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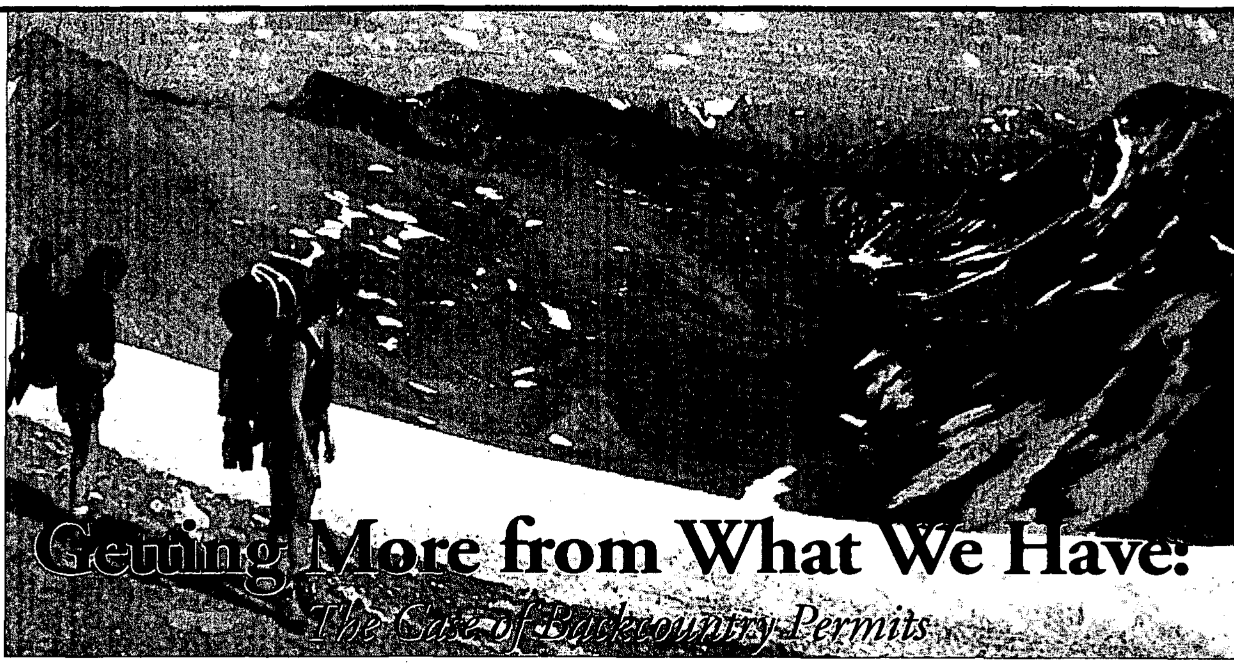

Getting More from What We Have:
The Case of Backcountry Permits

Bonita McFarlane, David Watson and Peter Boxall

Human use (HU) management is a key issue facing many of Canada's national parks. To provide effective HU management it is essential that Parks Canada understand the demand for recreational opportunities, the characteristics of users, and the impact of management and policy changes. For example, we must first determine the number of people using an area, their demographics, preferences and other characteristics, and then examine how these factors change over time, and develop models to predict human behaviour in parks.

Despite the recognized need for use and trend data, studies of trends in backcountry use and user characteristics have been scarce, especially in Canada. Backcountry permits are potential sources of information that are readily available but currently under used in many parks. Permits are mandatory for everyone staying overnight in the backcountry. Mandatory permit systems generally have a very high compliance rate, making the permit information a reliable data source representative of backcountry users (Watson 1993).

We have found that in a number of jurisdictions managers use mandatory or voluntary permitting systems (e.g. Englin et al. 1996; McFarlane and Boxall 1998). In every case in which we have been involved, the information is merely stored for accounting purposes or some other legal requirement. As we have outlined above, however, this information base can also provide important HU management information. With a little ingenuity and some database skills, permit systems can be developed into modeling tools for economic analysis, for assessing user satisfaction, and the impact of management and policy changes.

Human use models can provide information on visitor satisfaction that may be more robust than attitudinal measures. For example, behavioural models that actually predict park or trail visitation levels as a mathematical function of trail or park attributes (e.g. prices, levels of encountering other hikers, forest characteristics etc.) can be estimated from user data. The probability of return visits to a park or trail are related to levels of user satisfaction based on the array of attributes they experienced. The models can also include substitute trails or parks depending on the level of analysis. If attributes at one place change, these models can predict where and how many times recreationists will visit among the group of parks or trails included in the model developed. Thus, satisfaction can be examined among a complex of recreation destinations through intentions or actual visitation at the level of an individual recreationist. Furthermore, the estimation of nonmarket economic values provides information on satisfaction through visitation levels and return visitation levels. Areas with correspondingly high economic values are more desirable and satisfying than areas with low values. In economics the satisfaction associated with consuming a good (e.g. a backcountry trip) is referred to as utility.

The Socio-economic Research Network of the Canadian Forest Service (CFS), undertook a study in Jasper National Park (JNP) to examine the usefulness of backcountry permit information in determining the amount of backcountry use and user characteristics and to evaluate permit information as a potential data source for modeling HU and as a monitoring tool for backcountry management (Watson and McFarlane 2000). This project was part of

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a study identifying potential criteria and indicators for sustainable forest management in the Foothills Model Forest.

METHODS

Backcountry permit information for the years 1994 to1997, inclusive, was obtained under a data sharing agreement between CFS and JNP. The 1994 and 1995 data were available on paper permits and were entered into a data base. The 1996 and 1997 data were entered directly into a data base by Parks Canada staff at the time of registration. The information collected on each permit included name and address, dates of the visit, number of people in the party, mode of travel, and camp sites. The permit data were supplemented with records on number of user nights (kept by the park since1963). This supplemental information allowed us to examine trends in backcountry use.

RESULTS

The data on user nights shows that use peaked in the 1970s, declined into the 1980s, and has leveled off or is declining slightly (Figure 1). Overall, the trend has been a decrease in backcountry use since 1975.

Visitor origin showed that most parties are from Canada and about 50% of all parties are from Alberta (Figure 2). Edmontonians comprised 20 to 25% of all parties and over 40% of Albertans. The average length of stay was relatively stable over the 4 years at 5.7 nights. The average group size was also consistent at 2.5 persons. Visitors to the backcountry travel in small groups with 52% traveling in a group of 2, single travelers comprised 17% of the registrations, and 3 person parties accounted for about 11%. Overall, approximately, 95% of the parties consisted of less than 6 people. User nights were calculated by multiplying the number of users by the number of nights. This information was examined for each trail providing a spatial analysis of use. Future analysis will plot dates of the backcountry trips and number of users or user nights to provide a temporal analysis of use and identify peak use periods.

The permit database was linked with other databases to enhance the amount of information and types of analysis possible. Because visitors must identify either the campsites in which they stay or the trails they are using, the permit data can be linked with GIS data. The GIS layer contains biophysical characteristics for each trail such as forest cover, ecosystem types, and elevation. In the JNP study, the permit data were linked with GIS information and random utility models were developed to predict the impact of management or policy changes in the backcountry. The models were used to examine the association between biophysical attributes of trails and trail choice. The analysis assessed the relative importance of old-growth forest and elevation in trail choice and examined user preferences toward forest and alpine ecosystems (McDonald 2000). Findings suggest that forest age and trail attributes significantly affect the utility and site choice of visitors. Forests become increasingly valuable with age. In particular, Lodgepole

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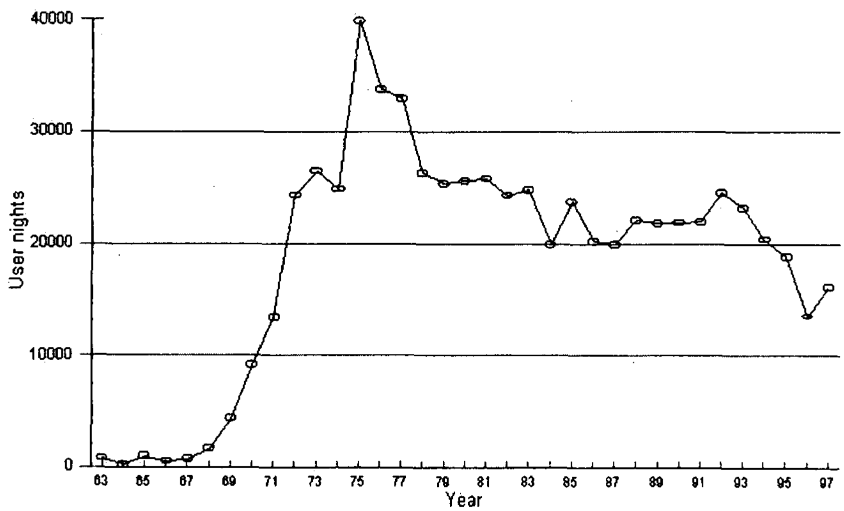

Figure 1. Backcountry visitor use in Jasper National Park, 1963-1997 (Source: Watson and McFarlane 2000).

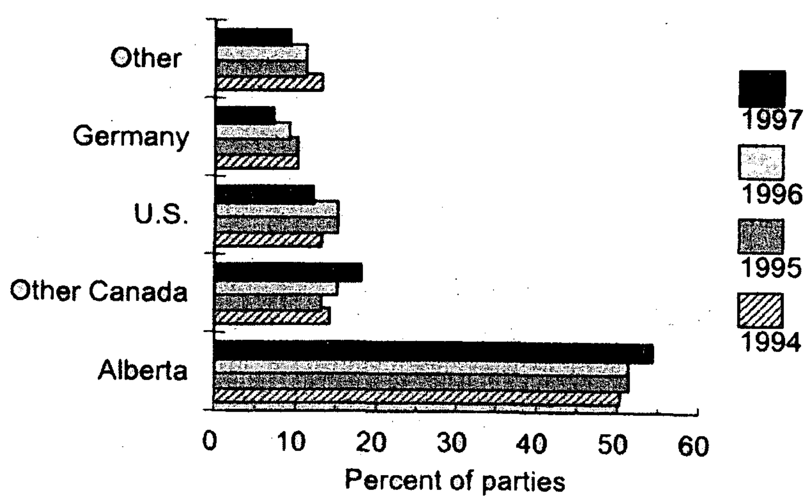

Figure 2. Origin of backcontry visitors

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pine forests become very valuable as old-growth. Tundra and alpine ecosystems provide positive benefits to users but the tundra ecosystem appears to more valuable than alpine. The model also proved to be a valuable tool for assigning nonmarket economic values to trails and trail attributes.

An important aspect of random utility models is their ability to analyze the effects of changes in trail attributes on the value users place on attributes. McDonald (2000) simulated the effect of a large crown fire on 3 trails: Skyline, Watchtower, and Jacques Lake. The value of the Skyline trail decreased, and Maligne trails increased the most in value. The simulation showed that a change in utility of one site changes the utility of other sites. This suggests that there is potential substitution between trails and random utility models may be useful in predicting the impact of a management change on the distribution (i.e., trail choice) of users in the backcountry. This modeling exercise was the first attempt at using Parks Canada permit data to model HU in the backcountry. Future analysis will include simulating the impact of management changes, for example, the impact of trail closures or other use restrictions on trail choice.

In addition to HU modeling, linking the permit data with GIS can produce a human use layer for the backcountry. This layer can contain, for example, occupancy data for each campsite, identify peak periods of use, number of people using the sites, visitor origins for each trail, and potentially delineate the direction of travel.

Another data source that will be linked to the permit data in future analyses is Statistics Canada census data. Using postal code conversion files, the permit data will be linked with census data to develop demographic profiles of visitors and visitor origins, particularly as they relate to the park region.

DISCUSSION

The current study has demonstrated the fact that some HU data currently collected by Parks Canada is under utilized. By analyzing the data beyond the calculation of user nights or revenue generation and linking with other data bases (such as GIS and census data) user characteristics, preferences, and trends can be examined and modeling tools developed. The study also highlights the need for a consistent and accurate permit database. A computerized backcountry registration system would provide a consistent and cost-effective means to collect user data. The success of such databases, however, is dependent on ensuring that information beyond mere accounting is collected. In essence, we believe that every administrative process that involves contact with a park user should be examined carefully to ensure that the effort expended to collect the data generates useful information. This information should include number of people in the party, address including the postal code, mode of transport, trails and campsites used, entry and exit points, and dates of travel. We suggest a number of features that park managers should consider for these types of information collection systems:

1. Key data elements must be collected every year in a consistent format. An example of this is a visitor's postal code or zip code.

2. The annual information should be stored in a database that is continually updated to allow managers to analyze temporal trends in use and changes in visitor origin.

3. Consideration should be made, and space on the permit be allocated, to allow managers to collect information of current topical use. This can involve a question or two on current management issues, or user opinions on potential changes in facilities or policies.

With the establishment of the data base used in this study, JNP now has baseline data which can be used for monitoring, trends analysis, and HU modeling. The success of such a database, however, depends on continued updating to include backcountry registrations in future years. Computerized permit entry at the time of registration would greatly enhance the efficiency of data entry and provide a readily available database. The study has also demonstrated how partnering with outside agencies and universities can extend the internal social science capacity of Parks Canada and greatly enhance research using existing HU data.

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