A call for a broad spatial understanding of outdoor recreation use

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Abstract — To better understand the scope of outdoor recreation in a pan Europe context, many agencies and organizations have attempted to collect data at various spatial levels and for a multitude of uses. The aim of this paper is to suggest a need for better and broader understanding of outdoor recreation use at various spatial levels. Case examples from Swedish data collection efforts are provided and suggestions are made to have a better understanding of horizontal harmonization and vertical data integration.

Index Terms — outdoor recreation, monitoring, vertical data integration.

1 Introduction

Understanding outdoor recreation use has long been acknowledged as fundamental to decision making for a range of recreation providers. As European life in the post Soviet era changed due to rising incomes, increase free time, technology developments, and EU expansion and centralization, the ethos of the outdoors has also changed [2]. Participation in the outdoors is now not only linked to enjoyable experiences but also to a country's health, economy, environment, and overall quality of life.

Outdoor recreation is often considered to be a public good and highly valued by citizens. This valuation continues to rise as users receive a higher consumer surplus due to the perception that the benefits of outdoor recreation greatly outweigh the exchange costs. One limiting factor that has prevented outdoor recreation, and conversely tourism, from being a major economic force in many regions is the lack of primary research-based data on recreation demand [16]. Without demand data, recreation planning decisions would be based on speculation and anecdotal accounts.

Many of the decisions surrounding recreation are directly related to planning and marketing, and they are dependent upon understanding their users. The volume, flow, scale, and impact from recreation are understood through these data [1], [6]. Those regions with weak or incomplete information risk being undervalued when policy, planning and management decision are made. The more comprehensive and precise the data, the better the understanding of recreation needs and where the industry is heading.

The goal of this paper is to suggest a need for better and broader understanding of outdoor recreation use at various spatial levels. Case examples using experiences from Swedish data collection efforts are provided, and suggestions are made to have a better understanding of horizontal harmonization and vertical data integration.

2 Outdoor recreation use at various spatial levels

To better understand the scope of outdoor recreation in a pan Europe context, many agencies and organizations have attempted to collect data at various spatial levels and for a multitude of uses [9], [14]. While many

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countries and management units have spent considerable effort in collecting visitor data, most studies are limited to a small geographic area, are not compatible with studies in other areas and do not lend themselves to trend analysis. This is not to imply that past efforts at understanding outdoor recreation have not been valuable, but only to suggest that many countries still have a long way to go to fully understand outdoor recreation at all levels.

Data requirements at three primary spatial levels have been conceptualized based on geo-political constructs and information usage (Table 1). While these are broad interpretations of a complex system of data usage, it presents the observation that recreation planning operates at different levels and their data requirements are unique. The first level is at the continent (e.g. E.U. or U.S. level [2], [3]. This level would also address defined regions such as the Nordic and Baltic countries. At the second level would be country specific understanding of outdoor recreation. In addition, this level would also include sub-regions of a country such as the mountain region in Sweden. At the third level would be the municipalities in the sub-regions, also including site-specific information for designated areas of national significance (e.g. National Parks) or urban proximate areas near municipalities.

As Table 1 also shows, the principal use of demand data varies depending on the spatial level. At the continent and country levels, this information is primarily used for policy development. At their corresponding sublevel, a main use is for funding allocations. At the site level, the main uses are for product development and marketing by small businesses. The frequency of use of recreation data also differs based on the spatial level. As the level increases to a broader geographic area, the frequency of use declines. Individual sites need accurate data quite frequently, often many times each year, while at the higher levels, policy development use often only occurs once every several years [11].

TABLE 1

DATA REQUIREMENTS AT MULTIPLE SPATIAL LEVELS

Spatial Level	Demand Function	Frequency of Use
Level 1: Continent	Policy development	Long term: 5-10 years
1A: Regions	EU funding allocation	Med Long term: 3-5 years
Level 2: Country	Policy development	Med Long term: 3-5 years
2A: Sub-regions	Country funding allocation	Medium term: 3 years
Level 3: Municipality	Sub-region funding allocation and marketing	Medium Short term: 1-3
3A: Sites	Product development and marketing	Short term: ≤1 year

3 MONITORING OUTDOOR RECREATION USE IN SWEDEN

Sweden has a broad, but non-systematic, scheme of collecting outdoor recreation that has evolved over the years [4]. Based on the spatial levels presented above, Sweden has attempted to address data needs primarily at levels 2 and 3 (Table 2), and below is a discussion of how these levels have been addressed.

Statistics Sweden collects information on outdoor recreation participation as part of the national census – "Undersökningar av levnadsförhållanden, ULF" [15]. This has been done in 1976, 1982-83, 1990-91, 1999, 2006-07 with a sample of approximately 7,000 each time. These surveys provide participation data for a selection of activities over time only, i.e. walking, forest hiking, gardening, outdoor swimming, boating, fishing, mountain backpacking and hunting. Data has been analyzed with regard to socioeconomic groups as well as trends over time.

Surveys on *forest recreation* have studied different forest characteristics vis-à-vis outdoor recreation, the distance to the closest recreational forest, and changes in forest recreation use between 1977 and 1997 [8].

TABLE 2

EXAMPLES OF MONITORING AT DIFFERENT SPATIAL LEVELS IN SWEDEN

Spatial Level	Case Examples	Vertical integration	Trend data
Level 2: Country	Statistics Sweden	no	yes
	Outdoor Recreation in Change Program	yes	(no)
	Forest Recreational Use Survey	no	yes
	Mountain tourism Survey	no	(yes)
2A: Sub-regions	Outdoor Recreation in Change Program	yes	no
Level 3: Municipality	Outdoor Recreation in Change Program	(yes)	no
3A: Sites	Numerous on-site surveys	(no)	(yes)

These studies are based on mailed surveys to samples of the national adult population in the range of 1000-3000 individuals each time.

Outdoor Recreation in Change is an interdisciplinary, national research program for the study of outdoor recreation and nature-based tourism in Sweden [13]. The program uses case studies of various outdoor recreation sites in combination with a national / regional postal and follow-up Internet inquiry to provide information on participation in outdoor recreational activities as well as associated motivations, constraints, economic and social factors. The postal survey was distributed to 7000 Swedish citizens (age 18-75), including a national sample of 4700 and regional oversampling in three regions (two urban proximate and one coastal) of 2300. E-mail addresses collected in the questionnaire were used for a web-based follow-up last visit survey distributed during one years time.

A study of *visitors to the mountain region* collected data in two phases; 1) a telephone survey to identify visitors and non-visitors to the Swedish mountain region followed by, 2) mailed surveys to collect additional information about the trips reported in the telephone survey [7]. The sampling frame was all households in Sweden outside the mountain region with a registered household telephone. A questionnaire which targeted activity participation was mailed to both mountain visitors and non-visitors who gave their address in the telephone survey. This study also repeated a survey by the Swedish Environmental Protection Agency in the mid 1980s, and includes information on changes in mountain tourism [5].

A large number of *on site visitor surveys* have been made in Sweden, and several different outdoor recreation settings have been subject to these studies, with special focus on (i) urban proximate nature, (ii) forests, (iii) mountains and (iv) coastal areas [1]. Notably, some of these studies have monitored outdoor recreation over time, while only one focused on winter based outdoor recreation activities (snowmobiling and cross-country skiing). All these studies represent large variations in methodology and quality, which clearly indicates a need for improved standards. In addition to data collection, some of these studies have also focused on visitor monitoring method development.

The studies above show that Sweden has tried to address the various data needs at Levels 2 and 3 but not in a systematic fashion. These studies were usually not coordinated and did not build on each other. In addition, little work has been done in a formal sense to address Level 1 data needs. Based on the most current literature, it appears that Sweden is not unique in the challenges in its collection and management of outdoor recreation data. As such, there is a need for a broader spatial based understanding of outdoor recreation in Sweden just like in most other EU countries.

4 OBSERVATIONS

Many countries have developed sophisticated techniques for collecting data at Level 2

(country level and sub region levels). Some examples are national manuals [10], the Nordic-Baltic visitor monitoring project [9], Cost Action E33 [14]. These efforts would be termed as "horizontal harmonization" (e.g. across country, region etc). The emphasis is to examine recreation use at a particular level without much consideration of its relationship or applicability to other levels. For example, there is often an emphasis on collecting nation wide data for use in policy or funding aspects. These data are then disaggregated to a sub level for use by municipalities. Unfortunately, the data at this stage is usually not valid or reliable due to small sample size and representativeness to the population. Very few Level 3 data collection efforts occur in a systematic accurate fashion. Examining the literature above, little evidence was found of any attempt to improve vertical integration of different spatial levels in outdoor recreation monitoring. Data that is collected at the macro level often is limited in its applicability at the micro level. Finally, very little emphasis has occurred for Level 1, EU level data collection. It is acknowledged that this change will occur slowly given the many countries in the EU.

It is suggested that vertical integration is just as important to planning efforts as horizontal harmonization that is currently emphasized by many countries. Recognizing the various data needs at different spatial levels will require a new paradigm shift in the way that recreation data is collected and monitored.

A recently proposed Swedish national program for Outdoor Recreation Monitoring has attempted to address vertical integration (though only for levels 2 and 3) through a process of spatial aggregation [12]. In essence there are three phases of this program; (1) a national survey of outdoor recreation use will occur; (2) on a rotational basis, a certain number of sub-regions will be over sampled; and (3) this oversampling will then identify clusters of areas at Level 3 with high demand that will subsequently be further on-site surveyed in the future. The idea is to identify those Level 3 areas and sites that are in the greatest demand. This process takes into account the need for a systematic method to have Level 3 data but acknowledges the limitations of collecting data for all sites.

5 Conclusions

The social, cultural and natural resource diversity that defines the many countries in the EU provides a multitude of important recreation and tourism opportunities. It is this diversity that makes a systematic understanding of outdoor recreation so important, and so difficult to achieve. This paper has made a call for a broad spatial understanding of outdoor recreation use. In examining the literature on outdoor recreation data collection, and as a case example, how Sweden has addressed the data needs, we would make the following recommendations for future outdoor recreation monitoring:

- Harmonization attempts have missed vertical integration between levels 1-3 which should be further addressed in systematic monitoring designs,
- An integrated approach is needed to address deficiencies in both horizontal harmonization and vertical data integration,
- Stimulation for better vertical integration may include;
  - Share data collection costs among different agencies and NGOs
  - Develop standardized data collection methodologies that can be used by a multitude of diverse recreation providers
  - Encourage data collection by recreation providers that can be stored in a central database
  - Encourage the collection of both macro level baseline data and aggregated micro level data
  - Discourage the use of disaggregated macro level data for micro level decision making.

References

[1] Anon, 2006. Monitoring Outdoor Recreation in the Nordic and Baltic Countries. Tema Nord, 2006:530. Nordic Council of Ministers, Copenhagen.

[2] Bell, S., Tyrväinen, L., Sievänen, T., Pröbstl, U., and Simpson, M. 2007. Outdoor recreation and nature tourism: a European perspective. Living Reviews in Landscape Research. Online article, http://www.livingreviews.org/lrlr-2007-2.

[3] Cordell, H. K. (principal author). 2004. Outdoor recreation for 21st century America. Venture Publishing: State College, PA, 293 pp.

[4] Emmelin, L., Fredman, P. & Sandell, K. 2005. Planering och förvaltning för friluftsliv – en forskningsöversikt. Naturvårdsverket, rapport 5468.

[5] Fredman, P. & Heberlein, T.A. 2003. Changes in Skiing and Snowmobiling in Swedish Mountains. Annals of Tourism Research, 30(2) pp. 485-488.

[6] Garber-Yonts, B. 2005. Conceptualizing and measuring demand for recreation on National Forests: A review and synthesis. United States Department of Agriculture Forest Service Pacific Northwest Research Station General Technical Report PNW-GTR-645, November 2005.

[7] Heberlein, T.A., Fredman, P. & Vuorio, T. 2002. Current Tourism Patterns in the Swedish Mountain Region. Mountain Research and Development, 22(2), pp 142-149.

[8] Hörnsten, L. 2000. Forest recreation in Sweden – Implications for Society and Forestry. Acta Universitatis Agriculturae Sueciae. Silvestria 169.

[9] Kajala, L., Almik, A., Dahl, R., Diksaite, L, Erkkonen, J., Fredman, P., Jensen, F. Søndergaard, Karoles, K., Sievänen, T., Skov-Petersen, H., Vistad, O. and Wallsten, P. 2007. Visitor monitoring in nature areas – a manual based on experiences from the Nordic and Baltic countries. Nordic Council of Ministers, Copenhagen.

[10] Lindhagen A. & Ahlström I. 2005. Användningen av rekreationsområden. Hur mäter man friluftslivets omfattning och kvalitet? - En handbok. Skogstyrelsen, rapport 3/2005.

[11] Monz, C. & Leung, Y. 2006. Meaningful measures: developing indicators of visitor impact in the National Park Service inventory and monitoring program. The George Wright Forum, 23(2), 17-27.

[12] Naturvårdsverket. 2008. Remiss av ett förslag till program för insamling av statistik om friluftsliv (regeringsuppdrag 2006/42). Manuscript.

[13] Outdoor Recreation in Change, 2006. Outdoor Recreation in Change. Landscapes, Expereinces, Planning and Development. Program Plan, 2008-08-18. www.friluftsforskning.se

[14] Sievänen, T., Arnberger, A., Dehez, J., Grant, N., Jensen, F.S. & Skov-Petersen, H. 2008 (eds.) Forest Recreation Monitoring – a European Perspective. Working Papers of the Finnish Forest Research Institute, 79.

[15] Statistics Sweden, 2004. Fritid 1976-2002: Levnadsförhållanden, rapport nr. 103. Stockholm.

[16] Yuan, M. 2004. Review of Outdoor Recreation for 21st Century America: A Report to the Nation, The National Survey on Recreation and the Environment (H. Ken Cordell). Journal of Park and Recreation Administration, 22 (4), 139-142.

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