Recreation Experience Preferences and Activity Profiles in a Crown Forest Landscape in Ontario, Canada

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Abstract: The use of public forested areas in Ontario, Canada is governed by the *Crown Forest Sustainability Act* that directs the management authority, the Ontario Ministry of Natural Resources (OMNR), to ensure that forest operations co-exist with other uses of the forest, especially recreation and tourism. Implementing these legislative requirements has been difficult for the OMNR: it lacks data on recreation and tourism; it lacks readily available social scientific expertise; and it lacks the necessary integrative model. The larger project of which this work is a part, focussing on the Dog River-Matawin Forest, west of Thunder Bay, Ontario and immediately east of Quetico Provincial Park, is designed to address several of these gaps.

This paper seeks to answer two of the many questions concerning how people use the forest for recreation and tourism purposes: what motivates different users and how do those motivations relate to activity profiles.

Our findings indicate that four distinct *experience preference groups* exist among the 1,556 people who used the forest for recreation and tourism purposes. When these groups are compared with four distinct activity profiles, we make connections that, when mapped (a future phase of the work), begin to indicate areas where potential conflicts might occur with forest operations or with other recreation activities.

We conclude by noting that, while knowledge about how people use the forest is interesting in itself, both an integrative framework and a scientifically-capable Ministry of Natural Resources are needed if that knowledge is to find its way into management actions to implement the requirements of Ontario's *Crown Forest Sustainability Act*.

Introduction

Recreation and tourism activities, while common and legitimate uses of public (Crown[1]) forest areas in Canada, are generally poorly understood, poorly documented and not well integrated with other uses of the forest, especially the production of forest products, in forest management plans[2]. This state of affairs has been addressed somewhat in the province of Ontario by the passage of the *Crown Forest Sustainability Act* (Statutes of Ontario 1994), legislation that was intended to see that non-timber values of all sorts were to be included when plans for forest management were developed. Details of this legislation are discussed elsewhere (see Yuan et al. 2004). In the subsequent ten years since the Ontario legislation was passed, little progress has occurred in achieving the integration of timber and non-timber values in forest management. The reasons for this failure are many, but chief among them would be the absence of social science expertise in the Ministry of Natural Resources.

The research reported here is part of a larger project that focuses on developing a framework to integrate recreation and tourism values and activities in forest management planning. Other aspects of that work, with its focus on the Dog River-Matawin forest, west of Thunder Bay, Ontario and east of Quetico Provincial Park (see Figure 1), are reported elsewhere (see McIntyre et al. 2004, Yuan et al. 2004).

This paper analyses data collected about people's activities and recreation experience preferences in the Dog River-Matawin forest. It is concerned first with identifying "activity profiles" that link related recreation and tourism activities with socio-demographic variables. Such profiles provide a useful starting point in understanding people's non-timber uses of the forest and represent a dramatic improvement on the current state of information concerning recreation and tourism in public forests. Determining the relationships between activity profiles and experience preferences comprises the second step. When data on people's experience preferences are associated with these activity profiles, one can begin to develop an

Figure 1. Dog River-Matawin Forest and Quetico Provincial Park.

understanding of how important modifications in the natural environment and the presence of other people are to people's satisfactions with their recreation and tourism engagements. Finally, and most importantly, the paper offers suggestions concerning a framework in which this kind of human dimensions information may be integrated into existing forest management planning practices in Canadian provinces.

Background

Experience Preferences

Research into people's recreation (or tourism) experience preferences has attempted to explain people's participation in activities and their pre-dispositions for engaging in them in specific settings. Virden and Knopf (1989), in testing these hypothetical relationships in real-world settings, found that the posited relationships were not as straightforward as hoped. While relationships among activities, experience preference and settings were found, they were not confident interpreting them and called for more research.

Harshaw and Shepherd (2003) have recently utilized experience preferences and activities in a forest management context, investigating the effects of changes in natural settings on recreational activities in a temporal context.

Manfredo, Driver and Brown (1983) have illustrated that certain experience preferences may be combined in "domains" representing more general experience assemblies. Both the specific recreation experience preference items and the more general domains have been tested by researchers and used in a variety of resource management applications.

Activity Profiles

Examining people's recreation or tourism activities offers a number of opportunities for researchers. Since people are participating in an activity, it is possible to collect data about the participants without having to postulate a relationship between participation and socio-demographic factors or psychological factors (Payne & Nilsen 2002). While activity profiles have been employed in the past, most notably in Canadian national parks (Parks Canada 1984, Westwind Resource Group 1987), the focus on a single activity has undermined effectiveness. Recreation or tourism activities are usually multi-dimensional, in that they change, sometimes radically. Take cross-country skiing, for example. It has fragmented into two distinct forms: classical, the original form; and, skating, with a different stride and equipment. Moreover, recreation and tourism activities are related to settings and experiences. A single activity, done in different settings, may well yield different experiences. What point, then, in maintaining an activity focus?

The approach employed here recognizes that people connect their activities to specific settings and expect certain experiences. Furthermore, people may be expected to engage in more than one activity, often a repertoire of related activities. In north western Ontario, a traditional repertoire has comprised fishing, hunting and camping. There is evidence however, that the traditional repertoire is being challenged by activities that are less consumptive of elements of the natural environment (see, for example, the National Round Table of the Environment and The Economy (n.d.) case study on Ontario's *Lands for Life* process).

The Search for an Integrative Framework

Ontario's *Crown Forest Sustainability Act* requires that non-timber values be included in decision making about forest use. The legislation does not specify how this integration should be effected, nor for that matter, what might constitute such integration. Integrative tools such as the Recreation Opportunity Spectrum have not been applied in the Ontario context: data on people's non-timber uses of forested areas is limited; and, the province's forest management agency, the Ontario Ministry of Natural Resources, does not possess the necessary expertise.

Two potentially useful approaches contained in the Ontario legislation, Resource Stewardship Agreements (Antler 2002, Hyer 2002) and Local Citizens Committees (Saunders 2003), offer particular advantages. Both turn on the notion that determining appropriate forests uses is a negotiation, where stakeholders present positions and information in support of their particular interests. Neither approach negates the utility of data on recreation and tourism uses: rather they provide contexts within which the data may be used in a more integrated form of forest management planning.

Data and Analysis

Data were collected through surveys of people who might be using the Dog River – Matawin Forest Management Unit and Quetico Provincial Park for recreation and tourism activities over the period

November, 2002 to October, 2003. This data includes information about the types of recreation activities in which people are participating, along with the timing and location of the activities. This data was collected using mail-in surveys that also included questions about trip planning, expenditures, motivations, and socio-demographic information of respondents.

The survey instruments employed used a modular approach in which a series of questionnaire modules were developed. Surveys for different seasons, populations, and distribution methods were developed by selecting the appropriate modules for each particular version of the survey. The primary focus of all versions of the survey was on a particular trip taken by the respondent. For mailed-out versions of the survey, respondents were asked to describe the last trip they had taken in the previous six months. For surveys that were distributed in person, respondents were asked to answer the questions about the trip in which they were currently participating.

The population sampled was divided into two segments: residents and non-residents. Residents were defined as those people residing in the study region, an area extending from the City of Thunder Bay west along Highways 11 and 17 to the towns of Ignace and Atikokan, and south to the Canada – U.S. border. Non-residents include everyone living outside of this region that visited or passed through the region. The sampling methodology was also split into winter (approx. November – April) and non-winter (May – October) recreation demand. A more extensive strategy of data collection was employed during the non-winter period due to the increased tourism, the nature of non-winter recreation activities, and the practical limitations of data collection during the winter months.

A total of 3,852 completed surveys comprise the data set, making it one of the largest currently available on non-timber forest use in Ontario. However, only those who reported engaging in activities in the Dog River-Matawin forest and Quetico Provincial Park, that is, 1556 respondents, were included in the analyses described below.

Data on experience preferences were collected using a modified Recreation Experience Preference (REP) scale with 20 questions representing a diversity of domains (Manfredo et al. 1983).

Results

Experience Preferences

Table 1 represents the five dimensions among the respondents' experience preferences. The five factors together account for 61.9% of the variance in the data.

Factor 1, with high loadings on experiencing risks, independence, developing skills, using equipment, self-confidence and adventure is a risk-adventure dimension. Factor 2 can be labelled as a solitude-get-away dimension, with high loadings on tranquillity, solitude, being in nature and getting away. With high loadings on being with others, meeting new people, bringing the family closer together, being with friends and sharing learning, this dimension is clearly social in nature and may be labelled as friends-family. Factor 4 represents a spirituality dimension, with high loadings on spirituality, self-confidence and First Nations (i.e., aboriginal) culture. Finally, experiencing new and different things and learning about nature load highly to form Factor 5, learning.

Table 1. Experience Preference Dimensions[1].

	1	2	3	4	5
with others	–	–	.715	–	
new people	–	–	.501	–	–
experience new	–	–	–	–	.784
learn nature	–	–	–	–	.619
solitude	–	.749	–	–	
spiritually	–	–	–	.729	
self–confidence	.603	–	–	.585	
develop skill	.655	–	–	–	
independence	.729	–	–	–	
experience risks	.754	–	–	–	
use equipment	.607	–	–	–	
family closer	–	–	.622	–	
friends	–	–	.807	–	
keep fit	–	.–	–	–	
adventure	.596	–	–	–	
FN culture	–	–	–	.703	
get away	–	.707	–	–	
share learning	–	–	.549	–	
be in nature	–	.754	–	–	
tranquility	–	.825	–	–	
Eigenvalue	3.2	3.0	2.5	2.1	1.5
Explained Variance (%)	16.1	15.1	12.6	10.6	7.5
Cumulative Variance (%)	16.1	31.2	43.8	54.4	61.9
Mean Scores	3.6	4.2	3.7	2.9	3.9

[1] Extraction Method: Principal Components.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 7 iterations.

Activity Profiles

Efforts focused on developing activity profiles eschewed the obvious, activity by activity, approach, opting instead to search for groupings that reflected the range of activities reported by respondents.

Hierarchical cluster analysis was employed to identify activity groups. Table 2 shows the resulting four activity groups and the proportion of respondents who participated in each activity in each of the groups.

Group 1, the largest of the four, exhibits a relatively high diversity of recreation or tourism activities in the forest but lacks a truly dominant activity. It is however a winter-oriented activity group. Group 2 is equally diverse, but with a high proportion of group members engaged in summer-time fishing and motor boating. A smaller group, Group 3, is highly diverse in activities and is dominated by canoeing, summer fishing, swimming and wildlife viewing. A final group is much less diverse in terms of activities but is dominated by canoeing.

Further information on the nature of the activity groups is provided when (Table 3) they are analyzed by respondent origin. The proportion of Thunder Bay residents in each activity group except group 4 and the proportion of Americans in activity groups 3 and 4 are quite evident.

Table 4 presents socio-demographic information about the activity groups, with significant differences recorded among the activity groups according to gender, age, education and income.

Table2. Activity Groups (%).

Activity[1]	Group 1 (n=581)	Group 2 (n=413)	Group 3 (n=281)	Group 4 (n=281)
Sights	17.7	17.7	21.0	2.5
SnoMo	15.8	2.4	0.4	–
DayHike	10.3	8.0	19.2	2.8
IceFish	21.0	3.6	0.4	–
Photo	9.3	6.5	29.5	–
Wildlife	7.6	2.7	45.6	0.7
MoBoat	0.3	28.6	13.2	0.7
Swim	0.3	28.6	49.8	–
FireWood	3.4	14.5	15.3	–
X-C Ski	7.1	0.5	0.7	–
Canoe	0.5	3.4	72.6	100.0
SumFish	1.2	89.3	66.2	–
Bike	0.3	4.4	6.0	1.8
Hunt	8.8	7.5	4.3	–
OffRoad	3.3	12.8	5.3	–

[1] "Sights" is sightseeing; "SnoMo" is snowmobiling; "Photo" is nature photography; "Wildlife" is wildlife viewing; "MoBoat" is power boating; "FireWood" is collecting firewood; "SumFish" is summer fishing; and, "OffRoad" is other motorized recreation (e.g., ATVs).

Table 3. Activity Groups and Respondent Origin (%).

Origin**	Gr1	Gr2	Gr3	Gr4
Thunder Bay	72.0	54.2	40.1	10.2
NW Ontario	19.7	14.7	11.6	3.3
Rest of Canada	4.8	4.1	10.1	3.3
USA	3.5	27.0	38.2	83.2

** chi square significant at .001 level

Table 4. Activity Groups and Socio-Demographic Variables (%).

Variables		Gr 1	Gr 2	Gr 3	Gr 4
Gender	Male	67.4	66.7	63.9	70.7
	Female	32.6	33.3	36.1	29.3
Age*	18–44	36.3	36.7	37.5	30.1
	45–64	48.3	47.6	54.2	60.3
	65+	15.5	15.8	8.3	9.6
Educat**	High school	40.5	55.2	25.9	19.2
	college	22.7	21.4	20.5	13.7
	univer	36.8	23.4	53.6	67.1
Income**	<40K	24.0	22.8	21.4	13.8
	40001–80000	46.3	54.6	41.7	42.6
	>80K	29.7	22.6	36.9	44.1

* chi square significant at .05 level
** chi square significant at .001 level

Gender does not differ significantly among the four groups: a ratio of 2:1 males to females is to be observed in all four.

Age is significantly different across the four activity groups, with activity groups 3 and 4 having a higher proportion of people between the ages of 45 and 64 and a lower proportion over the age of 65.

Educational attainment, too, differs significantly across the activity groups. Activity group 2 has a relatively high proportion of people who have attained the high school level. Activity groups 3 and 4 have over half of their members with university degrees, with group 3 at just over two-thirds.

With proportionally more people in the top income category in activity groups 3 and 4, income differs significantly across the activity groups.

A revealing element is the location where people in the activity groups engaged in their activities. Table 5 shows that Activity groups 1 and 2 were active only in the Dog River-Matawin forest, that Activity group 2 used the forest for two-thirds of its activities and that Activity group 4 primarily used Quetico Provincial Park.

Table 5. Activity Locations by Activity Group (%).

Location	Gr1	Gr2	Gr3	Gr4
DogMat	100.0	100.0	66.5	9.6
Quetico	0.0	0.0	33.5	90.4

To summarize, when analyzed the data reveals four activity groups that may be profiled in the following ways:

– Activity group 1, with a moderate diversity of activities and an orientation to winter activities lead by ice fishing and snowmobiling; overwhelmingly from Thunder Bay; a ratio of 2:1 males to females, representing all age groups, income levels and levels of educational attainment; active wholly within the Dog River-Matawin forest;
– Activity group 2, with a diverse range of activities, engaged in mainly in the summer, with fishing, motor boating and swimming dominant activities; mainly from Thunder Bay and the USA; a ratio of 2:1 males to females, with relatively low educational attainment, representing all classes of age and income; active wholly within the Dog River-Matawin forest;
– Activity group 3, highly diverse in terms of activities, with a summer orientation; drawn equally from Thunder Bay and the USA; a ratio of 2:1 males to females, with just over half the members in the 45-64 age category, relatively high educational attainment and relatively high incomes; active primarily within the Dog River-Matawin forest; and,
– Activity group 4, with the least diverse group of activities, dominated by canoeing; primarily an American group, a ratio of 2:1 males to females, with 60% between the ages of 18 and 64, with high educational attainment and higher incomes; active primarily within Quetico Provincial Park.

Exploring Experience Preference Dimensions and Activity Profiles

The following figures illustrate the differences and similarities among the means of the activity groups discussed above in relation to the four experience preference dimensions discussed earlier in the paper.

Discriminant analysis was used to identify the most important experience preference dimensions across the four activity groups. Table 6 shows the three discriminant functions generated in the analysis, two of which are significant.

Table 7 illustrates the strength of the four activity groups on the three discriminant functions.

Function 1 exhibits the importance of canoeing in differentiating the activity groups: groups 1 and 2 are not canoeing groups, while groups 3 and 4 definitely are. Function 2 depicts the role of summer fishing among the four groups. Activity groups 2 and 3 are summer fishing groups. Function 3 shows this relatively limited impact of wildlife viewing and nature photography.

Table 8 presents the highest correlations of the experience preference dimensions on the three discriminant functions. Function 1, explaining 87.1% of the variance, depicts an inverse relationship between solitude-getaway and friends-family. A less important discrimination occurs in function 2, in which solitude-getaway and friends-family are inversely related to spirituality and learning. The risk-adventure dimension is not important in differentiating the activity groups.

Figure 2 presents a graphical representation of the relationships of the four activity groups to the experience preference dimensions. The strength of the solitude and friends and family dimensions is noteworthy. So, too, is the limited role of the spirituality and learning dimensions.

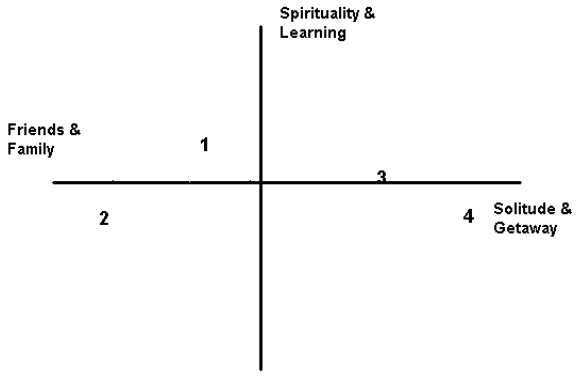

Figure 2. Graphical Representation of Activity Groups on Experience Preference Dimensions.

To summarize, the activity groups differ somewhat from each other on the experience preference dimensions in the following ways:

- Activity group 1 is oriented somewhat to the spirituality and learning dimensions and slightly to the friends and family dimension;
- Activity group 2 is highly oriented to the friends and family dimension;
- Activity group 3 is moderately oriented to the solitude and getaway dimension; and,
- Activity group 4 is highly oriented to the solitude and getaway dimension.

Table 6. Discriminant Analysis of Experience Preference Dimensions by Activity Groups.

Function	Chi-square	df	% Variance	Sig.
1	130.53	15	87.1	.000
2	17.73	8	11.3	.023
3	2.18	3	1.6	.536

Table 7. Discriminant Function Centroids by Activity Group.

Group	1	2	3
1	–1.00	–1.90	.34
2	–2.40	1.60	–.07
3	1.70	2.20	1.00
4	3.80	–.63	–.85

Table 8. Experience Preference Dimensions Responsible for Differentiating the Activity Groups.

Dimension	Function 1	Function 2
Solitude	.790	–.541
Friends	–.501	–.518
Learning	–	.392
Spirituality	–	.543
Risk	–	–

Discussion

At the outset, the intentions of this paper were the following:

- To determine the dimensions of experience preferences among recreationists and tourists in the Dog River-Matawin forest and Quetico Provincial Park;
- To use an activity profile approach to understand recreation and tourism activities in the study area;
- To examine the possible associations between experience preferences and activity profiles; and,
- To make recommendations for integrating information of recreation and tourism use of the forest in forest management planning.

Five experience preference dimensions were determined: getaway and solitude; risk and adventure; friends and family; learning; and, spirituality. With the possible exception of the spirituality dimension, these are commonplace expressions of experience preference in natural settings. The fact that this diversity of experience preference exists in a forest environment that is being logged is a useful finding, given the intentions of the *Crown Forest Sustainability Act*. Two of the dimensions – risk and adventure and friends and family – are not inconsistent with forest harvesting activities. However, the other two

dimensions – getaway and solitude and spirituality – may well be more sensitive to the kind of changes in the forest landscape wrought by forest harvesting. They may also be the sort of experience preferences that may be met by Quetico Provincial Park.

The identification of four recreation and tourism activity profiles shifts the focus away from an activity by activity approach to integrating non-timber uses into forest management planning. The activity profiles discussed in this paper are different from each other in several ways.

– Activity group 1 is characterized by a winter-orientation in which ice fishing and snowmobiling are important activities. Most members of this group are from Thunder Bay and two-thirds of them are males.
– Activity group 2 is a motorized summer fishing group, whose members come mainly from Thunder Bay but, to a lesser degree, from the USA. Like the first group, it is two-thirds males, but with the lowest educational attainment among the four.
– Activity group 3 is also a summer fishing group, but one that canoes, swims and views wildlife. Members are equally from Thunder Bay and the USA. Although members are two-thirds male, the group is somewhat younger, better educated and slightly more wealthy than the previous two groups.
– Activity group 4 is a canoeing group that is composed mainly of Americans. This group might also be labelled the "Quetico" group because that is where they are canoeing in the study area.

The activity groups also point to the utility of a modified activity focus for managers. The activities of canoeing, summer fishing and ice fishing/snowmobiling provide useful indicators of recreation and tourism groups in the forest and in Quetico Provincial Park that might be the focus of monitoring and programming.

The activity groups are differentiated by several of the experience preference dimensions. The risk and adventure dimension is the most important in the data, but its influence is spread over all four activity groups. The other four dimensions are connected to the activity groups in a number of ways. The winter group, activity group 1, is characterized by its friends and family and spirituality and learning dimensions. The social element inherent in ice fishing and snowmobiling is clearly visible. Activity group 2, the motorized summer fishing group, is even more a social group for whom friends and family are as important as the activities themselves. Activity group 3 eschews the motorized aspects of summer fishing, preferring a non-motorized orientation and activities of a less consumptive type. Activity group 3, the canoeists, highly prefer solitude and getaway, experience dimensions in relatively short supply in the Dog River-Matawin forest, but much more available in Quetico Provincial Park.

Recommendations concerning the integration of recreation and tourism use in forest management planning remain to be worked out. One lesson from the research reported here is clear: the subtle nuances of people's use of the forest for recreation and tourism use requires more than mere representation from activity=based user groups. What is needed is a forum where users of the forest may express the relationships between their activities and experience preference dimensions. At this time, Local Citizens Committees and Resource Stewardship Agreements are attractive in their potentials to involve users in negotiating forest uses. However, there is not currently a participant who can bring the sort of social science data and information discussed here into the decision making process. In Ontario, this more analytical role might be played by the Ministry of Natural Resources, had it the scientific capability.

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[1] Forested areas not privately owned in Canada are vested in the Crown (i.e., the Canadian head of state), but administered by provincial governments, under Section 92A of the Canadian *Constitution Act* (1867). In the province of Ontario, the Ministry of Natural Resources, wielding the *Crown Forest Sustainability Act*, is the agency responsible for forest management.

[2] The more integrated form of forest management practised in the province of British Columbia would stand as the exception to this generalization.