison (Scheuch 1990). The wide agreement of the kinship of the basic features of western societies and common scientific language is a good basis to do comparative research. But there is a need to pay attention to differences between societies' institutional basis.

Concerning some study cases, one country may be a too big unit to be analyzed and compared. The variation within a country may be bigger than between countries (Scheuch 1990). In recreation research, comparing snowmobiling makes more sense if the study is done by regions where there are favorable natural conditions for the activity and where the activity is popular.

Data collecting has a key role when the study has an empirical approach. When survey methods are used, some basic difficulties arise. For example, the questions get their formulation and wording in the context of the particular country or culture, and most probably in different languages. This means that the meaning of the question (concepts) is essential, not the same format of the question in each country. Furthermore, often it is more fruitful to compare relationships and change over time within and across recreation systems (Teune 1990).

Outdoor recreation research has two major aspects to keep in mind. Natural conditions and the infrastructure of recreation resources are the principal determinants. They are, first of all, the land-use system (rights of land use, how housing and working areas are related to recreation resources, designated areas for outdoor recreation, transportation systems), the amount of natural resources for recreation (land area per capita, water resources, mountains), and the climate. Second, the interest of society to provide man-made resources for recreation vary. This includes all kinds of constructions and developments for recreation, e.g. facilities and services for outdoor recreation, alternative opportunities (indoor vs. outdoor facilities), close to home vs. away from home opportunities.

The overall cultural atmosphere, and institutions of leisure have a major influence on population level leisure behavior. The amount and distribution of leisure time, especially the policy of paid vacation are influential. What are the social processes of leisure, and who has the most important role in socialization into different leisure activities. What are the alternative ways of spending or consuming leisure time. What types of leisure activities are socially accepted. The role of outdoor recreation in personal identity may differ in different countries. Many this kind of factors must be consciously recognized when cross-cultural comparisons are made, and explanations for similarities and differences are looked for.

## 1.2 Benefits to management and planning

Planners of recreation resources at all levels need information of both demand and supply of recreation resources for decision making. The comparative information from other countries offer a basis to evaluate the amount and structure of resource supply, and some information about future trends of demand.

Management agencies of recreation resources can benefit of the policies that others have applied. Exchange of experiences applying different methods and techniques of visitor, resource and information management are valuable. In most cases, the best benefits of cross cultural comparison are gained on the level of public policy (Teune 1990).

Research is only one way to learn from other countries. Other possibilities are, for example, to exchange specialists, and show and see things done in practice. Exchange of documents, reports, plans, directives and programs is one possibility. But, research has many advantages compared to these methods of information exchange. Research collects a new body of facts, uses available documented material, and processes systematic comparisons of policies, management activities, and recreation behavior. An important part of the research is to write a detailed document which offer the information in a form that other specialists and researchers can use it, and which may have a long lasting influence.

Comparative studies serve information on several levels. First, some information can be adopted easily and directly in the other country. This type of information has very uniform nature between countries. For example, information of recreation equipment technology (skis, snowmobiles, bicycles, boats) is in many cases the same all over the world.

Second, some information may not be directly comparable and adoptable. Trends of recreation participation are of this kind information. This has more uncertain influential factors which are dependent on cultural and economic basis of the country and people. This second kind of information can be used with careful concerns about the country's own experience, when there is not better information available.

Third type of information from comparative studies may not be adopted at all. Situations and conditions differ too much. Still, learning to know about these differences may offer a new perspective to the problems in one's own country. Indirectly the comparison helps to see, understand and solve problems which are unique or different from other countries and nations. This kind of information is

related to e.g. legislation, traditions and history, which have a strong influence on recreation resources and people's behavior. Most often, these things are not easily changed even they turn out to cause serious problems to managers and agencies in recreation field.

### **1.3 Benefits to research**

The art of scientific research has a demand of uniformity. In this sense, research should be comparable in all countries. There is a strong need among scientists to compare their own work to others, and to evaluate critically the work done by the others.

The common need is to develop methods that produce accurate and new knowledge of the subject under study. A theory is a product of cumulative knowledge, and has the nature of scientific law or a tool of thinking. Both theories and methods are valuable components of scientific exchange, and the scientific work should produce methods and theories which could be comparable and adoptable in other countries.

## **2 Comparative studies of long-distance trails and trail use in Finland, Norway and Minnesota**

The International Investigation of Long-Distance Trails is a comparative research project studying walking, hiking, cross-country skiing and bicycling activities, trail use and trail users in Finland, Norway and Minnesota (U.S.A.). The aim is to determine use patterns and preferences for long-distance trail opportunities. The main comparisons are focused on cross-country skiers, because the study in Norway addressed only cross-country skiers. The data in three countries were gathered by different methods because of national interests and financing restrictions. Only skiers' data are discussed here.

In Finland, 1000 persons from the whole population (15 to 74 years old) was randomly sampled, and sent a mail back questionnaire. 673 (67 %) of them responded. 298 persons of these 673 recorded that they participated in cross-country skiing during the winter season 1990-1991. Questions about skiing behavior and opinions of recreation environment were introduced (Sievänen 1991).

In Norway, personal interviews were conducted concerning the same winter season 1990-1991 with a sample of 1029 person 16 years of age and older (Scanfact 1991). 504 person recorded that they had skied during the last skiing season. Also, questions about their skiing activities and opinions about their outings were asked (Teigland 1991).

In Minnesota, 1821 households were contacted by telephone, and 1560 of those households said they had hiked, bicycled and or cross-country skied during the last 12 months (1990). Eighty-three percent of them agreed to be a part of the mail-back survey. From the sample, 348 skiers were sent a questionnaire, and 256 responded. Persons in the sample were 18 years of age or older (Anderson et al. 1991).

The main points of interest were, first, to describe the user behavior, characteristics of participants and trail-use patterns. Secondly, many questions were focused on the management policies concerning long-distance trails.

In the following, some results of the studies are reported to illustrate the types of information collected and how the results help to discuss about planning and management of long-distance trail opportunities in the involved countries:

#### Activity levels:

A far greater percentage of the population cross-country skis in Norway and Finland than in Minnesota. The participation rates are 40 in Finland, 49 in Norway and 14 in Minnesota. A remarkable difference in activity levels appear also between Norway and Finland. The average number of days that skiers skied during the study year in Minnesota and Norway were 10 to 12 days, in Finland it was 19 days. Also the number of kilometers show a big difference. While in Minnesota only 8 % of skiers skied at least 100 km or more during the season. In Norway and Finland, 18 % and 49 % respectively, skied those distances. If these figures are interpreted to present future trends in Minnesota, where cross-country skiing has a short history compared to the long history in Scandinavia, many cautions should be taken. Many cultural factors and skiing conditions which are discussed later in this paper may influence the trends in participation.

#### Skiing close to home:

Another surprising difference in skiing patterns appear concerning the locations of skiing tracks or groomed trails. When 23 % and 18 % of Minnesotans and Norwegians, respectively, began all their skiing trips from a walking distance from home, 46 % of skiers did so in Finland.

Skiing style:

Skiers in all three countries voiced their preferences for the conventional/parallel skiing method. Differences in preferred skiing styles were more similar than different. In Finland 87 %, in Norway 82 % and in Minnesota 89 % of skiers prefer conventional skiing style.

In the comparative studies, many differences as well as similarities can be found. The next step is to look for explanations. There are two sources of reasons or explanations. The first group can be called "the supply". Four different groups of supply factors can be found: management of opportunities, management of visitors, information supply and planning processes. Only, it is very difficult to isolate and evaluate what kind of influence and how strong influence each factor has on trail use, participation in trails activities, and behavior patterns.

The other basis of comparative studies comes from the studies of demand. This refers to the information about how much people participate in recreation activities, what kind of places the demand is focused, what expectations of facilities and services people have, and how recreationists' attitudes may reflect the possible changes in future demand. The other group of explanations include such influential factors as cultural basis of leisure behavior, leisure socialization processes and institutional framework of leisure time.

### **3 Looking for explanations 1: recreation resource supply**

#### **3.1 Management of opportunities**

There are some basic differences in practices and attitudes of providing resources for recreation in Norway and Finland compared to Minnesota. In Scandinavia, there is a long history of an abundance of resources for recreation. This is due to the small numbers of people compared to the amount of land and suitable environment for recreation. The common right of access to all natural undeveloped areas has been the basis of recreation resource use. The state of recreation resource planning and management is a reflection of the anticipated problems. The problems have arisen when other uses of natural resources have become more intensive. The quality of recreation environment has become the main issue.

In North America, the legal and institutional basis for recreation has been different. There are not as large common land use rights for recreational purposes in Minnesota compared to Nordic countries. When most of the land provided for recreation has been based on land use separation, not on joint multiple use, the policy of recreation

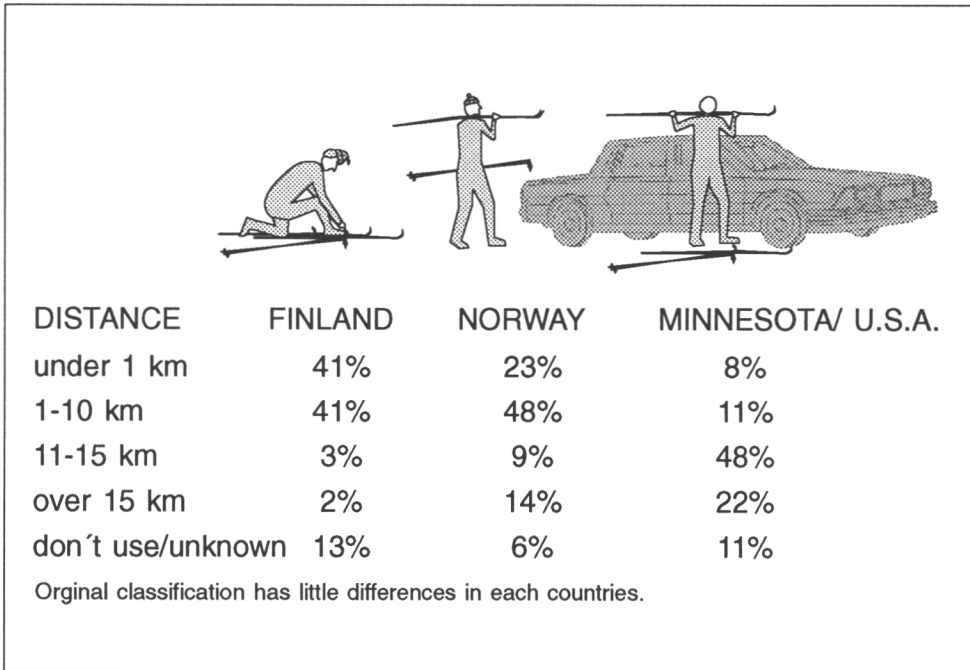


Figure 1. Distance to nearest groomed trail.

resource management has developed. According to the conscious policy it is important to provide opportunities for high quality recreation experiences on areas designated for recreation. The quality of recreation environment includes nature values, scenic values and cultural values as well as the infrastructure of facilities and services.

In United States, a lot of research has been done to define and describe what are the expected recreation experiences which should be in focus of resource management (f.ex. Driver and Brown 1983, Manfredo et a. 1983). What is the appropriate recreational use of a resource base, or what are the preliminary reasons to visit or to participate, what are the motives, and how a manager should respond to the hidden needs that people express when visiting a recreation area (f.ex. Schreyr et al. 1984,1985, Rossman and Ulehla 1977). Also, the studies that focus on the quality of physical environment, e.g. studies on carrying capacity, look for information that helps to provide quality experiences. (F.ex. Shelby ans Heberlein 1986, Lime and Stankey 1979, Schreyr and Roggenbuck 1978).

A comparative study looks for information which explains these kinds of supply factors. In the skiing trail study, the supply refers as well to the number of trails as to the quality of trails. There is a great difference on the supply of groomed skiing trails in Norway and Finland compared to Minnesota. In Figure 1, the average distance to groomed ski trails are shown in these countries. While, 82 % of skiers in Finland and 71 % in Norway have a groomed ski trail within 10 km distance from home, the corresponding percentage was only 19 % in Minnesota.

The high number of skiing days may be a reflection of a good accessibility of skiing trails in Finland. This does not indicate necessarily that if the supply of groomed skiing trails close to home is improved also the number of participating persons will increase. Improved accessibility may offer already active skiers better opportunities, and they ski more days and kilometers. Perhaps other means of policy should be looked for in order to get more people to participate in skiing in Nordic countries. In Minnesota, improved accessibility may have stronger influence on the number of participants.

In Norway and Finland, the illuminated skiing trails make a difference in skiing opportunities. Another concern is the quality of skiing tracks. In Scandinavia, the long tradition of skiing means that skiing trails are built as an independent facility having its own criteria for route lay out, steepness, turns and other technical details. In Minnesota, the skiing activities are lead to the same routes which in summer time are used for hiking. The hiking route and track are not suitable for skiing in many cases. The poor quality of skiing track may be a hindrance of intensive use in Minnesota.

Management issues are most different in each country. Only indirect comparisons are possible. In a Finnish bicycle trail study, the main management issue was 'more safe and improved trails', and in Minnesota the same type of need was expressed by demand to use old rail road beds for recreation trail purposes.

### **3.2 Management of visitors**

In United States, many visitor based management issues have been taken into the planning and management processes. The basic idea is to minimize conflicts between visitors and other people. The conflicting counterparts can be 1) other visitors, 2) managers and 3) landowners. Conflicts related to environment and nature itself are another issue, which is dealt with by visitor management programs ( f.ex. Christiansen and Clark 1983, Oliver et al. 1985, Roggenbuck and Barrier 1982, Clark et al 1972).

The issues of visitor conflicts are briefly described as problems of littering, visitors causing disturbances to wildlife, landscape or other visitors, visitors' acceptance and understanding of management actions. Same type of user conflicts were found in the comparative trail studies. In Minnesota, the most important trail use issue is to separate motor and non-motor users to separate trails. The Finnish skiers indicated that the presence of walkers and dogs on the same trail was the most serious problem.

In many recreation areas, the most contacts with managers and users concern guidance of recreationists' proper behavior toward other people and nature. Information about littering, wildlife and erosion are typical topics in the visitor management programs. Issues concerning visitors vs landowners or local inhabitants (Native Americans or Saami people) are common. There are long term experiences of all these management problems in United States. In a near future, more consideration to the visitor management should be paid in Norway and Finland.

### **3.3 Information management**

Visitor management programs are focused on what kind of information is needed and how to contact people. It is as important to produce proper information as it is to deliver the information to people. The comparative trail studies show that there is a great need of more information about trail use opportunities both in Finland and Minnesota. The difference between these two countries is that in Minnesota there is a long experience and a lot of research done on information management, while in Finland the whole issue has just recently been recognized in management programs.

The American studies ( f.ex. Bright and Manfreda 1989, Jones and McAvoy 1987, McAvoy and Hamborg 1984) show that it is necessary to use a variety of information means: pamphlets, signs and maps, visual aid (video, photos), face to face -interactive communication, they all are useful and effective methods. The choice of suitable method for each purpose makes the communication successful. When organizing information production and delivery, it is important to recognize the visitor perspective. This means that information should be provided as well for trip planning as for visit planning at site. The information should have a regional perspective rather than agency or site perspective.

Denmark has paid attention to the needs of visitor/user information (Jørgensen 1992, Lime et al. 1991). In Finland and Norway, a lot of effort to develop better information systems are still needed. The comparative studies may help to find effective types of information products and techniques.

### **3.4 Public involvement in planning processes**

Land use planning processes in different countries are dependent on the whole institutional system of resource and land use. The planning methods are also different. In Finland, land use planning is an effective tool to organize land use, and the basic decisions of recreation resources are made in the land-use plans. Recreation areas or other recreation resources are managed by municipality or state agencies (Kyöstiö and Sievänen 1992). The planning and management have been made without or with very little public involvement.

A law of State of Minnesota requires that, when it is a question of public lands or resources or of a project which has a strong public interest, the public should be heard or offered a way of being involved in the planning process. This has led to numerous studies of how the public involvement is to be done in practice (Burdge 1988, Dennis 1988, Dickhut and Gobster 1988, Gallagher 1988). The methods include public meetings and hearings, providing reports, making surveys, advisory groups and many other methods. Experience of public involvement methods in recreation resource planning could be exchanged between countries.

## **4 Looking for explanations 2: recreation demand**

### **4.1 Behavior patterns**

A typical type of comparative data describes participation rates, activity levels, uses of different kinds of resources and other information which build the picture of recreationists' behavior patterns. That is naturally an important starting point to understand what happens in each country. This was the case of the comparative trail study as well.

### **4.2 Socialization into recreation**

Cultural background (ethnic group, religion, traditions, etc.) and the basic socio-economic factors (age, income, education, family relations etc.) are analyzed when describing behavior patterns. Socialization into cross-country skiing was found to be remarkably different in Minnesota and in Norway and Finland. One probable explanation to why the activity level for cross-country skiing is clearly higher in Finland

and Norway than in Minnesota relates to the early age in which Nordic children are introduced to the activity. In the average, Minnesotans begin skiing in their mid-twenties, and Finns and Norwegians at the age of 4 or 5. Cross-country skiing in Minnesota is a relatively new activity. In Finland and Norway this activity has a long tradition. Parents play especially critical role in the process of learning to ski, as do the schools.

### **4.3 Leisure time and other influential social factors**

Many factors related to the amount of leisure time and personal resources available, affect the possibilities to participate in recreation activities. Many such institutional differences between countries are dominating compared to the influence of differences between individuals. In Norway and Finland, each employed person working fulltime and year around gets 4 to 5 weeks of paid vacation, compared to the rule of two weeks in Minnesota. Also, timing of vacations and how many periods of vacations (vacation patterns) make a difference. An example of this is the Scandinavian winter (skiing) breaks at schools which frame also vacation patterns of many working parents.

Personal resources and especially the alternative ways of using free time affect the participation in outdoor recreation. An access to one or more types of recreation resources such as a second home or a summer cottage or having a possibility to use a boat or a snowmobile are critical to the participation in many outdoor activities. For example in Finland and Norway, almost half of the population have some sort of free of charge access to a summer cottage, but much less have it in Minnesota. On the other hand, people in Minnesota are used to have a lot of different kinds of hiking or camping equipment in order to visit recreational areas. Access to a private car is necessary to use recreational areas in Minnesota, but in Norway and Finland car is less important.

Competitive leisure activities play also some role in comparing the recreation participation and patterns. Leisure orientation in mass communication or shopping are typical in United States. Norwegians have the image of outdoor oriented people, which can be seen in the time-use budgets (Arndt et al. 1980). Also, many other leisure activities, especially the types of sports and exercise explain the differences in outdoor recreation. Many choices in United States and interest in getting a taste of everything makes the picture of recreation participation different compared to the Nordic people who perhaps are willing to keep more into their traditional activities.

#### **4.4 Future trends and dynamics in participation patterns**

When participation and behavior patterns in one country are seen to be ahead of the others, possible future trends can be predicted or guessed by analyzing 'activity careers'. By activity career is meant the process how a new activity is introduced, and how the participation rate develops and how the types of participants change overtime. The participation rate of snowmobiling in Minnesota is now about 20 per cent, and in Norway and Finland less than 10 per cent.

In Nordic countries, snowmobiling is a new activity, and the participation rate has been increasing dramatically. If the predictions of participation rates were done only on the basis of trends during the last few years, snowmobiling could be a major outdoor activity in near future. But, the experience from Minnesota show that even though snowmobiling is a very important winter recreation activity, the participation rate on national level is not necessarily growing above 20 percent. Here, regional differences may be considerable, and comparisons should perhaps be done rather on regional levels.

### **5 Conclusions**

This paper emphasizes the benefits of comparative international research. In the field of recreation research, there have been fairly few international research projects. Experience of this study has been promising.

When looking for differences and similarities, it became obvious that similarities in large-scale factors (society level) are dominating. Social welfare including recreation opportunities is satisfactory in all participating countries. Even the numbers of population are close: 4 million in Norway and Minnesota and 5 million in Finland. Minnesota has a strong ethnic basis of Scandinavian heritage among population, but Minnesota has more heterogenous cultural values compared to culturally homogenous Norway and Finland.

Natural conditions are typical to northern areas, which means similarities in climate and landscape. Norway is dominated by mountainous and coastal landscape, while Minnesota and Finland are flat and forested. Typical to all participating countries are the big differences between southern and northern regions inside country (Teigland 1991, Anderson et al. 1991). Altogether, Norway, Finland, and Minnesota have a good basis for comparative research.

This cooperative project has been the first case study including trail use comparisons. Also, common research design applied in this study has not been largely used. Many problems of cooperative international research were faced. The three participants were not able to follow the original plan for common data gathering in all details. The national interests and restrictions were dominating in data gathering, and many compromises and adaptations of questions were done in order to gather empirical data for comparisons. Data analyzing is not a problem. Same computer technology and statistical programs are available in all three countries.

Management problems are similar in all three countries. Planning processes are changing to be more public oriented. Information is a key factor also in recreation services. But, empirical comparisons of management issues are not always possible, because the institutional systems differ.

United States has a long experience of solving problems of recreation resource management and visitor satisfaction. Many management methods and policy tools that have been developed in United States can be applied to Norway and Finland in principle. They are, the most important to be mentioned, Recreation Opportunity Spectrum (ROS), Visual Assessment System (VAS), Limits of Acceptable Change (LAC) and Visitors Impact Management (VIM).

The information about use patterns, attitudes and preferences are not well adoptable. Basically, information of recreation demand which is needed to evaluate the level and direction of policy actions is always country dependent. Even adoption of methods must be justified to the national conditions and phenomena.

When comparisons are made concerning participation rates, activity careers and participant profiles the differences are interesting. Trends in participation rates give some hints of future trends in the countries where the activity has a shorter history, such as cross-country skiing in Minnesota, and snowmobiling in Finland and Norway. Many activities have same kind of career and trends in general. Participant profiles help to analyze visitor segmentation now and in future when compared in the other countries.

The more detailed comparisons concerning the long-distance trail studies are planned to be reported later when all participants of the project have prepared their final reports on national basis. The discussion of this paper concerning the general principles of cross-cultural comparisons was needed to clarify the many difficulties and expected benefits of the cooperation. The benefits of comparative research are satisfactory, if the results are interpreted to practical level of recreation resource management and

planning. This paper hopefully helps to establish a good ground for further comparisons.

## References

- Anderson, D.H., LaVarre Thompson, J., Lime, D.W., Schleicher, T.D., Penney, C.A., and Woodrich, S.M. 1991. Long-distance trails in Minnesota: Planning and management concerns. A Final report to Minnesota Department of Natural Resources, Trail and Waterways Unit and The Legislative Commission on Minnesota Resources. 60 p.
- Arndt, J., Grømmo, S. & Haves, D.K. 1980. Allocation of Time to Leisure Activities. Norwegian and American Patterns. *Journal of Cross-Cultural Psychology*. Vol. 11. No 4: 498-511.
- Bright, A. and Manfredo M. 1989. A Model for evaluating the effects of a recreation information campaign and an evaluation of BWCAW 1988 wilderness communication efforts. Final report. Fort Collins, CO: Department of Recreation Resources and Landscape Architecture, College of Forestry and Natural Resources, Colorado State University. 62 pp.
- Burdge, R.J. 1988. The utility of the social impact assessment model in planning for natural resource development. In: *Proceedings Vining, J. (ed.). The Second Symposium on Social Science in Resource Management. 6-9.6.1988. University of Illinois at Urbana-Champaign.*
- Christensen, H.H. and Clark, R.N. 1983. Increasing the public involvement to reduce depreciative behavior in recreation settings. *Leisure Sciences* 5(4):359-379.
- Clark, R.N., Hendee, J.C. and Campell, F.L. 1972. The experimental control of littering. *Journal of Environmental Education* 4(2):22-28.
- Dennis, S. 1988. Incorporating public opinion surveys in National Forest Land and Resources Planning. In: *Proceedings Vining, J. (ed.). The Second Symposium on Social Science in Resource Management. 6-9.6.1988. University of Illinois at Urbana-Champaign.*
- Dickhut, K.E. and Gobster, P.H. 1988. Factors influencing landowner acceptance of open space preservation methods. In: *Proceedings Vining, J. (ed.). The Second Symposium on Social Science in Resource Management. 6-9.6.1988. University of Illinois at Urbana-Champaign.*
- Gallagher, T.J. 1988. Participation of Native people of Alaska in agency planning of public lands: An initial analysis. In: *Proceedings Vining, J. (ed.). The Second Symposium on Social Science in Resource Management. 6-9.6.1988. University of Illinois at Urbana-Champaign.*
- Jones, P.E. and McAvoy, L.H. 1987. An evaluation of a wilderness users education program: A cognitive and behavioral analysis. In *Proceedings of the Research Symposium: 1987 National Interpreters Workshop*, eds. L. Brochu and M. Legg, 56-63. St. Louis, MO.: The Association of Interpretive Naturalists and Western Interpreters Association. 109 pp.
- Jørgensen, Ian. 1992. Cykelruter i Danmark - behøver vi forske i det? In: *Proceedings of Nordic Outdoor Recreation - International Comparative Studies*. Siuntio, Finland, 9.-10.1992.

- Kyöstiö, K. and Sievänen, T. 1992. Management of Long-Distance Trails on Private Lands in Finland. In Proceedings Nordic Outdoor Recreation - International Comparative Studies. Siuntio, Finland, 9-10.1992.5p.
- Lime, D.W., Anderson, D.H., Teigland, J., Sievanen, T., Jensen, F., and LaVarre Thompson, J. 1991. An Exploratory International Investigation of Long-Distance Trails: Ideas for Consideration in Minnesota. Final Report to: Minnesota Department of Natural Resources, Trails and Waterways Unit and The Legislative Commission on Minnesota Resources. University of Minnesota. 38p.
- Lime, D.W. and Stankey, G.H. 1979. Carrying capacity: Maintaining Outdoor Recreation Quality. In Carlton Van Doren, et al. (ed.) Land & Leisure. Chicago: Maaroufa Press, Inc.
- Manfredo, M., Driver, B.L. and Brown, P. 1983. A test of concepts inherent in experience based setting management for outdoor recreation. *Journal of Leisure Research*. Vol 15:263-283.
- McAvoy, L.H. and Hamborg R. 1984. Wilderness visitor knowledge of regulations: A comparison of visitor contact methods. *Journal of Interpretation* 9(1): 1-10.
- Oliver, S.S., Roggenbuck, J.W. and Watson, A.E. 1985. Education to reduce impacts in forest campgrounds. *Journal of Forestry* 83(4):234-236.
- Roggenbuck, J.W. and Berrier, D.L. 1982. A comparison of effectiveness of two communication strategies in dispersing wilderness campers. *Journal of Leisure Research* 14 (1):77-89.
- Scanfact 1991. Omnibus April (2). Oslo.
- Scheuch, E.K. 1990. The Development of comparative Research: Towards Causal Explanations. In Øyen, E. (ed.) Comparative Methodology. Theory and Practice in International Social Research. Saga Studies in International Sociology:40. Sage, London, 1990. 227 p., 19-37.
- Schreyr, R., Lime, D.W. and Williams, D.R. 1984. Characterizing the influence of past experience on recreation behavior. *Journal of Leisure Research* 16:35-50.
- Schreyr, R., Knopf, R.C. and Williams, D.R. 1985. Reconceptualizing the motive/environment link in recreation choice behavior. In G. Stankey, S. McCool (Compilers), Proceedings-Symposium on recreation choice behavior: Missoula, Montana, March 22-23. 1984 (UDSA Forest Service General Technical Report INT-184, pp.9-18). Ogden, UT: Intermountain Research Station.
- Shelby, B. and Heberlein, T.A. 1986. Carrying capacity in recreation settings. Corvallis: Oregon University Press.
- Sievänen, T. 1991. Suomalaisten ulkoiluharrastukset. Retkeilyreittitutkimuksen kyselylomakkeet. Metsäntutkimuslaitos, Metsien käytön osasto. [The Long-Distance Trail Study in Finland. Finnish Forest Research Institute].
- Teune, H. 1990. Comparing Countries: Lessons Learned. In Øyen, E. (ed.). Comparative Methodology. Theory and Practice in International Social Research. Saga Studies in International Sociology:40. Sage, London, 1990. 227 p., 38-62.
- Teigland, J. 1991. Nordmenns vinterrekreasjon -struktur, utvikling og framtidsutsikter for friluftsliv, idrett og mosjon vinterstid. Norks Institutt for Naturforskning, Oppdragsmelding 096. 76 p.
- Øyen, E. 1990. The Imperfection of Comparisons. In Øyen, E. (ed.). Comparative Methodology. Theory and Practice in International Social Research. Saga Studies in International Sociology:40. Sage, London, 1990. 227 p., 1-18.

## Ideas and Experiences from Scandinavia Concerning Long-Distance Trails: Potential Application to Minnesota

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### Introduction

Travelling along trails is an ancient means of transportation. Today, trails still are used for transport of people and goods, but they often serve as important recreation resources and major tourist destinations in many countries of the world. Walking, hiking, cross-country skiing, snowmobiling, bicycling, horseback riding, and other activities are becoming more and more popular as the appropriate modes of travel on these trails. Long-distance trails, trails that provide the opportunity for long day-use outing or multiple-day excursions, have a special appeal that distinguishes them from shorter, more confined trail systems.

In the United States, the National Trail System Act of 1968 (P.L. 90-543) set forth the goal of establishing a nationwide network of scenic, recreational, and historic trails. The 2,000-mile long Appalachian Trail, created much earlier and secured by the Act, serves as a model. In many other countries one or more long-distance trails are well known and attract hikers, skiers, and other who wish to have special experiences that brings them into more intimate contact with the natural and cultural settings of a country or region.

In **Minnesota** the appeal of long-distance trails has born fruit with development underlay on the Superior Hiking Trail along the North Shore of Lake Superior as well as the expanding "rails-to-trails" program to convert abandoned railroad rights-of-way to trails. In excess of 25 designated long-distance trails for warm- and cold weather trail opportunities have been developed on abandoned railroads. The commercial tourism sector in Minnesota also has sensed the enthusiasm for long-distance trail opportunities and has responded, for example, with development of the yurt-to-yurt cross-country skiing and snowmobiling outings on northern Minnesota's Gunflint Trail as well as lodge-to-lodge skiing opportunities also on the Gunflint Trail.

Minnesota trail planners and managers at the local, state and federal level have grappled for years with a variety of questions about long-distance trail opportunities.

In doing so, they have made much progress in developing a diversity of single- and multiple-purpose trail opportunities throughout the state. In spite of Minnesota's progress in trail planning and development, it seems valuable to learn how other countries have dealt with trail issues and how their experiences might be extended to the Minnesota situation. Expertise for this project was sought both from the published literature and from personal exchange and dialogue with practitioners and researchers in the U.S. and abroad.

As part of larger study of long-distance trail in Minnesota (Anderson, et al. 1991), it was recognized that many of the ideas and experiences associated with long-distance trails in Europe (particularly in Scandinavia) might have important application to planning and management in the United States and especially to Minnesota. It was envisioned that the result of this discussion could lead to a broadening of cooperation and collaboration among the authors as well as with practitioners both in Minnesota and Northern Europe. It also was recognized that the ideas and suggestions offered in this report are not necessarily new or previously unknown concepts to Minnesota planners, resource managers, and other policymakers. On the contrary, many of the suggestions and ideas presented have been discussed in Minnesota and elsewhere in the United States - some indeed have been implemented. Such dialogue and exchange, however, helps reinforce the validity of good ideas, encourages avenues for further collaboration and discussion on this subject, and ultimately can speed up the application and implementation of fruitful strategies.

### **Different traditions concerning long-distance trails**

Models of long-distance trail development for recreation in the United States had differed in many ways from models in Europe and elsewhere. In the United States, for example, trail development activities and strategies by public land management agencies originally were confined to individual areas. Efforts traditionally were almost nonexistent to link existing areas and promote linear systems that utilized a diversity of ownership patterns. Usually, trail "systems" were confined to the park or forest unit, and recreational system development stopped at the boundary! Viewing recreational planning and management in a regional context was virtually nonexistent.

In Western and Northern Europe, however, the model of long-distance trail development was grounded on a linear-linkages concept and thrived upon a regional systems of connected trail segments passing through public and private lands. This process was complemented by a right of common access tradition where the public could

move about freely (except on croplands and close to private residences) in pursuit of their leisure interests. Some restrictions exist on the use of motorized vehicles, however, such as the use of snowmobiles in **Norway** for other than work related activities by farmers. Such policies, although they vary somewhat among countries, generally entitle everyone the free right to wonder about the countryside without seeking formal permission of public and private landowners.

This long tradition of "common landscapes" coupled with trails development by a variety of public, private, and volunteer groups frequently has resulted in a rich mosaic of trail opportunities and options that offers the user both short and long-distance possibilities (in terms of straight-line-distance from starting and ending points as well as long circular routes). It is generally recognized that the majority of use on these long-distance trails is for day-use outings. But, they also function as important pathways for outings of several days duration or longer. A variety of overnight accommodations serve this segment of the long-distance trail public and are offered both by land management agencies, the commercial tourism sector, and voluntary organizations.

Corridors that link existing parks, forests, communities, and other attractions are viewed by most Northern European planners and policymakers as having important recreation "value" and are critical components of the recreational/natural/cultural resource in their own right—corridors are not just a means to connect nearby attractions. In **Denmark**, for example, lightly-used roads and landscapes are selected specifically to link existing bicycling and hiking trails which offer the traveller maximum opportunity to experience diversity of both cultural and natural settings. Corridors represent an essential part of a system. Danish planners suggest that ideally it is not the exact location of where the trail starts and ends that is critical, it is the trip itself that really matters.

Only since the late-1960's and 1970's have American planners and policymakers sought to seriously break away from traditional boundaries of public lands to include a variety of public and private ownership patterns in their long-distance trail strategies. Terms such as "linear parklands", "corridor parks", "greenways", and "greenbelts" have increasingly been articulated and offered as plausible and appropriate direction for local, regional, and state trail programs (Grove 1990, Little 1975, Little 1989).

## Providing a diversity of long-distance trail opportunities

For the purpose of this discussion, long-distance trails in Minnesota include pathways that connect town to towns, neighbourhoods to neighbourhoods, and recreational facilities to neighbourhoods. In addition, a long-distance trail is characterized by multiple access points and at least some of the trail is separate from roadways that allow heavy concentrations of motorized street vehicles (e.g., cars, trucks, and motorcycles). Many long-distance trails in Minnesota are, or will be developed on former railroad beds. These "rail-trails" are usually converted into multiple-use trails for activities such as horseback riding, hiking, and bicycling in warm weather and cross-country skiing and snowmobiling in winter.

Long-distance trails need not be trails in which two access points are at least 30-50 miles apart (straight-line distance, for example). Rather, a long-distance trail system allows the user an opportunity to traverse a contiguous trail network of at least 30-50 miles. This range of possible mileage to "qualify" for long-distance trail status is arbitrary and our own. In Northern Europe, limits for long-distance trails are seldom defined. In **Finland**, however, 22 popular and well known long-distance trails have been identified that range from almost 30 miles to nearly 250 miles in length. In **England**, the National Parks Commission suggest that long-distance routes should in general have a minimum length of 70 miles and pass through areas of outstanding scenery (Tanner 1977).

Planners and policymakers in Minnesota and abroad seem to understand and support the notion of providing the trail-using public with a diversity or system of trail opportunities. The various writings and actions reinforce the importance to analyze existing and potential trail settings and connecting corridors in a regional context as well as to define appropriate and desired environmental, social, and managerial conditions to achieve objectives. A planning framework for this approach is the Recreation Opportunity Spectrum (Clark and Stankey 1979). This planning tool and way of thinking has been used to articulate direction for a diversity of resource settings and recreation activities.

The newly proposed **Norwegian** National Trail Plan, which so far covers only the mountain areas, serves as an example of planning for diversity and makes a distinction between three types of trail environments or zones (Directorate for Nature Management 1990). The plan calls for protection of the scenic, natural, and cultural attractions throughout the country's trail system to ensure a diversity of desired conditions. One type of proposed trail zone includes only undeveloped natural and near-natural areas

somewhat akin to the American wilderness preservation system. These areas would be without formal recreation facilities or improvements (e.g., signs, bridges, organized campsites) to aid the user. The two other types of proposed trail zones make a distinction between areas with small or medium recreation development to accommodate visitors (a few self-service huts or several self-service and full-service huts) and areas without any accommodations but having important natural qualities and where some changes to the landscape or man-made intrusions are acceptable (e.g., a small powerline).

The idea for this Norwegian trail zoning strategy is to establish nationally recognized and protected areas in addition to national parks that have clear guidelines for their resource and recreation management. A major philosophy in establish such areas is that there should be minimum impacts on the natural environment but a spectrum of overnight accommodations is necessary to serve visitors.

In **Denmark** the Ministry of Transportation recently (Directorate of Roads) issued an extensive report exploring a national strategy to further develop a network of bicycle routes for holiday excursions as well as general transportation for shopping, travel to work, and other needs. Attraction and criteria for the designation of these long-distance routes (ten are proposed) include the identification of nineteen zones having distinctive natural, cultural, and recreational attributes. Connecting these zones is a high priority and will provide a national network of opportunities to satisfy a spectrum of cyclists' desires.

### **Linking existing trail segments**

A variety of innovative methods and techniques have been used to link existing and planned trail segment in rural and urban settings into a system of long-distance trail opportunities. Most succesful attempts have included cooperation and collaboration among public agencies and private landowners. Volunteer groups have been actively involved in these activities, as well.

In **Denmark**, for example, efforts currently are underway to develop an integrated network of bicycle routes that connect attractions throughout the country (Directorate of Roads 1991). Creating this system begins at the country level (of which there are fourteen in Denmark) where regional plans are developed. Great effort is being made to coordinate the planned network so trails converge at country borders. These activities are encouraged by local and regional cycling groups as well as the Danish Tourist Board and Danish Cyclist Federation that promotes opportunities for cycling

at the national level. In several cases, the National Forest and Nature Agency (the equivalent to the Forest Service in the United States) has worked together with local authorities and counties to plan and establish portions of the system. Almost universally communities see important economic advantage of acquiring tourist revenue from new and increased bicycle traffic through or near their area.

In the Danish example and elsewhere in Europe, it is noteworthy that land acquisition is not paramount in the development and linking of trail resources. While strong efforts are made to confine trails to trail-use-only pathways, this is not always practical or possible. Long-distance trails are marked routes leading through communities and the countryside which include separate and independent pathways as well as secondary roads and lanes on more heavily-travelled roads and highways.

The point is that as far as possible, the resource base for a national network of cycle-routes in Denmark will be existing or planned trails with linkages formed from other existing linear pathways that may or may not be used for motorized vehicle traffic. Additionally, where it is necessary to use these existing multipurpose pathways, every effort will be made to select routes that offer users minimum interference with motorized vehicle traffic and an opportunity to traverse attractive areas with natural and cultural diversity.

An important ingredient of a long-distance trail network and system is information - not only for trip planning but also for onsite directions and interpretation. It is well known that many trail enthusiasts are unaware of the rich trail resources available to them and that most need at least some assistance to find them. Denmark, for example, has been especially creative in which they have developed a variety of hiking and biking folders for numerous trails throughout the country that typically describe the natural, historical, and cultural settings through which the trails lead. Maps specify the locations of access points as well as trailside and nearby overnight accommodations. Also, a variety of studies in the United States and Scandinavian confirm the importance of discrete and attractive signs and trails markings to attract hikers, cyclists, and others to long-distance trails.

Throughout Europe, and increasingly in the United States, trails and trail networks are linked using public transportation systems rather than physically connecting trail segments. Frequently trailheads or trail access points are located close to railways stations or bus stops. In England, for example, the Countryside Commission has collaborated with the public transit authorities to offer special bus routes on weekends and holidays for city dwellers to gain access to suburban and rural long-distance trails.

These popular opportunities are publicized with colorful brochures that include maps, bus stops, and details about attractions for each route.

In **Norway** the Norwegian Hiking Associate frequently helps organize special outings on weekends and holiday for a hikers and cross-country skiers to access the countryside using public bus transportation. Buses take groups to any number of locations that offer opportunities for long-distance trips back to their communities or other places where participants can be picked up on a scheduled bus route or return to their vehicle. Bus transportation is scheduled to meet the unique needs of the participants and can vary from outings of several hours to a week or more. The service is based on a market driven system and is offered as a profit as well as service by the bus companies.

In south-central **Sweden**, separate bicycling and hiking trail around Lake Siljan offer excellent long-distance trail opportunities in excess of 200 miles each. While overnight trips are possible (with stays in youth hostels, hotels, restored cottages, and Adirondack-style three-sided shelters) more popular outings are single-day excursions in which travellers use a "boat taxi" to access various segments of the trail system. A stay of several days in the area permits many trail enthusiasts to use entire trail network.

### **Overnight accommodations on long-distance trails**

Throughout Europe, and increasingly in the United States, various accommodation systems are used to provided services for long-distance trail users on trips of the one or more days duration. Such systems are found in backcountry settings as well as in and near populated areas. They are developed and maintained by both private and public sector providers. Frequently, hiking, cycling, and skiing associations or voluntary groups assist in these activities.

These overnight accommodation systems include both public and private campgrounds, self- and full-service huts or cabins, shelters, youth hostels, inns, bed-and-breakfast, farmhouses, and converted derelict farm buildings and other rural buildings. Provision of such accommodations requires cooperation and collaboration among all public and private sector interest - not only in developing them but in maintenance, law enforcement, and marketing the availability of the services.

In **Norway** the federal government, in collaboration with the Norwegian Hiking Association, local associations, and the commercial sector, have developed a unique

system of overnight accommodations for hikers and skiers not found in other countries. Facilities are generally found in mountain settings and away from roads and communities. Nearly all are at least a one-hour walking distance from a road or parking area. And, these facilities are located approximately one-days travelling distance apart.

Some aspects of this system may have application to Minnesota long-distance trail development. Three types of overnight facilities are found throughout Norway: (1) Full-service facilities where visitors can purchase food in addition to a bed and bedding. Hot showers, housekeeping services, and other amenities also are available. These "backcountry hotels" may accommodate in excess of 100 persons and maintain a full-service staff. Accommodations are reserved in advance. (2) self-service huts with food available where visitors can have access to a fully-equipped locked structure on a first-come-first-served basis where they can prepare their own food or purchase food from stocked shelves. Kitchen equipment, stove, furniture, bedding, and several sleeping rooms generally are provided. Visitors pay a nominal daily fee in addition to individual purchases of food and firewood (deposited in a safe), and they are required to clean up after themselves upon leaving. (3) Self-service huts without food available where visitors have access to the same type of facility and services as Number 2, but food is not available for purchase. Most of these huts are not locked and are open to use by anyone. A daily fee is requested from all overnight users.

In **Finland** a similar system of locked and unlocked self-service huts is available to the public for long-distance hiking and cross-country skiing outings. These huts are built and operated by both county authorities of the National Board of Forestry and hiking/skiing associations. Some of the huts are former farm houses. Keys are available from the associations or at local county offices for a nominal charge. Huts are often used in conjunction with organized and guided trips of many individuals but also are used by small groups of friends and families.

Throughout Europe, other forms of commercial overnight accommodation for long-distance travellers include youth hostels, hotels, inns, bed-and-breakfast, estates, castles, and farmhouses. In **Denmark, England, Germany, and France**, for example, more and more farmers are offering overnight accommodations. Often a "farm holiday" is promoted where travellers can spend part of their long-distance trip on a working farm and participate in at least some of the activities and chores. In **Finland**, similar accommodations are offered at some farms. The farm family offers overnight facilities and meals in their own home or in a building on the property.

Adirondack-types shelters, three-sided roofed structures with an open that may or may not be screened, are increasingly being employed in Europe and elsewhere for overnight accommodation on long-distance trails. These facilities are used extensively in the United States such as on the Appalachian Trails and Isle Royale National Park. They are relatively inexpensive to construct and maintain, and they are under less threat of vandalism if left unattended than are many other forms of accommodation. In **Sweden**, for example, a long-distance trail was recently developed that combined these three-sided shelters with self-service accommodations described above. Public agency developers and local tourism industry also are combining forces to make trail experiences more attractive by organizing trailside events such as craft demonstrations, cultural events, and exhibitions and activities to teach fishing and hunting techniques.

## Conclusion

Throughout this paper it has been emphasized that without partnerships public, private, and voluntary organizations, the amount and rich diversity of long-distance trail opportunities in Europe and elsewhere would not be a reality. Opportunities to expand such cooperation seems possible and should be encouraged in Minnesota and throughout the United States.

Partnership relationships are changing in the United States and elsewhere. In Norway, for example, the responsibility to establish and manage long-distance trail systems has been left largely to the Norwegian Hiking Association. In recent years, however, some financial assistance has been provided to aid new trail development, especially activities to link existing trail segments. Part of this revenue is generated directly from a national lottery system. This support from the national government is used by the association to supplement income generated from user fees for overnight accommodations, membership dues, private donations, and foundations established by various group and individual interests supporting trail use activities. Some management of trail segments in the systems has been decentralized with responsibility given to a variety of local organizations and groups. Not only do these responsibilities rest local and regional hiking and skiing groups, they also include backcountry rescue teams such as the Red Cross, resort and tourism operations and promoters, community departments of recreation, and sport training groups. These activities are supplemented with traditionally very active voluntary programs including both groups and individuals.

Although in most countries the majority of trail prefer to plan their own outings, there are many opportunities to participate in guided tours and group excursion. In Finland, for example, the Association of Outdoor Recreation (Suomen Latu) organizes guided long-distance trail trips on both a national and local level. Most trips are day-outings, but many participants experience several trail segments on successive days. On the national level the association has their own Tourist Center which is located near Urho Kekkonen National Park. They specialize in cross-country ski outings but also offer programs for hiking as well as for mountain bicycling and traditional bicycling. There also are guided excursions offered by hotels and other accommodations, especially in the North, that take advantage of long-distance trails on state lands.

## Literature

- Anderson, D.H., J. LaVarre Thompson, D. W. Lime, T. D. Schleicher, C. A. Penney, and S. M. Woodrich. 1991. Long-distance trails in Minnesota: planning and management concerns. Final Report to the Legislative Commission on Minnesota Resources. University of Minnesota, St. Paul MN.
- Clark, R.N., and G.H. Stankey. 1979. The recreation opportunity spectrum: a framework for planning, management, and research. USDA Forest Service Research Paper PNW-98. Portland, OR.
- Directorate for Nature Management. 1990 Report of an Ad hoc Project Group: Recommendations for the goals and direction for the Norwegian trail and ski trail plan. Draft prepared for public hearings.
- Directorate of Roads. 1991. Proposal for national cycleroutes. Danish Ministry of Transport. Copenhagen.
- Grove, Noel. 1990. Greenways-paths to the future. *National Geographic*. 177(6): 77-99.
- Little, Charles E. 1975. Greenline parks: an approach to preserving recreational landscapes in urban areas. Report to the Environmental Policy Division, Congressional Research Service, Library of Congress, Washington, D.C.
- Little, Charles E. 1989. Making greenways happen. *American Forests*. 95/(1,2):37-40.
- Tanner, Michael F. 1977. The potential of towpaths as waterside footpaths. Research Report 1. Water Space Amenity Commission. London.

## **Developing a Recreation Resource Inventory Model (RRIM) for Forest Planning and Management**

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### **Abstract**

A data based Recreation Resource Inventory Model (RRIM) is introduced. RRIM is conceptually based on the Recreation Opportunity Spectrum and refined with an aesthetic assessment model. RRIM is designed to work with natural resource inventories in a way which identifies the uniqueness and attractiveness of forested settings. Interval type measures of attractiveness derived by RRIM allow classification of settings and inventory of regional recreation potential. Distributions of setting conditions can be used to develop goals for the improvement of recreation opportunities and/or the identification of impacts caused by other management activities. Used with computerized forest management and planning programs, RRIM can identify cumulative regional and temporal impacts caused by various forest production scenarios. The model and application presented here are conceptual while validation efforts are currently in progress.

### **Introduction**

The recreational appeal of Minnesota is largely derived from forested landscapes, partitioned by numerous lakes and streams. Outdoor recreation is an important contributor to the quality of life in Minnesota and an important component of the state's economy. The Minnesota Department of Natural Resources estimated expenditures related to outdoor recreation at approximately 1.8 billion dollars in 1985 (MNDNR 1990).

Recent proposals to increase the level of forest production in northern Minnesota were perceived as potentially detrimental to the recreational quality of specific areas, regions and the state as a whole by some people. This issue brought forward the need for tools with the ability to inventory and monitor the recreational conditions of regional or statewide forested landscapes.

Forest management specialists at the University of Minnesota have developed a computer model (DTRAN/DUALPLAN) designed to help analyze forest management planning in terms of a forests' ability to supply multiple product flows to different market locations over time (Hoganson and Kapple 1991, McDill 1992, Kapple and Hoganson 1991). This tool is capable of assessing the demands of a large

region while maintaining a detailed understanding of the changes occurring on individual inventory plots. To address the issues at hand, recreation and landscape architecture professionals were challenged to design a model which worked in concert with DTRAN/DUALPLAN, to assess potential impacts to Minnesota's distribution of forested recreational settings likely to occur as a result of attaining various forest product production objectives.

This paper describes the results of that effort, the Recreation Resource Inventory Model (RRIM) developed by Anderson et al. (1992). RRIM combines the Recreation Opportunity Spectrum, a systems approach to designation and inventory of recreation settings, with an aesthetic assessment model which utilizes commonly available biological and landform inventory data. With the use of United States Forest Service (USFS) Forest Inventory and Assessment (FIA) data, the model was applied to the state of Minnesota and that application is used here to illustrate RRIM's potential.

RRIM has the capability to inventory the forested recreation and aesthetic setting conditions at a local or regional level. RRIM provides conceptual and analytic frameworks which can apply to areas of various sizes and are primarily limited by the quality of resource inventory data being used. Resource inventory data concerns include sample design and specificity of on-site measurement. Sample design determines the model's degree of spatial generality. In the application used in this paper, the inventory sample allowed regional comparison but not local. On the other hand, inventories used on individual forest units, may not be informative beyond their boundaries. These trade-offs must be assessed when using RRIM and the degree of generalization provided by data must be clearly understood. The level of on-site detail in an inventory is determined by the objectives for the inventory and the resources available for its implementation.

RRIM currently requires a relatively detailed inventory set but validation efforts currently in progress may be successful in narrowing the amount of necessary data.

### **Recreation Opportunity**

The Recreation Opportunity Spectrum (ROS) is a management framework designed to respond to the diversity of experiences desired by recreationists and is used by several federal and state land management agencies. This framework is based on the results of numerous studies which have validated its conceptual foundations (Bultena and Klessig 1969, Lloyd and Fischer 1972, Brown et al. 1978, Driver and Brown 1978, Brown et al. 1979).

Briefly, ROS describes six levels of recreation opportunities -primitive, semiprimitive nonmotor, semiprimitive motor, roaded natural, rural, and urban. Generally, opportunities described in the primitive range are less developed, less accessible, less abundant, and occur in more natural areas than nonprimitive opportunities. Additionally, recreation activities engaged in within the primitive end of the spectrum are those activities that require a more dispersed setting and do not include the use of motorized transport to get to them (Brown et al. 1979).

Recreation opportunities are characterized by three major components -activity, setting, and recreation experience. Table 1 shows the kinds of land based, water based and snow and ice based activities that are considered appropriate for each of the ROS classes. The activities presented are not meant to be exhaustive, but rather representative of the types of activities users will most likely undertake while recreating in a given ROS class. Specific additions or deletions from the list will depend on local forest conditions.

The recreation setting component describes the physical, social and managerial attributes found within each ROS class (table 2). As the ROS class changes from primitive to urban the setting becomes less remote and perhaps smaller in size. In addition, there is greater evidence of humans, greater user density and more noticeable management and regimentation (Brown et al. 1979).

Specific physical criteria are used to locate and designate recreation opportunity classes. Primitive areas, for example, generally need to be at least three miles from a maintained road, 5 000 acres in size, and possess very few to no facilities. Semi-primitive areas are typically at least 1/2 mile from a road, 2 500 acres in size and have relatively few facilities. As the classifications move toward the urban end of the spectrum, these criteria continue to reduce. Physical features of this nature can easily be included in forest inventories and potential distributions for ROS classifications can be defined within a data base.

The experience component of each ROS class changes from one end of the spectrum to the other as well (table 3). At the primitive end of the spectrum the opportunities for solitude, closeness to nature, tranquility and self-reliance are maximized. Whereas opportunities to experience affiliation with other recreation user groups and convenience of sites and facilities is more prevalent at the nonprimitive end of the spectrum.

Table 1. Recreation opportunity spectrum activity characterization.

ROS Activity Characterization					
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
<p><u>Land Based:</u></p> <p>Viewing scenery Hiking and walking Horseback riding Tent camping Hunting Nature study Mountain climbing</p> <p><u>Water Based:</u></p> <p>Canoeing Other watercraft (nonmotorized) Swimming Fishing</p> <p><u>Snow and Ice Based:</u></p> <p>Snowplay Cross-country skiing/snowshoeing</p>	<p><u>Land Based:</u></p> <p>Viewing scenery Automobile (off road use) ORV/ATV use Aircraft use Hiking and walking Horseback riding Camping Hunting Nature study Mountain climbing</p> <p><u>Water Based:</u></p> <p>Power boating Canoeing Sailing Other boating Swimming Diving (scuba/snorkel) Fishing</p> <p><u>Snow and Ice Based:</u></p> <p>Snowmobiling Skiing, downhill Snowplay Cross-country skiing /snowshoeing</p>	<p><u>Land Based:</u></p> <p>Viewing scenery Viewing activities Viewing works of humankind Automobile (on and off road use) ORV/ATV use Specialized landcraft use Aircraft use Aerial trams and lifts use Hiking and walking Bicycling Horseback riding Camping Picnicking Resort and commercial services Resort lodging Recreation cabin use Hunting Nature studies Mountain climbing Gathering forest products Interpretive services</p> <p><u>Water Based:</u></p> <p>Tour boat and ferry use Power boating Canoeing Sailing Other watercraft use Swimming and waterplay Diving (skin/snorkel/scuba) Waterskiing Fishing</p> <p><u>Snow and Ice Based:</u></p> <p>Snowmobiling Ice skating Sledding and tobogganing Downhill skiing Snowplay Cross-country skiing and snowshoeing</p>	<p><u>Land Based:</u></p> <p>Viewing scenery Viewing activities Viewing works of humankind Automobile (on and off road use) ORV/ATV use Train and bus touring Aircraft use Aerial trams and lifts use Hiking and walking Bicycling Horseback riding Camping Picnicking Resort and commercial services use Resort lodging Recreation cabin use Hunting Nature studies Gathering forest products Interpretive services Team sports participation Games and play participation</p> <p><u>Water Based:</u></p> <p>Tour boat and ferry use Power boating Canoeing Sailing Other watercraft use Swimming and waterplay Diving (skin/snorkel/scuba) Waterskiing and watersports Fishing</p> <p><u>Snow and Ice Based:</u></p> <p>Snowmobiling Ice skating Sledding and tobogganing Downhill skiing Snowplay Cross-country skiing and snowshoeing</p>		

Source: USDA Forest Service ROS user's guide.

Table 2. ROS setting characterization.

ROS Setting Characterization					
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Area is characterized by essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human-introduced restrictions and controls. Motorized use within the area is not permitted.	Area is characterized by a predominantly natural or natural appearing environment of moderate-to-large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum onsite controls and restrictions may be present, but is not permitted.	Area is characterized by a predominantly natural or natural-appearing environment of moderate-to-large size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but are subtle. Motorized	Area is characterized by predominantly natural-appearing environments with moderate evidences of the sight and sounds of men. Such evidence usually harmonize with the natural environment. Interaction between users may be low to moderate, but with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities.	Area is characterized by substantially modified natural environment. Resource modification and utilization practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for special activities. Moderate densities are provided far away from developed sites. Facilities for intensified motorized use and parking are available.	Area is characterized by a substantially urbanized environment, although the background may have natural-appearing elements. Renewable resource modification and utilization practices are to enhance specific recreation activities. Vegetative cover is often exotic and manicured. Sights and sounds of humans, onsite, are predominant. Large numbers of users can be expected, both onsite and in nearby areas. Facilities for highly intensified motor use and parking are available with forms of mass transit often available to carry people throughout the site.

Source: USDA Forest Service ROS user's guide.

The Recreation Opportunity Spectrum has enjoyed its greatest success in the large public forests of the western United States where it was primarily developed. Application of ROS is inhibited, however, on the smaller or more developed forests, typical of the eastern U.S. This is primarily because these forests lack enough diversity in remoteness, access and size for ROS alone to provide a true assessment of the range of opportunities available in a forest, state or region. To address these limitations, ROS was refined in RRIM by combining its conceptual framework with an aesthetic preference model to enhance the sensitivity of the setting inventory across and within ROS classifications.

Table 3. ROS experience characterization.

ROS Experience Characterization					
Primitive	Semi-Primitive Non-Motorized	Semi-Primitive Motorized	Roaded Natural	Rural	Urban
Extremely high probability of experiencing isolation from the sights and sounds of humans, independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skill in an environment that offers a high degree of challenge and risk.	High, but not extremely high, probability of experiencing isolation from the sight and sounds of humans, independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers challenge and risk.	Moderate probability of experiencing isolation from the sights and sounds of humans, independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers challenge and risk. Opportunity to have a high degree of interactions with the natural environment. Opportunity to use motorized equipment while in the area.	About equal probability to experience affiliation with other users groups and for isolation from sights and sounds of humans. Opportunity to have a high degree of interaction with the natural environment. Challenge and risk opportunities associated with more primitive type of recreation are not very important. Practice and testing of outdoor skills might be important. Opportunities for both motorized and non-motorized forms of recreation are possible.	Probability for experiencing affiliation with individuals and groups is prevalent, as is the convenience of sites and opportunities. These factors are generally more important than the setting of the physical environment. Opportunities for wildland challenges, risk-taking, and testing of outdoor skills are generally unimportant except for specific activities like downhill skiing, for which challenge and risk-taking are important elements.	Probability for experiencing affiliation with individuals and groups is prevalent, as is the convenience of sites and opportunities. Experiencing natural environments, having challenges and risks afforded by the natural environment, and the use of outdoor skills are relatively unimportant. Opportunities for competitive and spectator sports and for passive uses of highly human-influenced parks and open spaces are common.

Source: USDA Forest Service ROS user's guide.

### Aesthetic Conditions

The past two decades have provided the benefits of intensive and wide spread aesthetic preference research (Ribe 1989, Zube et al. 1984). The results of these efforts provide extensive information regarding the relationships between preferences for forested areas and various biological and physical forest setting attributes present in the forested area (Brush 1979, Buhyoff and Leuschner 1978, Daniel and Boster 1976, Schroeder and Daniel 1981). This research has been instrumental in the development of visual management guidelines (Minnesota Department of Natural Resources, 1991, USDA Forest Service, 1980) and has allowed for conceptual analysis of value trade-offs in resource management decisions (Brown 1987).

Methodology typically used in aesthetic preference research requires researchers, and/or land managers to acquire measurement data on the sites to be evaluated (Daniel and Boster 1976). On publicly managed forest land this is rarely a problem because of the presence of forest inventories (Schroeder and Brown 1983).

Since the passage of the McSweeney-McNary Forest Research Act (1928) the U.S. Forest Service has conducted forest inventories in every state on a periodic basis (USDA 1979). These surveys, coordinated by seven Forest Inventory and Assessment Projects (FIA) nationally, include biological and landform measurements which provide sufficient detail to assess current and prospective forest conditions on a regional or statewide basis. The Forest and Rangeland Renewable Resources Planning Act of 1974 expanded the inventory to include a variety of non-timber items (USDA 1979).

The FIA inventories have been studied to assess their value in measuring or monitoring various non-timber values (Rudis 1991). Particular attention was given to aesthetics by Rudis et al. (1988) in which statistical models explaining students' assessments of within-stand FIA plots in Texas and east Texas pine and oak-pine forest types were effectively developed.

To address proposed timber harvesting in Minnesota, an aesthetic model was developed which uses variables available in the North Central FIA data base to operationalize the relationships between aesthetic preferences and biological and physical forest site attributes (Anderson et al. 1992). An aesthetic model which operates within an inventory environment offers resource managers the opportunity to assess aesthetic conditions on an individual forest unit, regionally, or statewide. In addition, association with FIA data allows efficient incorporation of aesthetic considerations in management simulations and provides unique opportunities for value trade-off analyses.

The model extracts from the aesthetic assessment literature, 14 dimensions of attractiveness to describe the forest environment. Of the 14 dimensions, six describe landform characteristics of inventory plots and eight describe landcover characteristics. All of the dimensions can be operationalized from variables within the FIA database.

Of the 14 dimensions, the six landform dimensions; slope steepness, landform enclosure of space, water distinctiveness, absorption capacity, regional slope diversity and regional water diversity are contextual. Two of the landcover dimensions; regional vegetative diversity and regional pattern of open space and forested mass also are contextual. Contextual dimensions of a forested plot's attractiveness are typically quite stable over time. The remaining six landcover dimensions: species diversity, presence of old growth and large trees, vegetative distinctiveness, ground plain conditions, negative human scale effects, and spacial definition and visual

penetration are derived from biological attributes and are highly subject to variation over time and impact caused by management.

There are approximately 44 000 Forest Inventory and Assessment plots currently being monitored in Minnesota of which about 14 000 are in a forested ground land use. To assess regional diversity of topographic relief, presence of lakes and streams, vegetative diversity, and ratio of open space to forested mass, a computer program searched the 44 000 data plots, to count certain occurrences within an 18 mile radius of each forested plot. Table 4 provides details specific to each regional dimension of attractiveness. The mean number of plots within the radius was 165. The radius size was selected to coincide with other available data and provided fine enough resolution for the scale of a state wide project. Depending on the application, the size of the radius may need to be adjusted in future efforts.

The aesthetic model assigns scores from 0 to 100 to each dimension for each inventory plot (table 4). The total summed score for each plot provides an interval data assessment of the relative value of each plot. Changes in these scores caused by proposed management actions identify resulting impacts or enhancements. The interval scores also can be categorized to define landscape classifications. The classification method is highly compatible with applied use of the model and will be further illustrated in a later section of this paper. The aesthetic assessment component of RRIM is being validated by a study currently in progress.

When combined with the ROS, the aesthetic assessment model refines the precision and accuracy of inventory of the range on conditions found within each ROS classification. This level of precision is most beneficial in areas like Scandinavia and the Midwestern U.S. which are often described by only one or two ROS classifications.

### **A Sample Application**

In this application, the goal for RRIM was to use FIA inventory data to assess the current distribution of forested recreational settings in Minnesota, and identify how that distribution would change as a result of a harvesting scenario. Once these potential changes were identified, mitigation measures, appropriate to a setting type, could be proposed and the costs of these measures could be included as constraints in a DTRAN/DUALPLAN model.

Table 4. Operational definition of attractiveness dimensions within FIA data set.

Landscape Characteristics Being Described	Attractiveness Dimension	FIA Variables included in Dimension	
		Variable	Points
A. Landforms Characteristics of FIA Plot	1. Slope steepness	a. Percent slope	100
	2. Landforms enclosure of space	a. Slope position (recorded to indicate presence of low position on slope)	25
		b. slope shape (recorded to indicate presence of concave slope)	25
		c. Percent slope	25
		d. Slope length	25
	3. Water distinctiveness	a. Type of nearest water body	40
		b. Distance to nearest water body	60
B. Landform characteristics within 18 miles of FIA plot	1. Regional slope diversity	a. Number of plots within 18 miles having a slope grater that 8%	100
	2. Regional water diversity	a. Number of plots within 18 miles with ground land use equal to marsh or surface water body	50
		b. Distance to nearest water body	50
C. Landcover Characteristics of FIA Plots	1. Species diversity	a. Number of species groups present at site	67
		b. Mean DBH of trees	33
	2. Presence of old growth and large trees	a. Mean DBH of trees greater that 5 inches in diameter	33
		b. Number of live trees present at the plot	33
		c. Age of the stand	34
	3. Vegetative distinctiveness	a. Forest types present at the plots (recorded to indicate presence of aspen, birch, maple and conifer, excluding jack pine and black spruce)	50
		b. Mean DBH of trees present at the plot	50
	4. Ground plane conditions	a. Stand history (recorded to indicate presence of ground plane disturbance within most recent 5 and 10 year periods).	100

Table 4 continued.

Landscape Characteristic Being Described	Attractiveness Dimension	FIA Variables included in Dimension	
		Variable	Points
Landcover Characteristic of FIA Plots (continued)	5. Negative human scale effects of large stands of flat sites	a. Slope shape (recorded to indicate presence of level slope)	60
		b. Stand Area	40
	6. Spacial definition and visual penetration	a. Mean DBM of trees (recoded to give preference to larger trees)	40
		b. Number of live trees present (recoded to give preference to low numbers)	40
		c. Stand history (recoded to give preference to plots having disturbance regimes that favor visual penetration)	20
	D. Landcover Characteristics within 18 miles of plot	1. Regional vegetative diversity	a. Number of forest types present within 18 miles
2. Regional pattern of open space and forested mass		a. Number of ground land use types within 18 miles that are open within 18 miles that are open field, wetland or water	50
		b. Distance to nearest agricultural field	50
E. Visual Absorption Capacity of Plot	1. Visual absorption capacity of plot based on landcover and landform	a. Number of ground land use types within 18 miles that are forested	50
		b. Percent slope	50

The necessity for and appropriateness of the possible mitigation measures depend largely on the recreational sensitivity of the land area in which a proposed harvesting activity occurs. Therefore, the translation of possible mitigation measures into preferred measures requires that the recreational sensitivity of Minnesota forest first be assessed. The identification of recreational sensitivity provides a basis upon which decisions concerning the selection of preferred mitigation measures can be made.

The 14 dimensions of attractiveness coupled with recreation value as determined by ROS provide a basis for defining recreational sensitivity. The attractiveness dimensions can be used to develop a landscape classification system that divides the forest environment in to a series of discrete attractiveness levels. An attractiveness level contains a series of forest environments that all possess a similar amount of attrac-

tiveness. The array of attractiveness levels represents a continuum of the visual quality that exists in Minnesota's forest irrespective of whether there are any people present to partake of the visual quality. Attractiveness levels are transformed into recreational sensitivity areas by cross-tabulating the array of attractiveness levels with the continuum of recreational opportunity defined by ROS. A highly sensitive area would possess a high level of attractiveness, and it would also be a place where many people pursue a variety of outdoor recreational activities appropriate to the ROS classification. An area of low sensitivity, on the other hand, would have a relatively low level of attractiveness. Assuming a strong positive relationship between aesthetic and recreational value, relatively few people would use an area low in recreational sensitivity.

### **Attractiveness Levels**

To derive attractiveness levels, the frequency distributions of the on-site attractiveness scores were aggregated into five percentile groupings. These percentile categories range from the lowest 20th percentile of FIA plot measurements for on-site attractiveness to the highest 20th percentile. The contextual attractiveness scores were aggregated into five categories in a similar manner. Thus, both the on-site attractiveness scale and the contextual attractiveness scale were transformed into categorical scales that measure different levels of on-site and contextual attractiveness, respectively.

In Figure 1 the categorized ratings of on-site attractiveness are cross-tabulated with the categorical ratings of contextual attractiveness. Each cell in the cross-tabulation identifies the number of FIA plots contained therein. The cells have been grouped into five levels of forest attractiveness. Level I contains all plots that were in the top twentieth percentile of on-site attractiveness and the top sixtieth percentile of contextual attractiveness. Level I also contains plots in the top twentieth percentile of contextual attractiveness and the top sixtieth percentile of on-site attractiveness. These 2669 plots represent the most attractive forest levels in Minnesota. The 2270 plots falling into the lowest fortieth percentile on both on-site and contextual attractiveness rating constitute Level V attractiveness. They constitute the least attractive forest plots in Minnesota. The other three levels (II,III,IV respectively) contain plots of intermediate attractiveness.

Figure 1. Definition of forest attractiveness levels for 12 116 forested plots in nonreserved status.

Attractiveness of Parameters Affected by Impact							
Attractiveness of Parameters Defining Context of Impact		Very High	High	Mod.	Low	Very Low	Total
	Very High	I 409	I 709	I 585	II 433	III 261	2997
	High	I 485	II 507	II 531	III 515	IV 394	2432
	Mode- rate	I 481	II 396	III 469	IV 555	IV 446	2397
	Low	II 572	III 377	IV 425	V 486	V 601	2461
	Very Low	III 472	IV 407	IV 362	V 497	V 686	2429
	Total	2424	2396	2372	2486	2438	12116

1. Attractiveness of on-site attributes of FIA plots represents a summation of the weighted attractiveness values for attractiveness dimensions related to: species diversity; presence of old growth and large trees; vegetative distinctiveness; forest groundplane conditions; human scale; and spatial definition and visual penetration.
2. Attractiveness of forest plot context represents a summation of attractiveness dimensions related to: slope steepness; regional slope diversity; landform enclosure of space; water distinctiveness; regional water diversity; regional vegetative diversity; regional pattern of open space and forested mass; and visual absorption capacity.

### Defining Visual Sensitivity

Attractiveness alone, however, does not sufficiently define visual sensitivity. It inherently fails to consider the type of experience visitors to the area are seeking and the visual expectations those people will bring to their forest experiences. As noted earlier, a plot’s ROS classification provides a means of understanding the characteristics of the people who experience a plot’s attractiveness and the expectations they have of the plot and the range of activities that can appropriately occur at a plot.

Recreational sensitivity of an FIA plot is defined in terms of both the ROS classification of the plot as well as the landscape attractiveness level to which it belongs. One can imagine plots in this bivariate definition of recreational sensitivity that are within the top attractiveness level (i.e. level I as defined in Figure 1) and have unique recreation value. These plots would be considered to possess high recreational sensitivity. At the other end of the spectrum, plots belonging to the lowest landscape

attractiveness level would be defined as having relatively low levels of recreational sensitivity.

Forest harvesting activity occurring in the highly sensitive areas would need to adhere to a fairly stringent set of visual and recreational management guidelines. Failure to follow these guidelines may produce significant adverse impacts on the aesthetic and recreational value of the forest. In some cases recreational concerns may overshadow visual concerns. In a primitive area, for example, building the road needed for timber harvesting would change the character of the area such that the previous opportunity for solitude and distance from human alteration would be impossible. In this case an opportunity would be lost, regardless of the previous appearance. In an already roaded area, however, there may be a great difference of impact between harvesting a beautiful site versus harvesting a bland or unattractive area. Forest harvesting activities occurring in plots having low recreational sensitivity not need to conform with as stringent management guidelines, making the area more attractive for harvesting activity.

Five levels of visual sensitivity are offered in this example. These levels are described as follows:

### **Recreation Sensitivity Level 1**

This level includes all FIA plots having an ROS class description as Primitive. Visual Sensitivity Level 1 also includes: a) those plots assigned to the nonmotorized semiprimitive ROS class that have low to very high attractiveness value and low to very high recreation value; b) those nonmotorized semiprimitive plots belonging to attractiveness level 1, and, c) those nonmotorized semiprimitive plots that have a very high attractiveness level.

### **Recreation Sensitivity Level 2**

This level includes all plots assigned to the nonmotorized semiprimitive ROS class that have: a) very attractiveness. Visual Sensitivity Area 2 also includes those plots in Motorized Semiprimitive, Roaded Natural, Rural and Urban ROS classes that have a very high attractiveness level rating.

### **Recreation Sensitivity Level 3**

This level contains all plots in the Motorized Semiprimitive, Roaded Natural, Rural and Urban ROS classes that have very high attractiveness ratings.

### **Recreation Sensitivity Level 4**

This level includes all plots in the Motorized Semiprimitive, Roaded Natural, Rural and Urban ROS classes that have high, moderate or low attractiveness ratings.

### **Recreation Sensitivity Level 5**

This level includes all plots in the Motorized Semiprimitive, Roaded Natural, Rural and Urban ROS classes that have very low attractiveness ratings.

## **Discussion**

An interval assessment of attractiveness and recreational opportunity associated with natural resource inventory plot provides a dynamic, powerful management and planning tool. In the brief example described here, potential is shown for informing large scale resource management decisions of social implications which may otherwise be left to intuition or the persuasive ability of key stakeholders.

An inventory of the existing distribution of setting conditions allows managers to anchor their resources. In the example used above, the overall resource is anchored in a distribution of five recreational sensitivity levels. Through the use of a classification system, settings providing unique opportunities can be identified. Settings which can enhance opportunities through development also can be identified and targeted. For example, a management objective could target the conversion of a certain percentage of level four plots to level three, within a given ROS class over a discrete period of time.

An anchored resource is imperative for accurate assessment and comparison of proposed management alternatives since some management actions can result in subtle degradation of the resource over time. This may take the form of a redistribution of the number of plots falling into a given sensitivity level at various periods of a planning horizon. The extent to which various alternatives will cause degradation will not be evident unless they are measured from the common base-line situation an inventory provides.

The ROS organizing framework and inventory of current settings directly illustrates the potential diversity of recreation opportunities within the planning environment. A valuable component of RRIM lies in the recognition that visitor experiences are tied to resource settings. Providing a proper union between visitors and settings can

maximize the potential for satisfying experiences and reduce the potential for conflicts between visitors and managers. Thus, an inventory of settings can serve as a mechanism for matching desired visitor experiences with available opportunities. Such an allocation tool would be beneficial for resource managers, tourism professionals and other persons concerned with economic development.

Finally, inventory type data provides enormous potential for including the consideration of recreation resources in management using emerging management tools such as Geographic Information Systems and computerized forest growth and harvest simulators. With the assistance of this technology, the cumulative effects of management actions can be assessed geographically and temporally. Comparison of growth and harvesting models which are constrained by aesthetic considerations with unconstrained simulations, identify shadow prices of costs associated with maintaining a desired level of aesthetic and recreational integrity in multiple use management.

## **Conclusion**

As demands for natural areas broaden and intensify, resource managers increasingly need the ability to measure and understand the resources they offer and protect. In the recreation resource management profession, the Limits of Acceptable Change (LAC) planning framework has emerged as a leading planning model. LAC requires an inventory of social and biophysical conditions from which changes can be measured and goals can be set. For the same reasons, other natural resource management professions have known and addressed the value of a sound resource inventory for well over a half century.

The model introduced in this paper attempts to combine the accomplishments of these professions to produce an inventory tool with a higher value than the sum of its parts. Although the model is still conceptual, peer review has been positive and validation efforts are in progress. Once validated, incorporation of recreational and aesthetic values in general resource management planning will be improved providing a clearer picture of management potential. More complete costs and benefits associated landscape alteration and the duration and extent of potential impacts will be available for assessment in resource management planning and management.

## **Literature**

- Anderson D. H., W. F. Freimund, D. W. Lime, L. H. McAvoy, D. G. Pitt, and J. L. Thompson. 1992. Recreation and aesthetic resources: A technical paper for a generic environmental impact statement on timber harvesting and forest management in Minnesota. Draft Report to the Minnesota Environmental Quality Board. St. Paul, MN. 175 pages.
- Becker, R. H. 1983. Opinions about clear-cutting and recognition of clear-cuts by forest recreation visitors. *Journal of Environmental Management*. 17:171-177.
- Brown, T. C., T. C. Daniel, H. W. Schroeder, and G. E. Brink. 1990. Analysis of ratings: A guide to RMRATE. USDA Forest Service, GTR RM-195. Rocky Mountain Forest Experiment Station. Fort Collins, Colorado.
- Brown T. C. 1987. Production and cost of scenic beauty: Examples of a ponderosa pine forest. *Forest Science* 33:394-410.
- Brush, R. O. 1979. The attractiveness of woodlands: Perceptions of forest land owners in Massachusetts. *Forest Science* 25:495-506.
- Buyhoff, G. J., and W.A. Leuschner. 1978. Estimating psychological disutility from damaged forest stands. *Forest Science* 24:424-432.
- Daniel, T. C., and R. S. Boster. 1976. Measuring landscape aesthetics: The scenic beauty estimation method. USDA Forest Service Research Paper RM-167. Rocky Mountain Forest and Range Experiment Station, Fort Collins, Colorado.
- Hoganson, H. M. and D. C. Kapple. 1991. DTRAN version 1.0 - a multi market timber supply model-user's guide. Staff Paper Series. St. Paul, MN: University of Minnesota, Department of Forest Resources.
- Hull, R. B., G. J. Buhyoff, and H. K. Cordell. 1987. Psychophysical models: An example of scenic beauty perceptions with roadside forests. *Landscape Journal* 6:113-122.
- Kapple, D. C. and H. M. Hoganson. 1991. GISTRAN user's guide. Staff series paper no. \*\*. St. Paul, MN: University of Minnesota, Department of Forest Resources (in progress).
- McCool, S. F., R. E. Benson, and J. L. Ashor. 1986. How the public perceives the visual effects of timber harvesting: An evaluation of interest group preferences. *Environmental Management* 10:385-391.
- McDill, M. 1991. RxWrite users guide. Staff Series Paper no \*\*. St. Paul, MN: University of Minnesota, Department of Forest Resources (in progress).
- Minnesota Department of Natural Resources. 1991. Minnesota visual management guide (draft). St. Paul, Minnesota.
- Minnesota Department of Natural Resources. 1990. Minnesota's outdoor legacy: Strategies for the '90's. Statewide Comprehensive Outdoor Recreation Plan for 1990-1994. St. Paul, MN.
- Ribe, R. G. 1989. The aesthetics of forestry: What has empirical preference research taught us? *Environmental Management* 13(1):55-74.
- Rudis, V.A. 1991. Wildlife habitat, range, recreation, hydrology, and related research using Forest Inventory and Assessment surveys: A 12-year compendium. General Technical Report SO- 84. New Orleans, LA: U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station. 61 p.
- Rudis, V.A., J.H. Gramann, E.J. Ruddell and J.M. Westphall. 1988. Forest Inventory and management-based visual preference models of southern pine stands. *Forest Science* 34(4): 846-863.

- Schroeder, H. W. and T. C. Brown. 1983. Alternative functional forms for an inventory-based landscape perception model. *Journal of Leisure Research*. 15:156-163.
- Schroeder, H. W. and T. C. Daniel. 1981. Progress in predicting the perceived scenic beauty of forest landscapes. *Forest Science* 27:71-80.
- United States Department of Agriculture. 1979. The principal laws relating to forest service activities. USDA Forest Service and Agricultural Handbook No. 453. 359 p.
- USDA Forest Service. 1980. National Forest Landscape Management, Volume 2, Chapter 5: Timber. Washington, D.C.: United States Government Printing Office.
- Vodak, M. C., P. L. Roberts, J. D. Wellman, and G. J. Buhyoff. 1985. Scenic impacts of eastern hardwood management. *Forest Science* 31:289-302.
- Zube, E.H., Pitt, D.D. and T.W. Anderson. 1975. Perception and measurement of scenic resources in the Southern Connecticut River Valley. *Man and His Environment*. Publ. R-74 - 1191 pp. Amherst, MA.
- Zube, E.H., J. L. Sell, and J.G. Tayler. 1982. Landscape perception: Research, application and theory. *Landscape Planning* 9:1-33.

# Methods to Inventory the Quality of Long-Distance Trails

*Eeva Karjalainen and Tuija Sievänen*

## Abstract

The study outlines how it is possible to inventory the quality of long distance trails. It describes three different inventory methods. A list of scenic factors used in the field inventories of five long-distance trails, 300 km in total length, is presented. As a result the recommended inventory methods are discussed.

## 1 Introduction

About 2500 kilometers of long-distance hiking trails have been established in Finland during last two decades. In southern Finland, these trails are located mainly on commercial forest land and most often managed by local municipalities. Trails in southern Finland have got a rather small number of users. This fact leads to wonder if users have not found the trails interesting. It seems that the planners of long-distance trails have lacked knowledge on how to establish an attractive trail. For future, managers of existing trails and planners of new trails need to know how to improve trail quality. On the other hand, hikers need information about the quality of trails to make decisions and choices between different recreation opportunities. Some standards are needed to make different trails comparable with each other in terms of quality. This is also a concern of the state agencies which give monetary support to the municipal agencies to construct and maintain long-distance trails.

This paper is based on a study (Karjalainen 1991), which has its origin in these practical problems. There is an obvious need to develop a method to estimate the quality of long-distance trails. However, there are many problems concerning this issue. It is particularly difficult to measure scenic features and to find valid quality criteria for them.

Research of scenic quality can be divided into two categories. First, there are studies which develop classifications for landscapes, and which are descriptive in nature. Second, there are preference studies which measure how people value different landscapes or visual elements of landscape as they observe them through their cognitive maps.

Classification studies often include two parts: field inventory and description of quality. These studies are based on the assessments by professionals, often landscape architects. These studies have often failed to combine measured physical factors and criteria of scenic beauty. The reliability of these methods depend on the professional skills of the researcher and the validity of chosen factors (Daniel and Boster 1976).

In preference studies, landscape qualities and perceptions related to them are studied mainly by asking people to express their opinions about sceneries. Widely used and the most advanced forms of these studies are so called psychophysical methods (Ribe 1989). In these methods, relationships between scenic ratings and measured physical factors are estimated by statistical models. The aim is that scenic quality could be predicted by measuring physical features of the environment. The practical purpose of psychophysical procedures has often been to predict the visual impacts of different forest management activities. These methods are usually applied in forest landscape studies when the visual quality of a single forest stand has been assessed. Psychophysical methods have payed little attention to how a person experiences a scenery as a linear space, e.g. a trail corridor.

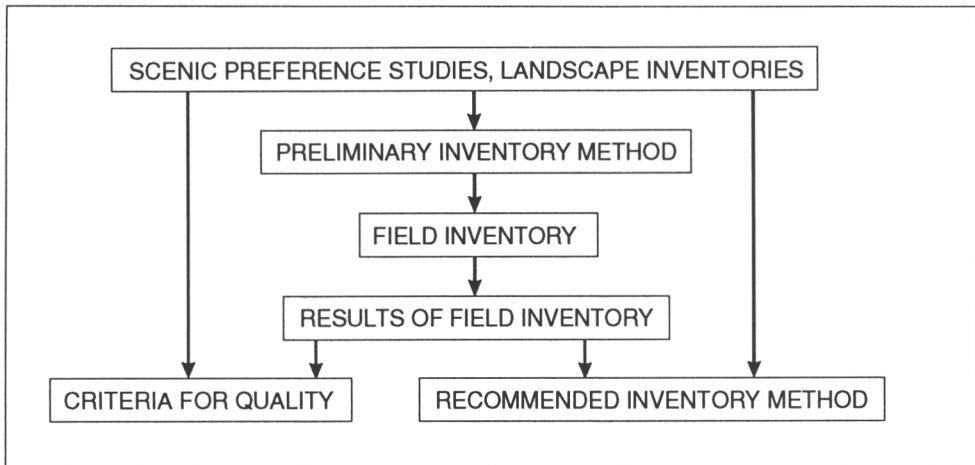
These two different approaches - users' preferences and assessments of professionals - of landscape studies should be combined in order to assess the quality of sceneries and recreation environments in wider perspective.

## **2 Research problem and procedure**

A long-distance trail means here a marked hiking trail which is long enough to provide at least a hiking trip for two days. This means that the trail offers an opportunity for camping and that there are other facilities for hikers as well.

The aim of the study was to clarify which environmental elements compose a trail of good quality, how these factors can be measured and in which amounts they should occur along a trail. This paper has its emphasis on the problems to measure the quality of a long-distance trail.

Figure 1 shows how the research problem is approached. It is assumed that the criteria of a good quality trail is impossible to determine only on the basis of theoretical knowledge. Practical problems in measuring scenic factors have to be taken into account. Also the natural environment and resources that are available have to be considered. For these reasons, it was chosen to do field inventory of example trails.



*Figure 1. A frame of the research procedure.*

Preliminary inventory method is based on the former landscape inventories and analyses, and on the landscape and recreation environment preferences. As a result of the study the most important and measurable factors are determined and recommendations of quantities of these factors are given. In addition, different inventory methods are compared.

### 3 Methods

#### 3.1 Measured factors

Former research has put very little effort to develop methods to assess the quality of linear recreation environment like trail corridor. The method which is described in this paper was developed with very little help of previous experiences. Factors measured and inventory methods used are shown in table 1.

Physical elements of environment are not the only aspect that influences the trail quality. Also the environment related values, emotions, observations, affections and knowledge owned by the user affect perceiving the quality of trail (Daniel and Boster 1976, Andersson 1981, Ribe 1989). However, only physical environmental factors can be manipulated by resource management. It is important to understand which physical elements and how they influence user's experience. There are ways to relate many of the intangible amenity values expressed by users with the physical environment factors. These factors can be taken into account when managing and developing the quality of recreation resources. The factors which were measured in this study

*Table 1. Inventoried quality factors and measurement methods.*

QUALITY FAC- TOR	VARIABLES INCLUDING TO EACH QUA- LITY FACTOR	MEASUREMENT METHODS
Scenic factors	main landscape type (forest, lake, field, open peatland)	continuous observation, sampling circular plots, sampling longitudinal plots
	topography	continuous observation, sampling circular plots
	human impacts, personal landscape assessment, visibility	sampling circular plots
	ONLY IN FOREST: stand development class, density, tree species composition, neighbouring compartments	sampling circular plots, sampling longitudinal plots
	forest site type, crown closure, number of canopy layers, layer, field layer, ground layer	sampling circular plots
Attractions	rocks, cliffs, boulders, ridges, dried-up trees, streams, rivers, rapids, brooks, springs, overview spots, rare plants, animals etc.	continuous observation, sampling circular plots
Disturbances	noise, impacts of forest management (clearcuts, slash, timber stores, soil preparation etc.), damages caused by industrial activities (gravel pits etc.)	continuous observation, sampling circular plots
Quality of trail base	type of trail base (road, path etc.), passability	continuous observation, sampling longitudinal plots
	trampling tolerance which consists of forest site type and composition of ground and bottom layers	sampling circular plots
Facilities	camping and fire sites, other accommodation services, missing constructions (missing sign posts, bridges, gates, steps)	continuous observation

were chosen according to the information from recreation and landscape preference studies (Loven 1973, Kellomäki 1975, Savolainen and Kellomäki 1981) and forest inventory studies (Hyvärinen 1986, National Forest Landscape Management 1974). According to preference studies there are many measurable landscape elements which correlate with scenic values or qualities expressed by people (Kellomäki 1975, Arthur 1977, Brush 1976, Brush 1979, Savolainen and Kellomäki 1981, Schroeder

and Daniel 1981, Vodak et al. 1985, Brown and Daniel 1986, Hull and Buhyoff 1986, Pukkala et al. 1988). Such factors are, for instance, diameter of trees, density of trees and the amount of slash and stumps.

Factors affecting the quality of a trail are here divided into five groups: scenic factors, attractions, disturbances, quality of trail base and facilities. When trying to measure the quality of trail, the most difficult task is to assess the scenic quality of trail corridor. This is why the study concentrates mainly on scenic quality and pays less attention to other quality criteria like facilities and trail base.

Scenic factors describe the overall scenic structure of the trail corridor. Attractions and disturbances are closely connected with scenery. Attractions are places or scenic elements along the trail which positively differ from the environment; they keep on the interest of the hiker. These are for example cultural and historical points, overview sites, water and forms of topography. Disturbances are man-made negative impacts on environment. They include noise and scenic damages which are usually caused by commercial forestry or industrial activities.

The basic idea of prepared, marked trail is to provide a safe access to nature, to provide helpful facilities and to improve the passability of the terrain. Factors which make hiking in the undeveloped areas easier are important. Also this kind of necessary facilities and constructions were observed. These are for example signs, bridges, steps on slopes, gates, camping and cooking facilities and accommodation services.

### **3.2 Trails in the study**

Five long distance hiking trails were chosen for the field inventory. These trails are located mainly in commercial forests in southern Finland. The total length of trails was 300 km, and the minimum length of one trail was 40-50 km. The trails were inventoried during the summer 1990. Figure 2 shows the location of example trails.

### **3.3 Inventory method designs**

Three different types of systematic measurements and observations were used (figure 3). These are here called Sampling Circular Plots (SCP), Sampling Longitudinal Plots (SLP) and Continuous Observation (CO).

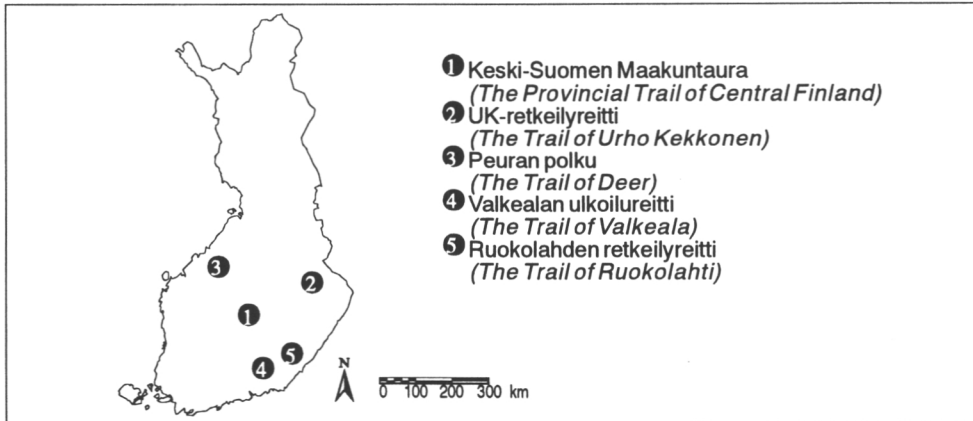


Figure 2. The location of example trails.

Landscape compartment is a central concept when using sample plot methods. Landscape compartment is the area, which distinctively and clearly differs from its environment (see figure 4). It reaches as long as the central features of landscape are similar. Landscape compartment turns into another compartment when there occurs a change in landscape type (forest, open peatland, water, field) or in the case of forest landscape type, stand development class and/or composition of tree species and/or visibility change noticeably.

### Sampling Circular Plots (SCP)

Such scenic factors which are not possible to observe continuously were measured by sampling circular plots. In addition, some attractions, disturbances and trampling

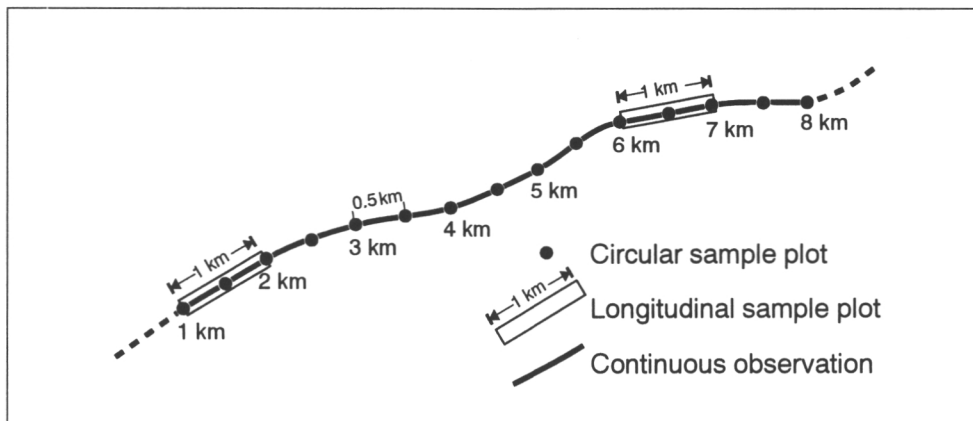


Figure 3. A schema of study design.



Figure 4. Illustration of landscape compartment.

tolerance were observed by this method. A structured blank was filled at each sample plot. Separate blanks were prepared for forest, water and field landscape units.

Sample circular plots were mapped along the trails so that the starting point was chosen randomly within the first kilometer of the trail, and then the interval of plots was 0,5 km. Altogether 600 circular plots were measured. One sample plot covers the landscape compartment which dominates at the site.

### Sampling Longitudinal Plots (SLP)

The original purpose of sampling longitudinal plots was to measure the variation of landscape, e.g. the number of different landscape compartments in a certain trail sector. In addition, it produced information about landscape type, development class of forest stand, tree species, visibility and neighbouring compartments. Also, the type of trail base and passability were observed in longitudinal plots.

Longitudinal plot was one kilometre long and it was measured once in five kilometres (altogether 60 plots). Each landscape compartment in one kilometre was marked on the map. Systematic observation of factors included in each landscape compartment were made.

### Continuous Observation (CO)

When using continuous observation, the researcher makes observations of quality factors continuously along the trail. The problem is that many quality factors are impossible to observe continuously. For example, it is very laborious to determine when one density class of forest stand turns into another. It is not a realistic inventory design to make continuous measurements of each forest stand. In addition, there are so many factors to be measured that it is impossible to observe all of them all the time. Factors which were very distinct and rare were observed continuously. Factors measured continuously were: facilities, quality of trail base (type of surface and width

of the route), passability, some of the attractions and disturbances, and the main landscape type.

## 4 Results and discussion

### 4.1 The quality criteria

The factors which were found to be most important for the quality are presented in table 3. Also some recommendations concerning the relative amounts of each quality factor are made. As an example of recommendations, table 2 presents the suitable ranges of chosen scenic quality factors. The choice of quality factors and recommended quantities of them are based on the combined information from literature of preference studies, from the results of field inventory done in this study, and from the statistics of local conditions (forest land classes etc.).

Landscape type, attractions and disturbances are considered to be central elements of scenic quality. Because forest is the most common landscape type in the studied areas, it is worth examining more closely. Stand development class, visibility, tree species composition, topography, neighbouring compartment, forest site type and layer are regarded most central factors within the forest. The most essential facilities are the type of trail base (road, path etc.) and passability, camping and fire sites and other necessary facilities like signs, information boards, bridges, gates and steps on slopes.

Some inventoried quality factors were regarded less important. For example, trampling tolerance can be improved by proper building of trail. Some inventoried factors were found to be either difficult to measure within a reasonable work force, or the factor itself was later considered to have a minor importance in the analysis.

The landscape of southern Finland is so uniform that same recommendations can be offered for the whole area. It is characteristic to the good quality of environment that certain factors, f.ex. lakes or camping sites should be evenly distributed along the trail.

In the case of scenic factors, recommendations telling only the relative amount of the needed quality factor is not sufficient information. Also the order of different scenic spaces in a linear landscape unit -for example trail corridor- is important. However, this study can not yet offer knowledge about this aspect.

*Table 2. The most important scenic quality factors and recommendations for their relative amounts along a trail.*

SCENIC FACTORS	CLASS OF SCENIC FACTOR	RECOMMENDED AMOUNT ALONG A TRAIL
Main landscape type	lake field	min 10 % of sample plots 5-10 % of sample plots
Development class of forest stand	clearing + seed trees sapling pole stage young forest middle-aged forest old forest	max 5 % of forest sample plots max 10 % of forest sample plots max 20 % of forest sample plots max 30 % of forest sample plots min 20 % of forest sample plots min 10 % of forest sample plots
Number of tree species	>1 species >2 species	min 50 % of forest sample plots min 25 % of forest sample plots
Density of forest	sparse normal and sparse very dense	min 10 % of forest sample plots min 60 % of forest sample plots max 5 % of forest sample plots
Layer	fairly abundant conifers predominant	min 50 % of forest sample plots min 30 % of forest sample plots
Topography	sloping steep	min 30 % of forest sample plots min 5 % of forest sample plots
Neighbouring compartments	altogether negative	50-75 % of forest sample plots max 5 % of forest sample plots
Forest site type	one forest site type	max 50 % of forest sample plots

#### **4.2 Recommended methods for inventory**

Three kinds of inventory methods were used; continuous observation, sampling circular plots and sampling longitudinal plots. Recommended inventory method for each quality factor is presented in table 3. Recommendations are based on practical experience of field inventory and descriptive comparisons of inventory results.

Sampling circular plots (SCP) appeared to be the most practical and easiest method to measure most of the quality factors. The comparison of methods showed that each method produced very similar results. For these reasons SCP is recommended for inventorying all scenic factors. Trail base type and passability can also be measured by SCP although these criteria were not observed with this method in this study. It should be kept in mind that in order to produce reliable results the interval of sample plots must be related to the length of the trail, e.g. to get a reasonable number of plots.

Continuous observation is the most suitable method for such quality elements which are rare and distinct so that they can easily be observed. It is the only possible method for such elements which occur so rarely that sample plot methods are not useful. However only a small number of variables can be observed continuously. Factors which should be observed continuously are facilities and some attractions and disturbances.

*Table 3. Recommended measurement methods.*

QUALITY FACTOR	VARIABLES INCLUDING IN EACH QUALITY FACTOR	RECOMMENDED MEASUREMENT METHOD
Scenic factors	landscape type: forest, lake, field, open peatland	sampling circular plots
	stand development class: clearing, seed tree, sapling, pole stage, young forest, middle aged forest, old forest	sampling circular plots
	number of tree species	sampling circular plots
	density: open, very sparse, sparse, normal, dense, very dense	sampling circular plots
	construction of layer	sampling circular plots
	topography: flat, sloping, steep	sampling circular plots
	neighbouring compartments: negative (clearing, gravel pit etc.), positive (forest, lake, field, open peatland)	sampling circular plots
	forest site type	sampling circular plots
Attractions	brooks, rivers, springs, rapids, boulders	continuous observation
	overview spots, dried-up trees, ridges, cliffs	sampling circular plots
Disturbances	damages caused by industrial activities: gravel pits, railways, main roads, industrial areas	continuous observation
	noise, impacts of forest management: clearcuts, seed tree, slash, timber stores, fresh soil preparation, fresh draining, fresh stumps, felled trees	sampling circular plots
Quality of trail base	type of trail base (path, road etc.), passability (easy, difficult, very difficult)	sampling circular plots
Facilities	camping and fire sites, missing constructions	continuous observation

Sampling longitudinal plots (SLP) did not turn out to be superior in measuring any of the tested factors. Using SLP only a small number of variables can be observed. Problems are similar to continuous observation. SCP is easier to use and at least as reliable as SLP. The original aim of sampling longitudinal plots was to estimate the variety of landscape types. However, it turned out to be difficult to observe variation of landscapes because there does not exist clear classification of landscape types, especially in forest landscape. There is a need of classification which could help in measuring the variety of sceneries.

## 5 Conclusions

The study shows that it is possible to discover measurable criteria for the quality of trails. It is difficult to assess some scenic aspects like fascination, general impression or organisation of scenery. Instead, simple and separate scenic features - which are assessed in this study - can be measured easily and objectively. The scenic features described here can be considered sufficient for evaluating the quality of trails.

Recommendations for the ranges of quality criteria can be set in order to create better trails. The users' expectations and preferences should be the basis of trail development. The preliminary goal should be that the trail gives full satisfaction to its users. On the basis of present study, it is possible to develop a quality classification for long-distance trails (Sievänen and Karjalainen 1992). Classification would offer possibilities to easily assess the quality of trails and to compare them with each others.

The study described here is characteristicly a pilot study. It tries to figure out some outlines how the quality of trails could be evaluated. Presented methods are only one way to approach the problem but may offer some ideas for further research work. Used inventory methods try to emphasize the variation of scenery. However they can not wholly take into consideration the linear order of different landscape spaces. Future research should clarify the problems in measuring the landscape variation and in estimating ranges of preferred variation. There is an immediate need to know more about how the landscape is experienced as a dynamic space such as a trail corridor. In addition, there is not enough knowledge about the preferences of hikers. More research is needed to expand the studies of scenery as a whole.

## Literature

- Anderson, L.M. 1981. Land Use Designations Affect Perception of Scenic Beauty in Forest Landscapes. *Forest Science* (27)2: 392-400.
- Arthur, L.M. 1977. Predicting Scenic Beauty of Forest Environments: Some Empirical Tests. *Forest Science* (23)2: 151-160.
- Brown, T.C. & Daniel, T.C. 1986. Predicting Scenic Beauty of Timber Stands. *Forest Science* 32(2): 471-487.
- Brush, R. 1976. Perceived Quality of Scenic and Recreational Environments. Some Methodological Issues. In: Craik, K.H. & Zube, E.H. (eds.) *Perceiving Environmental Quality*. Pp. 47-58. Plenum Press.
- Brush, R.O. 1979. The Attractiveness of Woodlands: Perceptions of Forest Landowners in Massachusetts. *Forest Science* (25)3: 495-506.
- Daniel, T.C. & Boster, R.S. 1976. Measuring Landscape Aesthetics: The Scenic Beauty Estimation Method. USDA Forest Service, Research Paper RM-167.
- Hull, R.B. & Buhyoff, G.J. 1986. The Scenic Beauty Temporal Distribution Method: An Attempt to Make Scenic Beauty Assessments Compatible with Forest Planning Efforts. *Forest Science* 32(2): 271-286.
- Hyvärinen, S. 1986. Metsänhoito ulkoilualueilla. Helsingin yliopiston metsänhoitotieteen laitoksen tiedonantoja no. 58.
- Karjalainen, E. 1991. Retkeilyreittien laatutekijät. Helsingin yliopisto. Ympäristötieteen pro gradu -työ. [The Quality Criterion of Long-Distance Hiking Trails. Master thesis, University of Helsinki, Department of Environmental Conservation.]
- Kellomäki, S. 1975. Ulkoilijoiden metsikköarvostukset. *Acta Forestalia Fennica* 146.
- Loven, L. 1973. Metsäympäristön viihtyisyystekijät. Helsingin yliopisto, metsänarvioimistieteen laitos. Tiedonantoja 3/1973.
- National Forest Landscape Management. 1974. Vol. 2. Chapter 1. The Visual Management System. Forest Service, U.S. Department of Agriculture, Handbook Number 462.
- Pukkala, T., Kellomäki, S. & Mustonen, E. 1988. Prediction of the Amenity of a Tree Stand. *Scandinavian Journal of Forest Research* (3): 533-544.
- Ribe, R.G. 1989. The Aesthetics of Forestry: What Has Empirical Preference Research Taught Us? *Environmental Management* 13(1): 55-74.
- Savolainen, R. & Kellomäki, S. 1981. Metsän maisemallinen arvostus. Summary: Scenic value of forest landscape. *Acta Forestalia Fennica* 170.
- Schroeder, H. & Daniel, T.C. 1981. Progress in Predicting the Perceived Scenic Beauty of Forest Landscapes. *Forest Science* 27(1): 71-80.
- Sievänen, T. & Karjalainen, E. 1992. Criteria for Scenic Quality of Long-Distance Trails. In *Proceedings of Nordic Seminar of Outdoor Recreation Research, Stockholm 22.-24.4.1992*, organized by The Nordic Council of Ministries & Nordplan.
- Vodak, M.C., Roberts, P.L., Wellman, J.D. & Buhyoff, G.J. 1985. Scenic Impacts of Eastern Hardwood Management. *Forest Science* 31(2): 289-301.

## **Cykelruter i Danmark - behøver vi forske i det ?**

*Ian Jørgensen,*

### **1 Indledning**

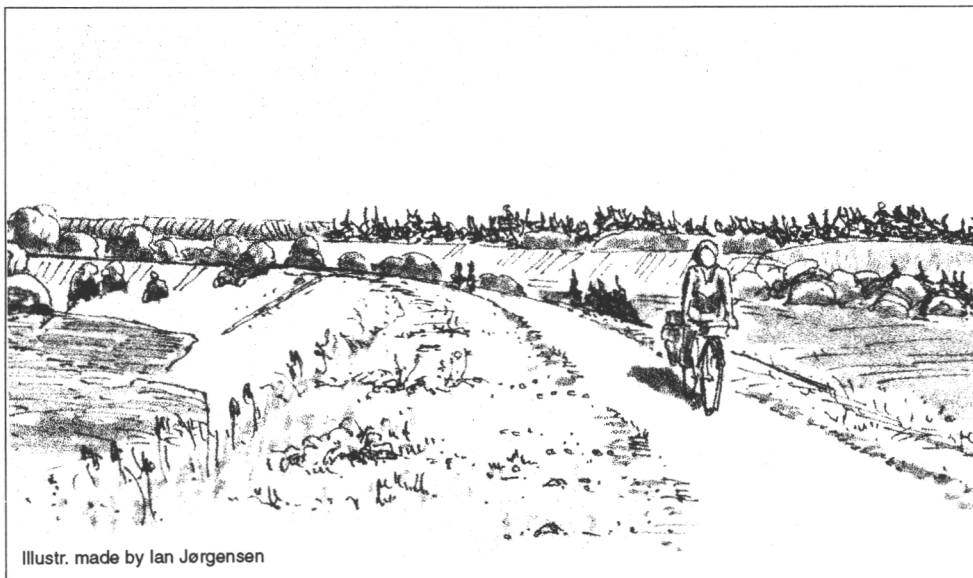
Inden for de seneste 5 - 10 år har planlægningen af cykelruter med tilhørende servicetilbud til feriecyklister fået et enormt opsving. Næsten alle amtskommuner har udgivet cykelrutekort over deres område og selvom amtskommunernes planlægning bygger på forskellige strategier, er man enedes om inden sommeren 1993 at etablere 10 nationale cykelruter i Danmark. Med 10 års forsinkelse synes det nu at være blevet vandrerens tur. De første længere vandreruter er blevet etableret med skiltning, tilhørende overnatning og kortmateriale - og mange nye ruter er planlagt. Alt i alt er der tale om en omfattende planlægning for turismen/friluftslivet og relativt store offentlige investeringer i forbindelse hermed.

Et af spørgsmålene på Nordisk Forskerakademis møde var, hvilken rolle forskningen har haft i udviklingen af længere cykel- og vandreruter. Det danske svar er meget kort, idet man må konstatere, at der ikke ligger nogen egentlig forskning til grund for den gennemførte planlægning.

De resultater, vi ser idag, er opnået i en åben dialog mellem planlæggere og brugere. Processen er gennemført skridt for skridt, med engagement og visioner som den drivende kraft og justeringer på baggrund af opnåede erfaringer som styring.

### **2 Drømmebilleder**

Da jeg blev bedt om at fortælle om planlægning af længere vandre- og cykelruter i Danmark på Nordisk Forskerakademis seminar, startede jeg naturligt nok med at undersøge hvilken forskning, der ligger til grund for planlægningen. Hvad er der skrevet om feriecyklisters og turvandreres præferencer, behov og adfærd?, og hvem har undersøgt, hvor mange der cykler og vandrer? Hvem har beskrevet landskabets bæreevne, visuelle tilbud til cyklister og vandrere, eller stiføringens betydning for oplevelsens kvalitet?

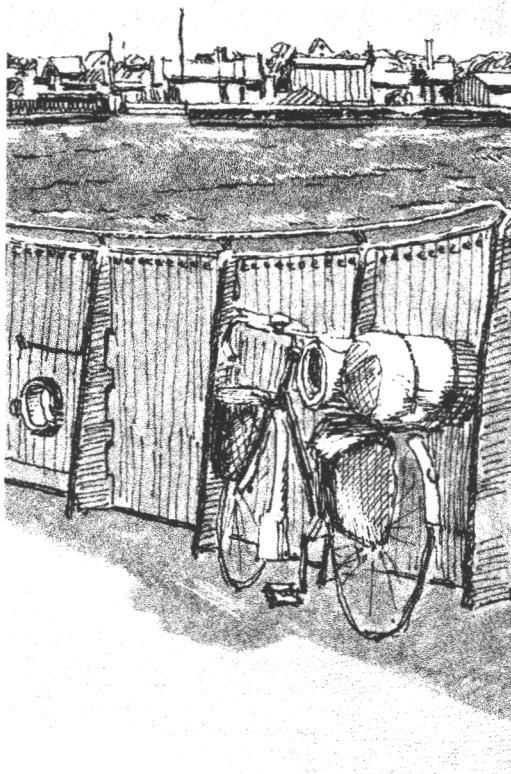


Illustr. made by Ian Jørgensen

*Drømmebilleder fra miljøministeriets rapport om planlægning for cyklister (2).*

Resultatet af afsøgningen var meget beskedent, idet der kun dukkede få referencer op. Den ene beskriver resultaterne af en spørgeskemaundersøgelse om cykelferier på Sydfyn (1). En anden fra 1978 handler om cykelveje (3). Der findes ikke noget om vanderruter.

Udviklingen af cykel- og vandreruter er altså ikke sket på baggrund af systematisk indsamlet viden, men derimod i en dialog mellem politikere, planlæggere og brugere. Metoden kan bedst karakteriseres som "prøv og fejl", hvor erfaringerne fra eksisterende stier i et vist omfang bliver indarbejdet i de ny projekter.



Illustr. made by Ian Jørgensen

At udvekslingen af erfaringer har haft stor betydning fremgår også af Miljøministeriets rapport om planlægning for cyklister (2). Den handler bl.a. om fericykling, og gør meget ud af at beskrive eksempler, men har ingen henvisninger til forskning inden for området. Drivkraften for udviklingen er altså ikke dokumenteret viden, men visioner. Det sidste kapitel i rapporten hedder drømmebilleder eller virkelighed om nogle år?. I ord og drømmebilleder vises det, hvordan den ideelle cykelby kunne udformes med trafiksanerede boligområder, sikre cykelruter i byerne og sammenhængende stier fra boligen til det åbne land.

### 3 Fire cyklistgrupper

Det er blevet foreslået (2,3), at man i trafikplanlægningen skelner mellem fire forskellige cyklistgrupper nemlig,

- Hverdagscyklister, på vej til og fra arbejde, skoler, butikker, fritidsaktiviteter m.v.
- Legecyklister, der er ved at lære at cykle i boligområderne
- Udflugtscyklister, der har afsat en weekend-dag til en tur i det åbne land
- Fericyklister, der cykler i flere dage mellem udvalgte overnatningssteder

90 % af de voksnes cykelture er **hverdagsture**, så det er ikke underligt, at emner som cykelstier i byen og trafikikkerhed er blevet viet den største opmærksomhed i planlægningen. Ikke mindst Danmarks cyklistforbund har en stor del af æren for, at cyklen er blevet sat på dagsordenen som et miljørigtigt og sundt transportmiddel i hverdagen.

**Legecyklisterne** har trange kår i byen, men mulighederne for at etablere stilleveje med begrænset hastighed for bilisterne og lege- og opholdsområder på tidligere vejarealer har forbedret børns muligheder for at færdes trygt på cykel i byernes lokalområder.

**Udflugtscyklisterne** lider under det forhold, at de planlægningsmæssigt cykler mellem kommuneplanlægningen, der dækker byen og den regionale planlægning, der dækker det åbne land. Ligesom for andre nærrekreative aktiviteter har dette forhold lagt en dæmper på planlægningen, der gensidigt henviser ansvaret til "det andet niveau". Det bedste danske eksempel har derfor i lang tid været fra Sverige, nemlig cykelruten mellem Malmö og Torup, selvom også flere danske købsteder kan vise eksempler på rutenet mellem byen og det åbne land.

## 4 Feriecyklisme

Der henvises ofte til det faktum, at Danmark har et utroligt fint net af asfalterede, kommuneveje, som kan anvendes af folk på cykelferie. Selv uden nogen form for offentlig tilrettelægning, findes der altså gode muligheder for at komme på cykelferie. Forholdet kan sammenlignes med de vandremuligheder, der findes i de andre nordiske lande jvf allemandsretten. Men gode kommuneveje er ikke tilstrækkeligt, hvis man vil tilbyde større grupper i befolkningen at tage på cykelferie. Nogle begrænsende faktorer kunne være at der mangler service, skiltningen - som er beregnet for bilister - viser ud til de overordnede veje og selv på de smalleste kommuneveje kører der både personbiler og lastbiler.

Der kunne derfor i begyndelsen af 80-erne opstå et marked for cykelbøger, der anviste ruter gennem landskabet og oplyste om service og seværdigheder i forbindelse hermed. Flere amtskommuner startede på omkring samme tid med etablering af kortere, skilte cykelruter med tilhørende kort. Udviklingen sidenhen har været uden fast struktur. Da der ikke var faste rammer for finansiering, udformning eller fordeling af ansvar for planlægning, projektering, etablering eller vedligeholdelse af cykelruter, blev resultatet af aktiviteterne de følgende år et væld af mere eller mindre sammenhængende stier i meget forskellig udformning, og med forskellig skiltning amtskommunerne imellem.

Idag har næsten alle amtskommuner udarbejdet cykelrutekort. Kortene er meget ens i udformningen, og skjuler således at der er store kvalitetsforskelle amtskommunerne imellem.

Som det ene yderpunkt findes amtskommuner med cykelkort, der bygger på det eksisterende net af kommuneveje og blot viser forslag til cykelruter i amtskommunen, uden at disse er skilte eller på anden måde tilrettelagt for cyklister.

Det andet yderpunkt findes i amtskommuner der gennem længere tid har udviklet trafiksikre cykelruter med gennemført skiltning, service og tilhørende overnatningsmuligheder. Baggrunden for den høje standard i nogle amtskommuner bygger gerne på et tæt samarbejde med turistindustrien.

Planlægningsmæssigt viser det sig, at cykelruter, der går ad lokale veje er meget sårbare over for ændringer i den øvrige trafikstruktur. Senest viste det sig, da Turismens Fællesråd i samarbejde med kommunerne på ganske kort tid fik gennemført og skiltet en national rute for bilister på ferie i Danmark. Marguerit-ruten kaldes den, og den er på 3500 km. I nogle amtskommuner dækker marguerit-ruten


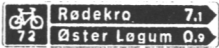


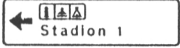
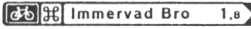

over 50% af det regionale cykelrutenet. I dette tilfælde kom planlægningen til kort. Magtforholdet mellem bilferie og cykelferie faldt ud til bilisternes fordel. Spørgsmålet er, om forskningsresultater inden for området ville kunne have ændret på dette forhold.

### 5 Et nationalt cykelrutenet og fælles skiltning

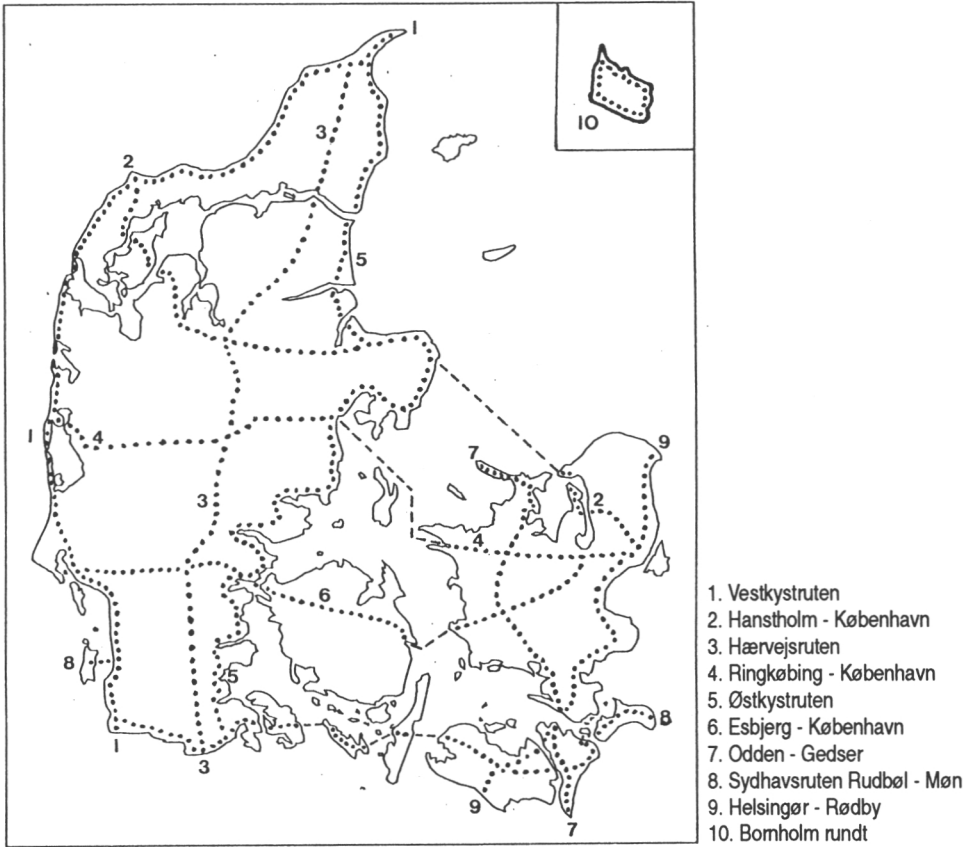
Sideløbende med den regionale udvikling af ruter og kort tog de nationale planlægningsmyndigheder initiativ til etablering af et nationalt net af cykelruter med en fælles standard for skiltningen. I 1991 blev vejreglerne for stivejvisning vedtaget, hvilket betyder, at man inden for en periode på 15 år skal anvende det system, der beskrives (5).

Ansvar for gennemførelse af det statslige initiativ vedrørende nationale cykelruter blev meget naturligt overtaget af amtskommunerne, som har aftalt at gennemføre etablering af foreløbigt 10 nationale cykelruter. Cykelruterne skal skiltes som anvist i vejreglerne dog med den forskel, at nummeret på nationale cykelruter vises på et rødt felt i stedet for et blåt.

Vejvisere

F 21.1	Stirutetavle	
F 21.2	Stiplvejviser	
F 21.3	Stitabelvejviser	
F 13	Servicevejviser	
F 18		
F 13.21	Servicevejviser	
F 18.21		

Vejreglernes kvar til vejvisning for cyklister, vedtagen i 1991.



*Nationale cykelruten - klar til brug i 1993.*

## 6 Overnatningsmuligheder

I Danmark er der som bekendt ingen allemandsret, hvilket dels betyder, at der er begrænsede muligheder for færdsel i det åbne land, og dels at det ikke er tilladt at overnatte i det fri uden for campingpladserne.

For at skabe mulighed for overnatning i telt i naturprægede omgivelser startede den selvejende institution Idéværkstedet et forsøg med oprettelse af teltpladser hos private lodsejere. Fra 2 teltpladser i 1988 har ordningen udviklet sig, så der idag findes 550 teltpladser spredt ud over hele landet (4). Ordningen administreres af Idéværkstedet i samarbejde med Danmarks Cyklistforbund.

En teltplads er et smukt areal i "naturen", hvor det er muligt at opstille max 10 telte. Der skal kunne hentes vand og være et lokum i nærheden af teltpladsen, og overnatning må højst koste 10 kr. pr person. Teltpladser er kun beregnet for cyklister, vandrere, ridende og eventuelt folk i kano eller jolle. Der må ikke køre biler på pladserne.

De fleste teltpladser ligger på privat ejede arealer, som en bonde, en højskole, en efterskole eller privatpersoner stiller til rådighed. Men også offentlige myndigheder har fulgt ideen og etableret teltpladser på offentligt ejede arealer. I år har Statsskovvæsenet således åbnet ca 70 pladser i statsskovene for overnattende gæster i telt. På disse pladser er der dog sjældent hverken lokum eller vand.

Nettet af teltpladser er idag så tæt, at det er et enestående tilbud til cyklister og andre friluftsfolk, der vil overnatte billigt og i kontakt med naturen på tur i det danske landskab.

For at følge tråden op om forskningens rolle, så må man lige som ved udviklingen af cykelruter konstatere, at drivkraften ved udviklingen af teltpladser har været bestemt af driften eller ønsket om at overnatte i tæt kontakt med naturen og styringen er foregået gennem justeringer i forhold til opnåede erfaringer. At starte med forskning eller udredning i forbindelse hermed ville have været en omvej.

## **Kilder**

Cykelturismeanalysen. Friluftsrådet, 1991.

Planlægning for cyklister. Hverdag og fritid. Miljøministeriet. Planstyrelsen og Fredningsstyrelsen. 1985.

Cykelveje - en rapport om planlægning af cykelveje uden for byområder. Jens Erik Larsen og Arne Vestergård Pedersen. IVTB-rapport nr.15, 1978. Institut for veje trafik og byplan. DTH.

Overnatning i det fri - teltpladser og naturlejrpladser i Jylland/på øerne. Idéværkstedet og Danmarks Cyklistforbund. 1992.

Vejregler for stivejvisning. 9.10.16 Udstyr. Afmærkning. Vejdirektoratet, Vejregeludvalget, 1991.

# **The Management Point of View on Long-Distance Trails: "Experiences in Central Finland"**

*Heikki Herva and Mikko Kankainen*

## **Abstract**

This paper examines outdoor recreation trails in the light of experiences gained in Central Finland. The managerial point of view will be accompanied by a comparison with the circumstances for long-distance trail planning between Central Finland and Lapland.

## **Background**

In a way, Central Finland has constituted an experimental area for long-distance trails in southern Finland. There is a "Provincial Trail" of over 200 kilometres and a shorter wilderness trail called the "Lapland Finger" in the northern part of Central Finland (figure 1).

The national framework for such trails was created by the 1973 Outdoor Recreation Act. It contains regulations concerning the planning and construction of outdoor recreational areas. According to the law municipalities are responsible for planning and implementation of the trails. Although the planning and implementation of long-distance trails usually requires inter-municipal cooperation. In Central Finland, the plan for the overall land use was made by the Regional Planning Authority (the track was marked on the confirmed regional plan), and the track was built by the Central Finland Provincial Federation, which employed a secretary for that specific purpose. At this point it is worth pointing out that the two provincial offices mentioned above were combined in 1990 and they form the present organisation called the Regional Council of Central Finland.

## **Development of long-distance trails and contributing factors**

The process defined in law for constructing long-distance trails is a rigid and slow procedure. The longer Provincial Trail has been implemented on a voluntary basis, in consultation with land-owners. At first, no remuneration was paid; later, the



In the seventies a hotel company began to build tourism centres in Central Finland on a large scale. What we call 'wilderness hotels' cropped up in different parts of the province, in Viitasaari, Saarijärvi and Joutsa. The company also built a hotel in Jyväskylä and had plans for several others. One of the central aims of the long-distance trails was to boost nature-oriented tourism. The trail connected these centres, and the trails were part of their marketing. Since then, the centres have changed their character and developed towards spa hotels. The long-distance trails no longer had their former significance. Some centres have also been closed down because of financial difficulties.

At the beginning guided treks were arranged, and they attracted a number of foreign groups especially in winter. PR treks were organised for decision-makers also during the summer. A lot of publicity was accorded to an event called the 'Governor's Trek', to which high government officials were invited once a year. One of its aims was to advance local projects in the state budget.

Another aim was to create a positive image of the province both within and outside the region. The trails were seen to enrich the provision of leisure-time activities available to the local population and to boost their regional spirit. The local authorities considered these objectives so important that they saw it as a great shortcoming if the trail did not pass through their area. One example of this is Joutsa in the south-eastern part of Central Finland, where local authorities designed a trail of their own in the late eighties.

Especially in the beginning, the Central Finland Provincial Trail played an important role in large-scale development ventures in the province. The trails were used particularly during wintertime. The trail and the resting places bordering densely populated areas are still in extensive use, for instance in the outskirts of Jyväskylä.

Because of the positive experiences gained and encouraged by the financial aid allocated by the government for the trails in the eighties, Central Finland authorities embarked on the construction of the so-called model track between Jyväskylä and Jämsä. The aim was a high-standard trail and pleasant resting places. The cost of the construction was 800 000 FIM. The municipalities along the trail did not, however, see the trail as their concern. In the southern end, the trail is integrated into local plans and has already been realized to some extent. A new participant in the undertaking is the Central Finland Water and Environment District.

The long-distance Provincial Trail in Central Finland has been cleared in the terrain and marked with signs. Resting places have been built along the trail. The Lapland Finger trail in the northern parts has also been marked. The larger part of the Provincial Trail is seldom used in the wintertime.

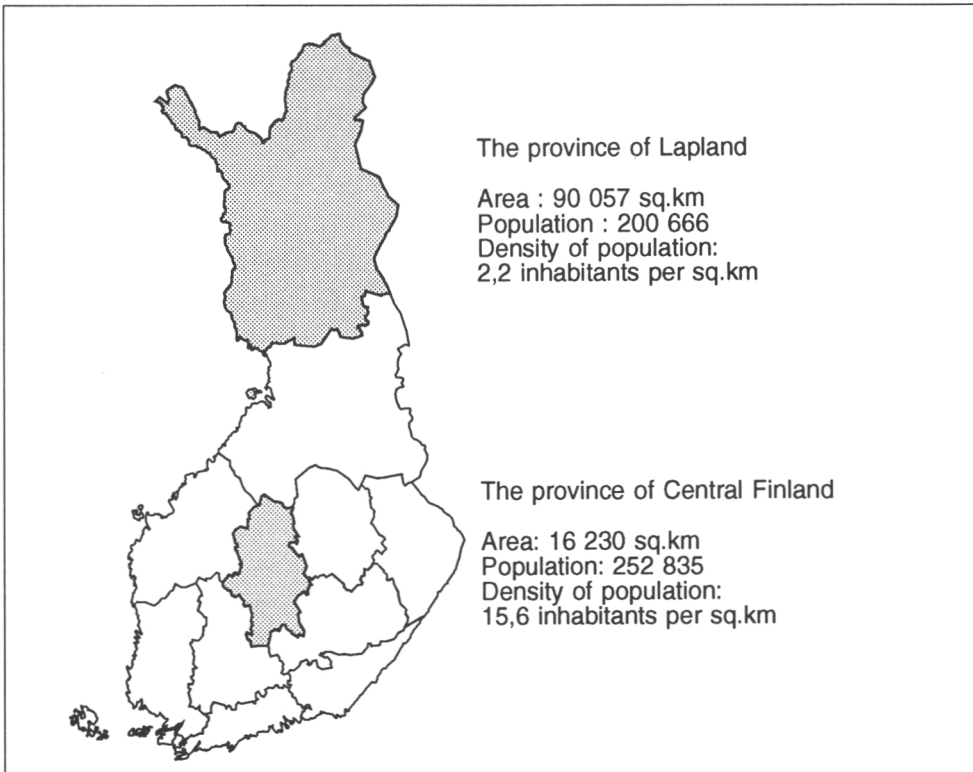
The function of the trails should be reconsidered. There have been plans for reviewing the use of the trail, even plans for concrete research, but they have never been undertaken because of lack of funds and other difficulties. It is high time to study the extent to which the trails in Central Finland have fulfilled their purpose and to assess their current use. Such studies would also have wider significance.

### **Comparing Central Finland to Lapland**

According to early textbooks (e.g. Olin & Virtanen 1975, Liikuntasuunnittelu 1981, Liikunta ja ympäristö 1985) there are certain groundrules to be taken into account when planning outdoor recreation areas and long-distance trails. The most important ones of those are the population and its location, and the structure of commercial and industrial life in the planning area. These factors have a strong influence on outdoor recreation activities and on the use of recreation areas and long-distance trails, for which reason they form the basis on which the actual planning objectives can be placed.

Lapland is well known as a traditional region for hiking and skiing. Because of this it is an appropriate object of comparison for Central Finland. Even a harsh geographical comparison between Lapland and Central Finland (figure 2) indicates the significant circumstantial differences which separate these two provinces. First of all Lapland is by its area of land almost six times larger than Central Finland. Furthermore, the density of population in Lapland is seven times lower than in Central Finland. According to this information it seems that the environmental potential (natural unconstructed surroundings) for long-distance trails is located in Lapland while the potential users live in southern Finland. This is supported by the old tradition of "spending one's vacation hiking or skiing in Lapland".

Economically, the fact that the structure of trade in Lapland is much more (tourist)-service oriented (over 60 % of all trade) than in the more industrialised Central Finland also puts Lapland into a better position in terms of promoting the development and use of long-distance trails. This tourism oriented aspect is also the basis on which the long-distance trail-system has successfully been established in Lapland. Lapland's unique nature with its wilderness, fjelds and mythology attached to its history



*Figure 2. The provinces of Central Finland and Lapland.*

create the foundation on which the masstourism oriented network of tourist centres has been established. And the network of tourist centres has created a good basis for the development and use of long-distance trails. This kind of kaleidoscopic foundation cannot be found in Central Finland.

Basically all the trails (for hiking and skiing) in Lapland are nowadays planned and implemented around tourist centres far apart from towns while there seems to be no need to connect the more densely populated areas to the long-distance trails. Previous plans concerning long-distance trails which connected towns and other more densely populated areas have been set aside because of lack of demand for them in Lapland. Most of those trails originally ment for hiking and skiing have lately been changed over to snowmobile trails for which there has been a growing demand (Hiltunen 1992).

In Central Finland the problems with the lack of interest and use of long-distance trails have mainly been caused by a wrong approach in planning the trails. Tourism oriented long-distance trails are well suited for Lapland, but do not work in Central Finland where the environmental and social circumstances are different. Experiences

in Central Finland indicate that the individual and social needs for the planning of outdoor recreation routes are quite the opposite from Lapland. In Central Finland it seems to be necessary to connect all the trails (shorter and longer trails) closely to densely populated areas, if we want them to be used. Another factor affecting the use of trails is whether the trails are implemented on traditional paths in the terrain or on totally new grounds which have never been used before. The latter alternative will set high requirements for the qualitative aspects of the trail. It is also clear that people's behavior affected by traditional values like hiking and skiing in Lapland is not easily changed, if at all.

## **Conclusions and development proposals**

Because there has not been sufficient research data to back the planning and implementation of long-distance trails, they have been moulded after foreign models. Additionally the local or regional characteristics have not been considered properly in the planning process. The role of long-distance trails is different in Central Finland and Lapland. The motivation behind long-distance trails in Central Finland has been other than pure trekking and nature experiences. This can also be seen in the way the Provincial trail is designed to run long distances along forest drives which are neither enjoyable in terms of aesthetics or the appreciation of nature. This is exemplified by the Lapland Finger, which has virtually had no use at all. If people wish to experience Lappish wilderness, they go to Lapland and not to Central Finland.

One difficult aspect of the construction of long-distance trails is inter-municipal cooperation. Province-wide implementation and maintenance is not as topical as it was in the beginning. The overall regional objectives, for instance to promote a positive image of the province, are perhaps largely fostered in other spheres. The cutbacks made in public finance also concern organisations like the Regional Council of Central Finland. No full-time employees are available to promote the trails.

In the future the long-distance trails may relate more to municipal activities and cooperation between neighbouring local authorities. In this case, the planning and construction of outdoor paths could be built on existing reservations for recreational areas. Estimation on the state of implementation of area reservations for recreation in regional plans stage I and II shows that there are still many unused areas suitable for the promotion of outdoor recreation and long-distance trails (Hamarus & Kankainen & Salminen 1986). The experiences gained in Central Finland show that more attention should be paid to making outdoor trails more accessible. Trails, also long-distance trails, would then be more closely connected to recreational areas in

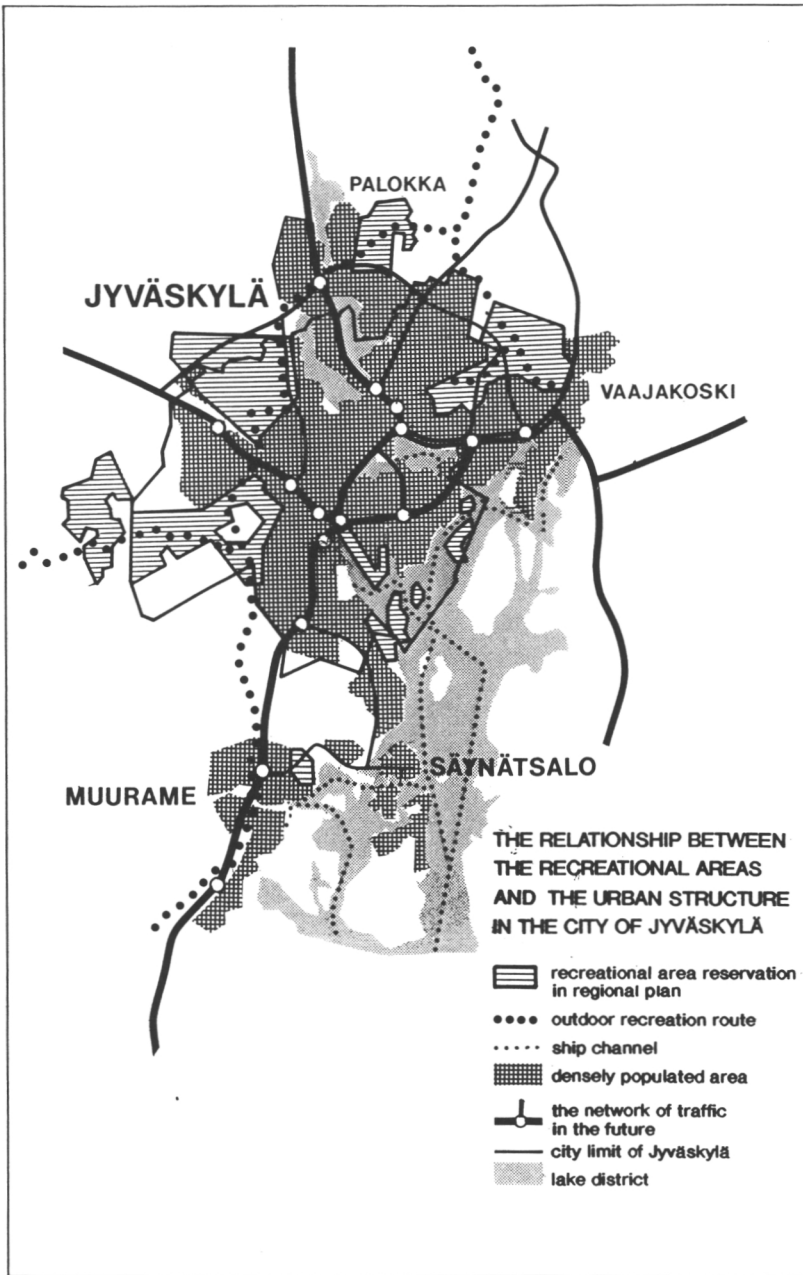


Figure 3. The relationship between the recreational areas and the urban structure in the city of Jyväskylä.

and outside towns and cities, which in turn form an integral part of the urban structure as a whole, as in Jyväskylä (figure 3). One of the major problems in outdoor sports and recreation is the severe cuts made in local activities. Sports and recreation are threatened in many municipalities, and the foundation on which inter-municipal cooperation rests is crumbling.

National measures would be a great help in this situation. This would entail a clear policy for action. One that deals with matters relating to trails, and with how state support is channelled. If state financing for long-distance trails is included in the general state grants for local activities, municipalities will almost certainly overlook the trails in resource allocation. The administrative organisation in trail construction was changed on proposal of a relevant committee in 1988, and the financing, overall supervision and development were transferred from the Ministry of the Environment to the Ministry of Education (Ulkoiluhallintotyöryhmän mietintö 1988). The Ministry of Environment now only takes care of the general promotion of outdoor recreation and the use of nature for recreational purposes. On the basis of the experiences gained in Central Finland, the point of departure in the development of long-distance trails should be that the government in cooperation with the municipalities support the implementation and review of the trails undertaken by municipalities. Additionally the planning process of the trails should be rethought in terms of taking the actual public needs into consideration.

## References

- Hamarus, A. & Kankainen, M. & Salminen, M. 1986. Virkistys- ja suojelualueiden toteuttaminen. Arvio ensimmäisen ja toisen vaihekaavan virkistys- ja suojelualueiden toteuttamisesta. Keski-Suomen seutukaavaliitto, julkaisu nro 79, sarja B. [The realization of area reservations for recreation and nature protection in regional plans stage I and II. Regional Planning Authority of Central Finland, publication 79, series B] Jyväskylä. 119 p.
- Hiltunen, T. 1992. Lapin reitistöjen kehittäminen. Selvitys reittien huomioon ottamisesta kaavoituksessa. Lapin seutukaavaliitto, julkaisu nro 120, sarja A. [The development of outdoor recreation trails in Lapland. A report on taking the trails into consideration in land use planning. Regional Planning Authority of Lapland, publication 120, series A] Rovaniemi. 75 p.
- Liikunta ja ympäristö 1985. Käsikirja ulkoilualan päättäjille, suunnittelijoille ja toteuttajille. (toim.) Kinnunen, A. & Riekkinen, L. Suomen Latu ry. [Outdoor recreation and environment. A handbook of outdoor recreation for policymakers and planners. The Finnish Ski Association] Helsinki. 195 p.
- Liikuntasuunnittelu 1981. (toim.) Lagus, P. Liikuntatieteellisen Seuran julkaisu nro 77. [Planning for physical activity. The Finnish Society for Research in Sport and Physical Education, publication 77] Helsinki. 185 p.

Olin, K. & Virtanen, M.O. 1975. Ulkoilu- ja retkeilyreittien suunnittelu. Osa I: Yleiset suunnittelu- ja kehittämisperusteet. University of Jyväskylä, Department of Sociology and Planning for Physical Culture. Research reports 10. 67 p.

Ulkoiluhallintoyöryhmän mietintö1988. Ympäristöministeriö, ympäristönsuojelu-osaston sarja C/32. [A report of the committee for the administration of outdoor recreation. The Ministry of Environment, department of nature protection, series C/32] Helsinki. 34 p.

### **Other sources**

Keski-Suomen seutukaava 1. vaihekaava 1985. Virkistykseen ja vapaa-aikaan liittyvien toimintojen sekä suojelun alueet. Keski-Suomen seutukaavaliitto, julkaisu nro 10, sarja A. [Regional Plan stage I. Area reservations attached to recreational activities and leisure time. Regional Planning Authority of Central Finland, publication 10, series A] Jyväskylä. 353 p.

Ulkoilulaki 1973. Suomen Asetuskokoelma, nro 606. [Outdoor Recreation Act].

# Management of Long-Distance Trails on Private Lands in Finland

*Kauko Kyöstiö and Tuija Sievänen*

## Abstract

The principles of land-use planning and administration related to outdoor recreation and long-distance trails in Finland are briefly described. A municipality has the main responsibility to provide public outdoor recreation services. The financing possibilities, administrative and managerial skills, and especially the political will on local level are instrumental in the supply of public recreation opportunities. Adminstrating and managing of long-distance trails in cooperation by two or more independent communities have been problematic.

## 1 Land-use planning system and recreation administration

In Finland, we have the Scandinavian everyman's right which means that we can hike, ride bicycle, ski, pick berries and mushrooms on all land without limits of land ownership. However the visitor on private land may not cause harm or damage to the nature or to disturb the privacy of housing. This is why in Finland there are not as many designated recreation areas compared to, for example, England or United States. The need for designated recreation areas in Finland depends on the size of the community. In bigger cities, these areas are managed by the municipality agencies. The state has also established large areas for hiking, fishing, cross-country skiing and other outdoor recreation activities.

Land-use planning takes place on three levels in Finland: national, regional and local levels. The decisions about land use inside a commune boundaries are made on local level. Areas for recreation are reserved in the land use-plans. The local municipality is responsible to implement the plan.

On national level, recreation administration is shared by Ministry of Education and Ministry of Environment. On regional level neighbouring municipalities have organized regional recreation associations, which take care of recreation services in practice. Regional Planning Associations are only responsible for regional planning. National authorities provide monetary support and also give advice and control local authorities by intermediate administration. (Ympäristöministeriö 1988, figure 1)

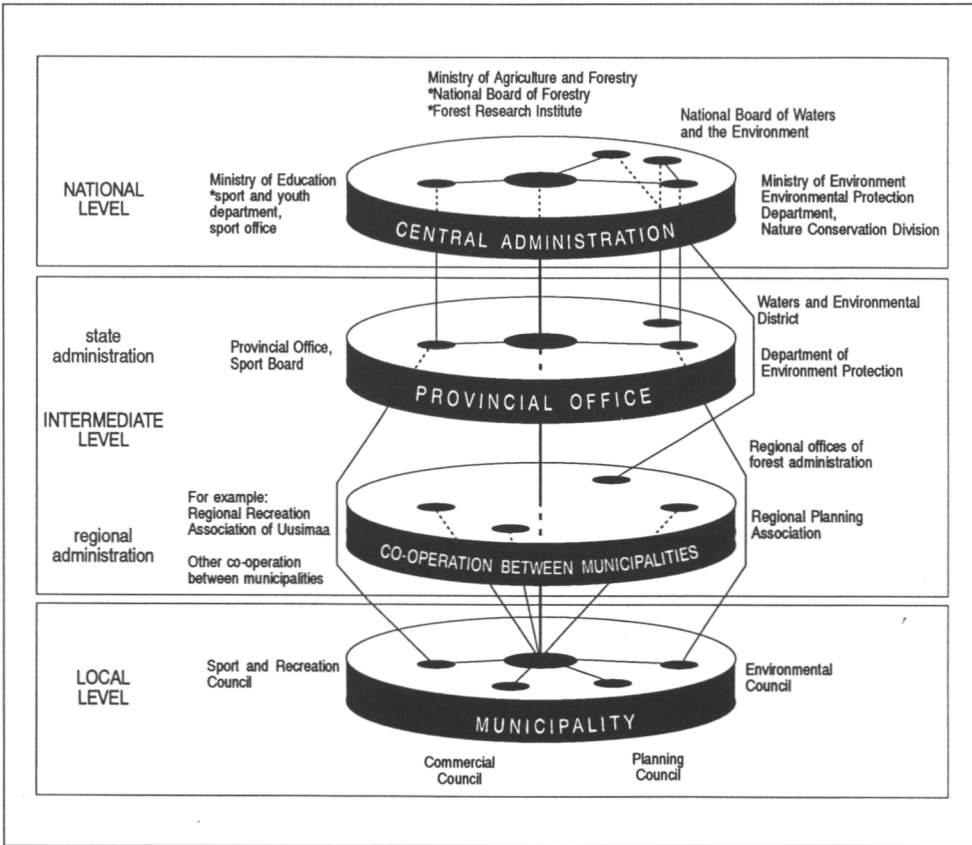


Figure 1. Levels of Finnish administration.

In general, a municipality (there are 440 independent communes in Finland) is responsible to organize outdoor services for its population. This policy refers to all recreation facilities such as sport fields and sport halls, swimming halls, beaches, skiing tracks etc., and also outdoor recreation areas which mainly serve the local community.

Authorities have a large autonomy to make decisions concerning recreation services. The decision-makers need to choose within a limited budget what recreation facilities or areas are to be developed. Every commune has its own budget and organisation, several acting agencies, and the final decisions are made on political level by specialized councils such as Council of Sport and Recreation. To establish a long distance trail can be one alternative, but there is not any policy on national level which could force local authorities to build a long-distance trail.

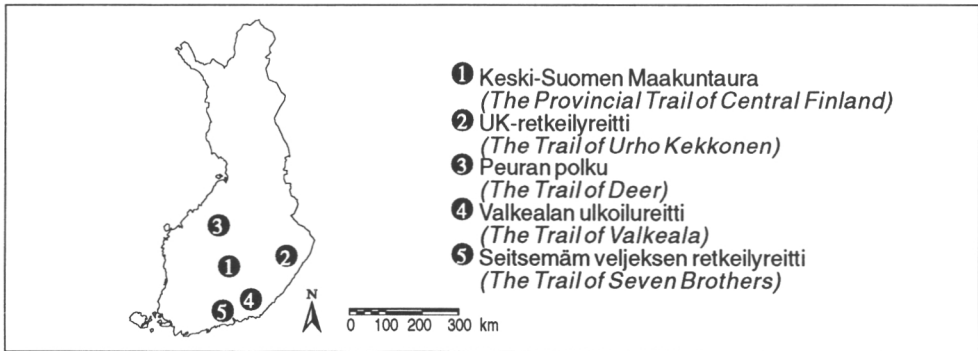


Figure 2. Studied long-distance trails.

## 2 Research problem

This paper describes some of the results of a study which focused on the administrative and planning problems of long-distance trails. Five existing long-distance trails from Southern and Central Finland, each crossing the borders of several communes, were chosen as study objects (Kyöstiö 1992, figure 2). The trails are located in five different regions and in 19 different communes.

The studied long-distance trails are managed cooperatively by several municipalities. They have a regional coordinator. In the studied cases, the regional coordinators were the Regional Travelling Association, Regional Planning Authority and Finnish Skiing and Hiking Association. The regional coordinator has the role of a planner but all decisions are made in each commune.

The data was collected by interviewing municipal agencies and regional coordinators. In addition a structured questionnaire was sent to municipalities. Analysis was made using matrix technique.

## 3 What are the main problems concerning long-distance trail planning and administration?

In many cases, in the very beginning, the idea to establish a long-distance trail came from some active local people, and the basic work to build a trail was done to great extent on voluntary basis. The main reason for building a long-distance trail was to support nature tourism, not to serve local people. The initiation to establish a trail was made by one commune, and the other communes were invited to join the project. Some communes have participated in trail projects just for solidarity reasons, and the

motivation for cooperation has not been very high. Willingness to invest into trails has varied.

In most cases, the long-distance trails are managed by three to five municipalities. The coordination of trail projects has had difficulties. When planning, building, maintaining and financing in one commune have not been motivated, it has reflected into the whole trail project. A lot of delays, cancelling and weakening of original plans has happened. The quality of the existing trails is not satisfactory (Karjalainen 1991).

One problem in the trail projects has been caused by land ownership. According to the Outdoor Recreation Act (Ulkoilulaki 1973), the commune may plan a trail to pass through private lands, and in most cases, the trails are directed at least partly to private lands. Problems are, for example, the big number of landowners with whom the planner must negotiate about the route plan and "key landowners" who are not willing to cooperate. Difficulties with landowners may cause that the route of the trail can not be directed through the most interesting and passable areas for hiking or skiing.

In general, local authorities have very little information about who uses the trail and how much. The maintenance of the trails has not been on satisfactory level, which may have had influence on the number of users. Nearly all municipality agencies were disappointed about the fact that there have been very few hikers on the long-distance trails.

## 4 Conclusions

In near future, Finland may become a member of the European Community. That may increase pressures toward recreation resources. Long-distance trails will get a more important role as a part of recreation resource system. One reason to develop trail systems is based on the growing problems of erosion in Finnish National Parks, especially in Lapland. One solution to ease the pressures in Lapland is to provide competitive recreation opportunities in Southern Finland. Also, the majority of Finnish population live in south, and it is important to provide good recreation opportunities close to where people live.

Because of these future trends there is a need to improve the quality of existing trails. This is not possible if the maintenance by municipality agencies is not improved. Maybe new and better trails should be constructed. All this means that the problems in administrating long-distance trails cooperatively should be solved, and better

administrative methods should be developed. Maybe regional recreation associations will take the challenge to develop a good long-distance trail system in Finland. Also hikers must be convinced that they can find good trails in Southern and Central Finland.

### References:

- Karjalainen, Eeva 1991. Retkeilyreittien laatukriteerit. Helsingin yliopisto, ympäristönsuojelun laitos. Pro gradu -työ. [The Quality Criteria of Long-Distance Hiking Trails. Master thesis, University of Helsinki, Department of Environmental Conservation.]
- Kyöstiö, Kauko 1992. Retkeilyreitit aluesuunnittelun ja -hallinnon näkökulmasta. Helsingin yliopisto, maantieteen pro gradu -työ. [Planning and Administration of Long-Distance Trails. Master thesis, University of Helsinki, Department of Geography.]
- Ympäristöministeriö 1988. Ulkoiluhallintoyöryhmän mietintö. Ympäristönsuojeluosasto. Sarja C32. Helsinki. [Ministry of Environment. Report of Outdoor Recreation Administration Working Party.]
- Ulkoilulaki 1973. Suomen Asetuskokoelma nro 606. [Outdoor Recreation Act]

## **The Role of the Finnish National Board of Forestry in Outdoor Recreation**

*Pertti Veijola*

### **Abstract**

The Finnish National Board of Forestry (NBF) administers about one quarter of Finland's total area. Most of the State forests are located in Eastern and Northern Finland. The share of the State forests of Finland's timber production is ten per cent, and State-owned lands have many other values, such as nature protection and outdoor recreation.

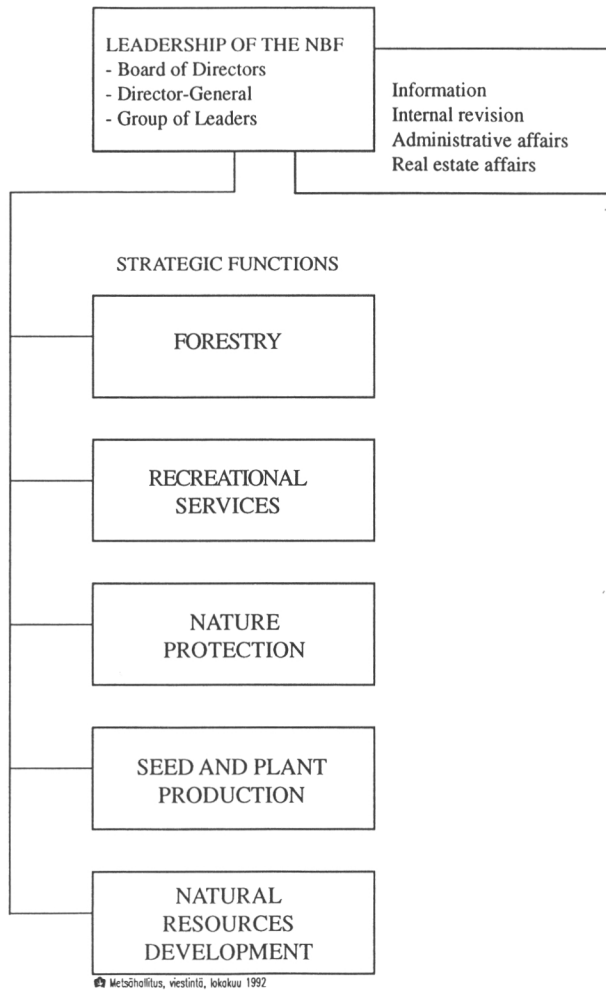
### **New Organization**

The NBF had earlier a traditional three-level forestry organization. Intensive organizational development work was realized during the past two years. Development was based on the analysis made by the external working environment. The major strong points and weaknesses were identified, and a new vision was created. In accordance with the Vision 2000, the NBF aims at:

- the management, utilization and protection of the State forest, land and water property in the best possible way from the viewpoint of society and in a sustainable way from the viewpoint of nature; and
- managing all the tasks related to the State forest, land and water property, all the way from nature protection to timber production, efficiently and economically with the same organization.

The new organization has two levels: the strategic level at the headquarters and the operational level in the field. The functions have been divided into strategic and support functions. The strategic ones include Forestry, Nature Protection, Recreational Services, Seed and Plant Production, and Natural Resources Development. In this reform, nature protection and recreational services got an equal status with forestry. The NBF is no longer merely a forestry organization but rather an organization managing natural resources.

THE FINNISH NATIONAL BOARD OF FORESTRY (NBF)  
as of May 1, 1992



## Recreational Services

The Recreational Services of the NBF are responsible for fishing, hunting, outdoor recreation and the traditional means of livelihood. The main tasks of this function are as follows:

- to manage the lands and waters reserved for recreational services;
- to provide recreational services based on these areas;
- to develop and market the products and services;
- to cooperate with Forestry in promoting recreation in commercial forests;
- to provide services for the traditional means of livelihood; and
- to cooperate with Real Estate Services in the administration of real estates.

There are various kinds of services. Some of them are purchased by the customers and some are public services free of charge. Recreational Services can be divided into the following three groups:

1. Business: sports fishing, hunting, rental huts, land leasing, service packages.
2. Public Services: trails, unlocked wilderness huts, campfire sites, leans-to, information.
3. Official Duties: tasks based on legislation, such as forest ranger activities, employment relief, free fishing and hunting.

The area of function of the Recreational Services covers the whole of Finland: from the southern coast to the northernmost part of Lapland. There are today some one hundred sports fishing areas and a large number of other fishing waters, nearly eight million hectares of hunting grounds, six special hiking areas and two hundred other recreation areas. The facilities for outdoor recreation include three visitor centres, some two hundred huts, hundreds of leans-to and campfire sites as well as about six thousand kilometres of hiking, boating and snowmobile trails. The public access principle (also called the everyman's right) guarantees possibilities in recreation on almost all State lands.

The strategic management of Recreational Services is situated at the HQ in Vantaa in the Helsinki Metropolitan Area. The main tasks of this unit are to provide the financial and general framework for the activities and to lead the development.

The field organization has been divided into seven districts: Western Finland, Eastern Finland, Ostrobothnia, Kainuu, Western Lapland and Eastern Lapland as well as the northernmost special unit, called the Northern Lapland Wilderness Management Area. This area covers three of Finland's northernmost communes, 90 per cent of whose area is owned by the State. The national minority, the Saami people, lives in this area. Apart from the recreational services, the Wilderness Management Area is responsible for nature protection and forestry. One of the main objectives is to integrate these three activities.

The Recreational Services employ 120 officials and 50 permanent workers within the whole organization of the NBF. The yearly budget is about 100 million Finnmarks. The number of visitors enjoying free services is estimated at about one million per year. Some 250,000 fishing and hunting licences are sold yearly. Almost all the important winter sport resorts of Northern Finland are located on State lands. In such cases the built areas and recreational services around them are

managed as a whole. All in all, the NBF is the leading provider of recreational services for nature lovers in Finland.

## Research Needs

The large-scale maintenance and development of recreational services should be based on facts, not on opinions. For the present, the providers of the services have, in many cases, defined the objectives, and the specialists have played a decisive role in the planning phase. The free services financed by the State have mostly been one reason for this situation. Now this will, however, change: the NBF will be more market-oriented in the future. Thus more information on the preferences of our prospective customers is needed. The free public services should be evaluated more accurately, and the benefits of outdoor recreation for society should be studied.

More research is needed in the following topics:

### 1. Basic Data

- use patterns both on national and local level;
- forecasts on changes in use patterns;
- user characteristics, needs of various groups for segmentation of services;
- social and psychological carrying capacity; and
- experiences in various activities of outdoor recreation.

### 2. Economic Issues

- the importance and value of the free public services; and
- outdoor recreation as a part of forest production.

### 3. Off-Road Vehicles

- positive and negative effects, snowmobiles and summer vehicles.

### 4. Green Tourism and Outdoor Recreation

- tourism and outdoor recreation as a whole; and
- possibilities of developing new means of livelihood in the countryside.

### 5. Public Involvement in the Planning of Outdoor Recreation

Outdoor recreation requires much cooperation and coordination: within the public sector, between the public and the private sectors, and between the organizations providing outdoor recreation and the customer organizations. The cooperation between the organizations providing outdoor recreation and those doing research, both on the national and international level, is an essential premise for the success in the development work.

# Impacts from New Roads on Tourism and Outdoor Recreation - Environmental Impact Linkages and Assessment as Strategy

*Jon Teigland*

## Abstract

The conflicts between large development projects and environmental values have been an issue of high public concern for many years. A core question in several cases in the Scandinavian countries has been the interrelated impacts between new roads, environmental quality, and outdoor recreation and nature based tourism. New roads through larger areas with wilderness character and land protected for recreation/nature based-tourism have especially been controversial.

Decision makers and planners have so far seldom used evaluation in advance, or impact assessment, as a strategy to clarify and eventually solve problems related to new larger roads and tourism/-recreation. One reason may be that very few scientific studies have been done in this field, either before (ex ante) or after (ex post) a road construction project. The base for making impact assessment for these relationships have therefore been weak.

This paper tries to reduce some of these problems by first giving a short account of some basic concepts, including the different types of impacts which new roads (and other developments) can have on outdoor recreation/tourism. It then clarifies goals, and gives guide-lines for the workprocess during the assessment, with a strategy for analysis of interaction/cumulative-effects.

The paper is based on a recent assessment done for Swedish Road Authorities in connection with a new highway through an environmentally sensitive area in Sweden. But it also includes basic results from Norwegian research on impacts from roads on outdoor recreation and tourism, studying the reality "before and after" new road developments.

## 1 The problem

The planning of new highways and roads through larger nature areas or environmentally sensitive areas, have often created strong public debate in the Scandinavian countries. Several of these controversies have been difficult to handle for planners and decisionmakers, because of strong disagreement about the effects such roads can have on the tourist-industry and outdoor recreation interests. This has especially been the case in connection with roads through wilderness and protected areas.

Opponents of new roads through sensitive areas have often referred to a significant reduction of environmental qualities. Which according to their expectations would

reduce significantly the attraction and number of nature based visitors, and thereby the basis for the tourism-industry. Advocates of new roads at the other side have often argued that the new road would be an attraction in itself and open up the area for more and new types of visitors and thereby strengthen the economic base for the tourist trade and local communities. The increased accessibility will in addition, according to many advocates of such roads, make the nature accessible for other population groups, who otherwise would not have the same possibility to experience the nature. These simplified arguments give a picture of the classic conflict in Scandinavia between environmental qualities, economic interests, and a political desire to "democratize" the accessibility to nature.

## **2 Scientific knowledge and impact assessment as problem solving strategy**

Surprisingly few studies have, however, looked into the realities and tried to investigate what are the potential effects for tourism and outdoor recreation from new larger roads. Decision makers and planners have therefore few models and guidelines to follow, if they want to know - during the planning and before a decision - what could be the effects on outdoor recreation and tourism from a controversial new road. Evaluation in advance, or impact assessment, have very rarely been used as a strategic tool.

In Norway the environmental concern is now changing that situation. The Ministry of Environment require today an assessment of impacts covering explicate also naturebased recreation from all larger new projects, also new roads. That requirement has recently been written into the Norwegian Planning Law. The change has created a strong need for assessments in the tourism and recreation field, and for improved methods and knowledge.

This paper gives an account of some important concepts and methods which can be used in such impact assessment. The account is based on an impact assessment done recently for Swedish Road Authorities in connection with a new highway through a protected nature area in that country (Teigland 1992). But it also includes the main findings from two scientific "before and after"-studies which have investigated the effects on naturebased recreation from new roads developed through environmental sensitive areas in Norway (Teigland & Vorkinn 1987, Teigland 1991). The intention of the paper is to contribute, hopefully, to this kind of assessments in the future by sharing experiences from Scandinavia.

### 3 Major types of impacts

Large development projects, as new highways, hydro power developments, oil drilling projects, airports, tourist resorts etc., can effect tourism and outdoor recreation in many similar ways. Some of these effects are related to impacts on the recreation users of a nature area (**the consumers**), and some of them are impacts directly and indirectly on the people delivering goods and services to the recreational users of the area (**the producers or the recreation and tourist-industry**). The impacts on the consumers and the producers are not always the same, and it can therefore be necessary to assess the impacts on the users (the consumers) and the industry (the producers) separately.

#### 3.1 Impacts on the consumers (the tourists and recreational visitors)

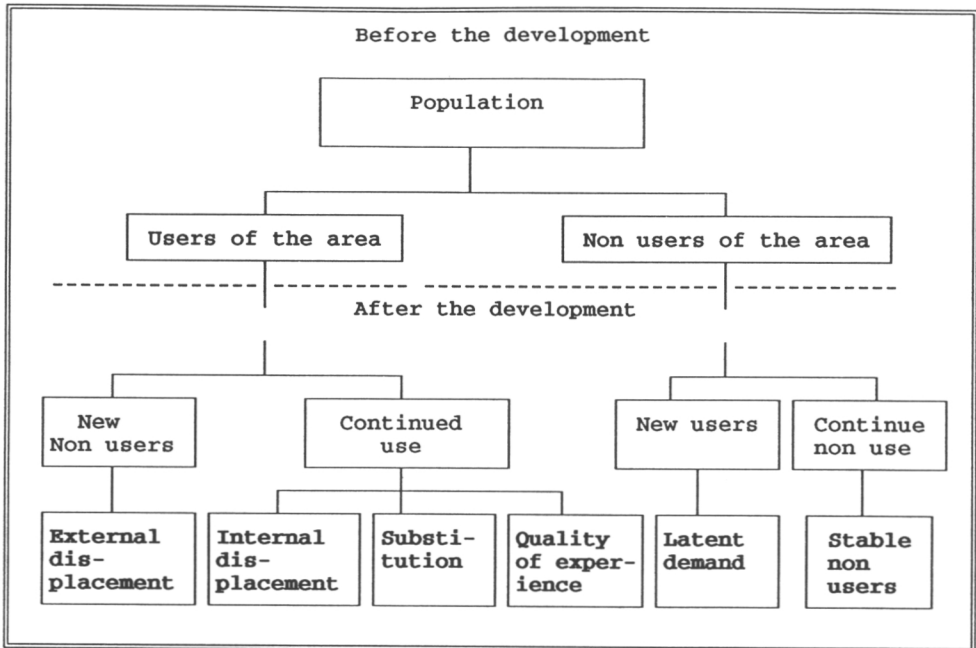
Large developments, as new roads and highways can have 4 major impacts on the consumers or visitors to nature areas; by releasing displacement effects, substitution- and quality-effects, and latent demand effects.

**The displacement effects** refer to former recreational users of the influenced area - both local inhabitants and visitors/tourists - who are relocating their recreation activities to other areas during and after the developments, either outside of influences area (**the external displacement effects**) or to less influenced parts of the area (**the internal displacement effect**). Former users of the area can also continue to use the same area for recreational purposes, but change the activity they are doing there (**the substitution-effect**). Former users may, however, also use the same area in earlier ways - and not move their recreational activity to another area or change the recreation behaviour -, but find a change in the quality of the experience. This **quality-effect** can cover the full spectre from positive to neutral and negative changes.

New development projects will, however, most often have effects not only on former users, but also on inhabitants and tourists who have not used the influenced area earlier for recreational purposes. Public debate and information through massmedia on the planned developments can make earlier non-users aware of the recreational possibilities in the influenced area, even before any new development starts. Development plans can thereby release use from earlier non-users. Improved asseccibility to the area can also release a desire among earlier non-users to visit the area. And if the development project itself have attractive qualities or make earlier attractions more visible, from view-points or from a travel corridor, that too can attract new

users. Such release of new users among earlier non-users can be seen as **the latent-demand-effect**.

All large development projects in nature areas may have these effects on the recreation patterns and experiences among tourists and local inhabitants, not only new highways and road developments. These effects can be summarized as in figure 1.



*Figure 1. Main effects on tourists and local inhabitants interested in outdoor recreation, from development projects in nature areas.*

### 3.2 Impacts on the tourist and recreation-industry

A change in the behaviour of recreation users of an area will often effect the tourist and recreation-industry in the area directly. The impacts can, however, be very different for a producer located close to the new road compared with similar producers located in areas adjacent to it, or along other alternative and competing through-roads.

A new main road will in most cases **change the traffic flow on other roads** in the neighbourhood, and thereby have direct impacts on existing tourist companies along the existing roads (the **redistribution-effects**). If the new road is not an attraction in itself and leads to an increase in the traffic, then some of the existing roads and tourist companies located there will lose traffic. The increased traffic and tourist demand along the new road will then equal the decrease along the existing roads, and give regionally a "Zero-sum-game" with some of the existing tourist companies along other roads as the most probable losers.

The importance of this redistribution effect can be very different among tourist companies along roads with reduced traffic flows, as the importance for a company of the impact will depend not only on the reduction in traffic volume. The importance for a company will also depend on how much of its business is related to nature-based visitors and how much is based on other types of customers, who are primarily coming as visitors to the local community, business visitors, conference guests etc. And therefore have less or no connection with the nature in the area which is changed because of the road development. The importance of the impacts can also depend on a company's possibilities and abilities to find alternative customers, if the flow of earlier visitors decrease because of displacement or as a change of the geographical travel pattern. The redistribution effects from a new major road or road-section on the tourist and recreation-industry will therefore depend also on the general market situation in the area before and after the development.

A new road can in addition have a "**braking-effect**" and a "**detour-effect**" on the tourist flow through the area, if the new road is an attraction in itself or gives the through-traffic information about attractions, for example by showing the travellers a view of very attractive areas along the road. If these attractions get the attention of the through-traffic and keep it so the travellers are using more time in the area, then the road have a "**braking-effect**" with potential impacts on the tourist-industry in the area and along the travelling corridor.

In cases where attractions in the adjacent areas make the travellers interested in a detour from the new main road, then the road have a "**detour-effect**". These impacts will in a large degree depend on the quality of the attractions which the new roads "releases" for tourist/recreation purposes.

A study from a new main road along the Norwegian north coast show, however, that braking and detour-effects can depend also on the relationship between the new road, the total itinerary the travellers have planned and the location of the main destination of the travellers (Teigland 1991). Many of the travellers in that area had a rather fixed

itinerary with a planned visit to one main destination away from the new road. The attractions along the new road was therefore only an **intervening opportunity**, and a minor attractions compared with the chosen main destination. In that case even dramatic views to international unique nature from the road, had only a small braking or detour effects on the tourists driving by. Only a few percent of the car tourists driving through the area, took a few hours detour to take a closer look at the unique nature. The braking-effect among most of the car tourists, was a 3 minute stop in average along the road to look at the most breath taking view.

The few car travelling tourists who did take a detour, stayed, however, in a larger degree overnight along the new road than the other through-travellers. The detours had therefore a minor braking-effect along the road-corridor, and influencing tourist companies also outside of the nearest region. (The international cruise industry, however, send their ships to the area because of the unique landscape qualities. But the cruise ships have only small impacts on most of the tourist industry on shore, and they would most probably come also without the new road development).

#### 4 The influence-zone

New roads and other large new development projects in nature areas, will usually have influence on tourism and outdoor recreation not only in the area which are developed physically (**the developed area**), but also in a zone around where the development will be directly experienced by visual, sound or smell-impacts. Large developments as new roads can, however, have an influence on tourism and outdoor recreation also outside this **core-area** where the development is directly experienced.

That is the case if the development influence environmental sensitive recreation users or travellers who are not staying in one part of the area, but are passing through the area following a travel- or recreation corridor. In such cases the flow through the whole corridor can be effected, even if the development only effect directly one part of the corridor.

The Norwegian study referred above showed that the new coastal road had only a minor "braking"- and "detour-effect" among the existing car tourists, but that minor impact was distributed along a regional influence zone following the road-corridor. Another Norwegian case-study from an undeveloped mountain area show that a new road can have large impacts on the flow of long distance hikers along the whole trail corridor. The flow of long distance hikers through that former wilderness-like area

went down 50-60 percent **along the whole trail corridor** - which cover a 3-4 day hiking distance - as soon as a new road was developed through one part of the very attractive trail corridor (Teigland & Vorkinn 1987).

**The influence zone of a development project can therefore include not only the core area, but also the travel- and recreation corridors effected.** Which means that it can be important in impact assessments in this field to make a distinction between **stationary and travelling users** of an area. Stationary users then are recreation users who are connected most of their time to a smaller area, as second home owners, swimmers etc. often are. A road development can have larger impacts on such users, than on travelling users who are moving through larger areas along a corridor, as hikers and people travelling by boat, bicycle, horse, cars etc. often are.

Travelling users have usually more alternatives than stationary users of the core area of a new road development. And one way to mitigate some negative effects from road developments can be to develop alternatives; relocate trails or secure and inform about alternative recreation areas.

## 5 Goals and workprocesses in such impact assessments

The goal of impact assessment in this field will, normally, be to improve the knowledge about important impacts for tourism and outdoor recreation, **before a decision is taken on a planned change of nature.**

An impact assessment study is with other words an information tool for planners and decisionmakers, which should;

- identify significant effects, which could come during the construction, and on short and long term afterwards.
- clarify the geographical areas which will be influenced (the influence-zone).
- give a base for predictions on volume and direction of the coming effects.
- clarify possibilities to eventually reduce negative and to increase positive effects from the road project.
- contribute to the best possible base for decisions, among other things by comparing alternative plans for the new road with a situation without any change from the existing conditions (the "0- alternative").

The work on such impact assessments is usually applied science, concentrating on clarifying the different changes which could occur (i.e.the theories). And testing the theories about expected changes by factfinding about the existing situation and trends

in tourism and outdoor recreation in the influence-zone, using all kinds of sources (existing statistics, user-surveys, interviews with informed locals and other persons etc.). Information from comparable developments in other areas could also be collected to test theories about impacts. In most cases it is, however, recommended to compare information from several sources, as some of the information in conflictful cases is not too reliable (the triangulation-strategy).

The first task in an assessment process will often be to identify the main direct and indirect effects from the new road or road-section, as that increase the ability to direct the work towards the important issues as soon as possible. Identification of potential effects can be done in cooperation with the different interests involved, and used as the base for a written work-program for the assessment. One advantage of identifying potential effects in cooperation with the different interests involved in a project, is that such a process often clarify the different competing theories about the effects from the roadproject.

Explicite discussion in the assessment of "competing effect-theories" can be helpful for all actors participating in the planning and decision process, and can lead to adjustments and compromises, and easier acceptance of decitions. Assessments should, however, also look for unexpected impacts which the different interests involved have not thought of at the beginning of the assessment process.

## **6 Planned and unplanned changes; interaction and cumulative-effects**

Unexpected impacts have been important both in the Norwegian and Swedish road impact studies referred earlier. One reason is that construction of a new major road or highway-section will usually take several years. The construction of the new Swedish highway-section, will for example last for approximate 4 years, with a start in 1993 and opening of the road in 1997 if the construction goes as planned. The short term effects will therefore be visible towards year 2000, and the long term effects will be seen by year 2010 and later.

Assessment of such future-effects is difficult. The task is not made easier by the large probability that, **in addition to the planned changes** (the highway project), several **unplanned changes will occur at the same time**; as changes in Swedish economy, new national relations to EEC, policy adjustments, changes in holiday patterns in Sweden and neighbouring countries etc. Such unplanned changes may both increase

and decrease the impacts from the planned change (the road development). The planned and unplanned changes will therefore most probably give some **interaction and cumulative-effects**.

In addition to such unplanned interaction and cumulative-effects come the **effects from secondary projects** (as new road service-facilities), which the new road itself (**the primary project**) can release. And the Scandinavian experience is that a new main road can release many unexpected secondary projects both on short and long term. The new road through parts of the referred to Norwegian wilderness-like mountain area have released in the long term both the development of more roads, powerlines, second home developments, accommodation-facilities, and a so far a non-permanent summer ski-resort (report to be published, Teigland).

Secondary projects released by the primary project, give very important effects. **The Swedish impact assessment referred earlier, showed for example that the cumulative-effects of planned secondary projects along the new highway had a potential for larger negative impacts on the existing tourist industry than the development of the new highway-section itself. That was an effect that none of the involved interests had thought of in advance, but which now can be reduced or avoided by adjusting the plans for the secondary projects.**

The interaction and cumulative-effects from unplanned changes and secondary projects will always be difficult to assess. One way of handling such effects in an impact study can be, to first assume that all other factors than the new road or highway-section will be stable both on short and on long term. After such a **partial-analysis**, the assessment can then discuss briefly the possible and probable changes in other factors on short and long term, given the knowledge at the time of the study about other changes going on. The impacts from secondary projects can often be assessed more thoroughly, as roadprojects often very early release several plans for road-service facilities, accommodation facilities, new tourist attractions etc. An analysis of effects from secondary projects can not, however, include more than secondary projects known at the time of the assessment.

## **7 "Values and Remaining values"**

An impact assessment can clarify what kind of effects a new road in a nature area can have on outdoor recreation and tourism, and analyze alternative solutions. How important this information will be in the planning and decision process is difficult to know. That will most probably depend on the political strength of the outdoor

recreation and tourist-interests, and the values connected with nature and environment qualities in each country.

The concepts referred to so far in this paper may indicate that the value of nature for outdoor recreation and tourism is closely tied to the use of the area. Research has, however, shown that an area not only has such "use values", but often has large value also for non-users, who would like to keep the possibility open both for them self to experience the area (the **option value**) and for knowing that an area is protected (the **existence value**). North American studies show that option-, existence- and other values, can be larger than "use values" (Walsh 1986).

The existence of larger areas without modern undevelopment has been reduced dramatically in the Scandinavian countries during the last 30-40 years, but no studies show the existence and option values connected with the remaining wilderness-like areas. The Norwegian case study referred to from the earlier undeveloped mountain area show, however, that the use-value of such wilderness areas can be significantly reduced for traditional recreation users if a new road is developed there. The number of long distance hikers who used that case area was reduced with 50-60 percent after the road was developed early in the 1970'ties.

That reduction has been a long term effect, and is most probably a result of the lasting reduction of the environmental quality in the area. Which have led to an external displacement effect of 50-60 percent among the traditional users, who have moved their long distance hiking activity to other alternative wilderness-like areas in Southern Norway after the development.

That case study shows also that the new road has not released a latent demand large enough to compensate for the reduction of former users (Teigland & Vorkinn 1987). The main reason is most probably the large supply of alternative roads through mountain areas with similar qualities. Tourists and car-drivers in Southern Norway have in other words had enough mountain roads to choose from, and have not had any strong need for more of them for recreation purposes.

The reduction in quality is, however, not so strong that people are not using the road for recreational purposes. And it is still a significant number of long distance hikers using the area. The area has therefore still a **remaining value for recreation and tourism**. But the remaining value in this area is mainly a result of the environmental concern expressed when the development was planned, and the crude impact assessments done then. The public reactions to those plans and the expected effects was so strong that the parliament as a compromise decided to protect the most attractive parts

of the area from all kinds of roads and other developments. The road was therefore led through many long tunnels to less significant areas, to keep the most attractive parts of the area and the old trail-corridor without developments.

User-studies show that the remaining attractions for the traditional and new recreation users are in a large degree concentrated to the high quality parts of the area protected from new roads and other developments. But the protection of the most valuable parts has in spite of the increased accessibility, released relatively few new usergroups. Most of the users of the high quality protected area are still hikers of similar kind to them who used the area also before the development. The earlier users, the hikers, have, however, started to use the area in new ways; not only for long distance hiking, but also for day-hiking.

The different main effects of this new road reflects perhaps that a new road through a nature area do not increase the interest for nature experience, but mainly that people already interested in nature get new possibilities to experience the remaining nature-values in that area.

## 8 Conclusions

The basic idea behind impact assessments in general has been that better understanding of the effects of new projects will improve the quality of decisions made with respect to environmental matters. As one of the pioneers in the field has said (Armour 1991): "The hope has been that the requirement to prepare an environmental impact statement would serve as an action-forcing mechanism facilitating the achievement of these (environmental) goals". That pioneer added, however "Unfortunately this has seldom been the case".

There are many reasons for the limited success of impact assessment as an environmental strategy. Too much attention on procedures and methods, and too little on substance and the integration of the results in the planning and decision processes are perhaps the most important ones.

The Scandinavian experiences so far seem to indicate that substance is the superior requirement. One efficient way of increasing substance can be to learn from the past; by doing some long term basic case studies on what really are the impacts, using "before and after" - research strategy.

The referred impact studies in Norway and Sweden indicate that new roads in larger protected or sensitive areas can have more negative impacts on traditional recreation and less positive touristic impacts than often expected, at least in the Scandinavian countries. The arguments for building such roads because of recreational or touristic interests have therefore become less important. It is possible that similar impact assessments will show the same realities in other countries. The requirement of impact studies covering impacts on recreation and tourism, may therefore be an environmental friendly strategy also outside of Scandinavia.

### **References (with English translation of Norwegian titles):**

- Armour, A.: "Impact assessment and the planning process: A status report" *Impact Assessment Bulletin*, Volume 9, No.4 (1991), p. 27-33.
- Teigland, J. & Vorkinn, M.: "Impacts on outdoor recreation and tourism from hydro power and road developments in Aurlandsdalen". NTNF's utvalg for miljøvirkninger av vassdragsutbygging. Rapport nr. B24, Oslo 1987.
- Teigland, J.: "The outdoor recreation and tourist-interests at Engabreen/Svartisen glacier. A before and after study of impacts from a hydro power and road development. Baseline study summer 1991". Norwegian Institute for Nature Research. Oppdragsmelding 084, Lillehammer 1991.
- Teigland, J.: "Impacts on tourism and outdoor recreation from a new European highway-section. A case study from E4 in Central-Sweden". Telemark Research Foundation. Rapport nr. 55, Bø i Telemark 1992.
- Walsh, R. G.: "Recreation economic decisions: Comparing benefits and costs". Venture Publishing, Pennsylvania 1986.

# Trails Through Nature and Culture in Norway

*Ingun Grimstad*

## 1 Conceptual background

How people experience nature as a cultural landscape is one of the main issues in a project called "landskapsopplevelse og kulturlandskapsvern" (The personal experience of the landscape and protection of cultural landscape). In Norway the expression cultural landscape has only recently become important in senses like ethnology, archaeology, landscape planning and geography. The expression has a lot of different meanings, mostly focusing on the man-made or man-influenced aspects of the landscape, and also on how people experience and view landscapes.

When I use the expression, I will be focusing on the landscape as a result of cultural processes. The landscape concerned is not of a particular kind, it could equally well be almost every landscape we have, but it is the way of seeing the landscape that is the essence. Behind this manner of using the expression is the understanding of the fact that all landscapes are influenced by people in one way or another, from the agricultural cultivation of land to the effects of human activity such as pollution.

The traditional agriculture produced a land with a richness of varieties, high aesthetic quality, and many possibilities for recreational use. Because of big changes in our use of land in modern times, especially in agriculture, this landscape is now threatened by the more effective use of the land resulting in a more singular type of landscape. This is the underlying force for the strong motivation felt by cultural historians, biologists, and the agricultural authorities to prevent eradication of cultural landscapes of high quality.

## 2 Study plan

In the project, I plan to focus on the leisure-time use of cultural landscapes, and I have chosen three trails as examples, for this purpose. I aim to study the connection between people's experience of landscape and nature, and their experience and attitude towards the cultural landscape and heritage in the same landscape. What do

people see, how does knowledge about the area's cultural history affect this, and do people recognize a connection between the area's history and nature. Does the experience of nature give modern people empathy with the people that previously lived in the area.

Nature and culture will be the main contrast, and I will be looking at this contrast in different aspects; between daily life in the city and free time at the countryside; between man's use of nature and nature's adaptability to this use; between the experience of the walkers in nature and culture in the area they walk in and in nature as continual processes.

By these means I hope to find out how people understand and experience the cultural landscape. At the conclusion of the project this will be discussed, along with the reasons why we want to take care of and protect our old material culture like buildings and old landscapes.

The project will be finished as a doctor's thesis in about three years from now.

### **3 Study areas**

The areas in which I collect data have greatly differing nature and cultural histories. All three areas have a marked path that give the walkers the possibility of enjoying nature and cultural heritage at the same time. The landscapes are, in different ways, also a result of people's use.

#### **Akerselven miljøpark**

Akerselva is a city river flowing through Oslo town. The old industries of the town are situated here. The river is about 8 kilometers long and flows from a height of 150 m above sea level to finally empty into the fjord. It has lot of small natural and man made waterfalls, forming the basis for the originally situating industry along the river. The area has now been renovated and made into a park.

A path along the river traverses this park the whole way down to the Oslo Fjord. The path is used by people living in the areas around, mainly old working class people, and a new younger population of academics that moved in recent years. It is also used by "tourists" from other parts of town. There are a lot of guide books with information about the area and the river. Along the river there no longer exist areas that are not

changed by people's use. This is obvious for the walkers to see, but the path nevertheless gives walkers contact with nature, with trees, flowers, birds and the running water.

### **Finnskogen**

The second area is called the Finnskogen - the Finnish forest. Finnskogen is a great evergreen forest extending both sides of the Norwegian-Swedish border. The forest was populated in the late 15th and beginning of 16th century. The settlers brought with them another way of using the forest, other ways of building and of course a very different language. Even to today the area is still colored by this immigration, and the people of the area still call themselves Finns. The language died out two generations ago.

The area has also much in common with other districts with a very marginal agriculture. It has not followed the agricultural revolution, and still a lot of the old is kept, houses, fields with piles of stones and another totally different richness of flowers compared to meadows influenced by chemical fertilizer.

A 240 kilometer long path through the area was opened this year. This path mainly comprises parts of old path systems, and it traverses the border about 7 times. Walkers on this path will pass many of the old small Finnish farms. The forest is experienced as a great wilderness with wolf and lynx. The people living there tend to have and are also expected to have a superstitious view. But, the forest is at the same time a modern industrial landscape used for producing timber, and nothing remains uninfluenced by people.

The walkers are tourists from all over Norway, tourists from other countries, and the local population who have a very strong feeling for the nature in the area.

### **Aurland**

My third area is near the famous Norwegian fjords, on the west coast. Up to the beginning of our century the valley was populated by farmers. Their income came mainly from the good grazing provided by big and rich mountains. One of the important trails from east to west Norway passed through the valley. The people in the valley left for America or the nearest settlement partly because the place became

too far away when things such as school and shops and new communications became important.

The path through the valley is connected to the great trail system in the Norwegian mountains. The path is today one of the most popular tourist trails. The part of the valley I use is a days walk, going from the mountains and down to the fjord. The nature can be described as wild and impressing. Both the path itself and the area around are rich with memories from the older use of the valley. The new use, waterpower, is hardly visible. But at the same time as walkers experience the river as wild, a technician down in "Vasbygda" village decides exactly how much water is allowed to run in the valley.

The hikers consist of one day hikers, both car tourist and the local population, and partly hikers that have spent many days in the mountains.

#### **4 Methods used in the study**

The main way of collecting information will be interviews, or may be rather conversations with the hikers. From earlier projects I have good experience using a sort of open interview with tape recorders. But a problem now will be that the repertoire of the hikers for giving vent to there views is limited. It is not easy to give an explanation for why they find the valley of Aurland marvellous and why they want the old Finnish farms at Finnskogen to be preserved.

I have not started the analysis of the interviews, but I know from earlier experience that my main task will be to separate the genuine and personal way of expression, from the more common cultural repertoire. But this standard way of seeing things will also be used but in another way. Why is it, for instance, very common in Norway to answer the question "do you normally go for a sunday walk" with: "I have not been very good at that" or "Yes I am in fact quite good at that and go for a walk every weekend". And is it something people do feel or have learned the right answer that old buildings should (could) be preserved because it is part of our roots or cultural history.

Important is also the connection between knowledge and what people actually see and therefor also enjoy. And the attitude to our cultures use and misuse of nature as a contrast to the old culture's more harmonious way of using it.

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## PROGRAMME

### NORDIC OUTDOOR RECREATION

#### The Workshop on International Comparative Studies

- Sept 9th     International Comparisons in Recreation Research: Methods and Concepts for LDT-studies. Seminar with scientists
- 10.00        Welcoming by Tuija Sievänen
- 10.15        Jon Teigland (Telemark forskning) and others: Basic concepts. What are long-distance trails and trail-systems?
- 11.00        Lunch
- 12.00        Lars Hedlund (University of Uppsala): Methods and problems with measuring trail use
- Tuija Sievänen (Finnish Forest Research Institute): Methods to measure trail qualities
- Dorothy Anderson/David Lime (University of Minnesota): Methods for resource inventories (carrying capacity) and monitoring (activities, experiences and benefits)
- 14.00        Coffee
- 14.30        Research problems and methods connected with new trail-projects, open for potential participants:
- Ingun Grimstad, Ph.D. student, Department of Ethnology, University of Oslo: the Experience of cultural heritage along trails, problems and methods in case studies started in Norway.
- Open for other participant who would like to present and get comments to their project and research problems:
- 16.00        Problems and advantages with international comparative studies: The experiences from the studies done in Finland, Minnesota and Norway (Anderson, Lime, Sievänen and Teigland)
- 19.00        Dinner
- 21.00        The saunafestival starts

- Sept 10th What have we learned about Long Distance Trails (LDT)? A seminar with managers
- 9.00 Aarne Reunala (Research Manager, Finnish Forest Research Institute): Multiple use of forest and forest recreation research in Finland.
- 9.15 Cross-cultural approach in Recreation Research  
Tuija Sievänen: What the Nordic Countries can learn from North America and from comparative studies.
- Prepared comments from Dorothy Anderson and David Lime
- snowmobile-trails: problems and solutions
  - cooperation between management and outfitters
  - trail-development, tourism and the local community
  - what North America can learn from the Nordic countries
- 11.00 Lunch
- 12.00 Protection and development of trail-interests:
- Lennart Bäck: What are the impacts on trail-use from new highways and hydro-power developments. Results from Swedish studies
- Ian Jorgensen (Danish agricultural University): National and regional long distance trail planning in Denmark (walking and bicycling)
- Prepared comments on trail planning processes: The Minnesota experiences. (Anderson/Lime).
- 14.00 Coffee
- 14.30 What do we need to know in the future about LDT and Nordic outdoor recreation areas? Prepared comments and discussion:
- Representative from Finland (on trails) and Denmark (on Nordic recreation areas): The management point of view. Heikki Herva, Pertti Veijola, Ian Jorgensen.
- David Lime/Dorothy Anderson: The Scientists point of view
- 16.00 Summary of the management seminar: Tuija Sievänen/Jon Teigland
- 19.00 Dinner
- 21.00 The saunafestival continues







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