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SNOWMOBILING IN MANITOBA: PRESENT
USE AND PLANNING PROBLEMS

by

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**A dissertation submitted to the Faculty of Graduate Studies of
the University of Manitoba in partial fulfillment of the requirements
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Chapter 1INTRODUCTION

The study of recreation is a comparatively new pursuit while the evaluation of individual recreational activities is even more recent. This recent development of the study of recreation compared to other aspects of our everyday life can be understood when it is considered that outdoor recreation has only recently been accepted as an integral part of our life-style. Clawson and Knetsch (1966, p. 4) also attribute the late development to the fact that recreation was, in the past, considered as play and not worthy of research.

Recreation takes place when we are at leisure. Both are difficult to define because of the indistinct boundary which exists between work and leisure. The definition adopted by the International Study Group on Leisure and Social Sciences states:

..... leisure consists of a number of occupations in which the individual may indulge of his own free will - either to rest, to amuse himself, to add to his knowledge and to improve his skills disinterestedly and to increase his voluntary participation in the life of the community after discharging his professional, family and social duties. (Cosgrove and Jackson, 1972, p. 13).

Despite its length this definition tends to be vague and merely states that we are at leisure when we are not at work. Since this study is concerned with a single recreation activity (snowmobiling) then it is sufficient to note that the activity takes place when the participant is at leisure. It should, however, be indicated here

that the snowmobile is a form of transport used both for recreation and work, the boundary between the use for work and use for recreation sometimes also being indistinct. It is with the use of the snowmobile as a recreational vehicle that this thesis is concerned.

When the snowmobile was first marketed in the early 1960's few people - if any - realised the impact that this vehicle would make on the North American landscape. Its sales have grown astronomically until in the season 1971-72 some quarter-of-a-million snowmobiles were sold. As the majority of people retain their snowmobile from one year to the next, these sales are an amazing feat considering the machines have been marketed for less than ten years. One problem of obtaining accurate statistics for the number of snowmobiles in North America is that not all States and Provinces have, as yet, made licensing compulsory. However, this legislation will shortly have been passed in most States and Provinces and subsequent research into the number of snowmobiles, their impact and demand should be made much easier and less time-consuming.

This thesis examines snowmobiles and their use in Southern Manitoba and makes some recommendations for the limiting of use to certain designated areas in southern and central Manitoba. These designated areas could become provincially-run parks. In the past, provincial parks have tended to ban all forms of all-terrain vehicles from their confines, the rationale being that these vehicles were not truly recreational. Potton (1972, p. 1) stated that "although

some of the activities carried on by various off-road vehicles can perhaps be questioned because of conflicts and environmental impact" their value as outdoor recreation vehicles must be recognized. The snowmobile is by far the most important off-road vehicle in Manitoba in terms of volume of use (Potton, 1972, p. 3) and consequently research should be oriented particularly towards this vehicle.

The Manitoba Parks Department believes that "opportunities for these vehicles in various units of our provincial park lands system" must be provided so that conflict will be minimized (Potton, 1972, p. 1). A new Act (see Appendix A), known as the Provincial Park Lands Act (S.M. 1967, c. 67, chap. P20), has allowed for this as well as providing a framework for planning for new parks of several types.

Conflict between users and non-users of snowmobiles has increased rapidly since the early 1960's. Snowmobiles have been accused of causing environmental degradation without any real data being presented to support this accusation. Some snowmobilers have vehemently reacted against this stating that any action to reduce their participation in this new recreation activity is a denial of "their rights to use and enjoy recreation resources" (Potton, 1972, p. 3).

It is important to plan for snowmobiling in a rational and logical manner. The various objectives of the Manitoba Parks Branch must satisfy the needs of the Parks' users at the same time as maintaining environmental quality.

Manitoba Parks become examples and objectives of harmonious land use, and are to serve basic functions of providing solitude, retreat and opportunities for social endeavour free of custom and social position, allowing opportunities to observe, study and appreciate the natural resources of Manitoba. The uncontrolled and unrestricted use of ORRVs* (the snowmobile is by far the most important of these in Manitoba) in Provincial Park Lands conflicts with this objective (Potton, 1972, p. 3).

This thesis sets out to examine snowmobiling in Manitoba with the aim of minimizing this conflict.

Objectives

This study was initiated as a result of discussions held with the Department of Tourism, Recreation and Cultural Affairs, Government of Manitoba. It was felt essential to provide at least some sort of framework within which planners (and others) could work to produce controlled recreation areas for snowmobiles. These controlled areas should be planned so as to minimize the conflict between user and non-user and between the user and the environment.

This research could provide the raw material for subsequent research and for planning decisions in relation to the snowmobile as a recreation vehicle. Essentially this study was designed to provide the same information for Manitoba as Samoil (1971) found for Alberta viz. to establish the location, frequency and type of recreational use of the snowmobile and also to identify the socio-economic characteristics of snowmobile owners. It was also designed (unlike the Alberta study) to find out the attitude of snowmobile owners in relation to the possibility of establishing basic facilities and services in suitable areas and to designating possible

*ORRV = Off-the-road recreation vehicle.

recreation areas for snowmobiles given that these vehicles must, in some way, be controlled in the very near future.

There is a considerable lack of information and studies on recreation in Manitoba as a whole and an almost complete lack of snowmobile studies. This lack of studies on snowmobiles and their users extends right across North America. Consequently it was hoped to establish information on the use of snowmobiles, to integrate the various findings and to delimit areas for future snowmobiling use taking the data collected into account. Naturally, any study concerned with planning must have some subjectivity for any final decision to locate snowmobiling on a beach at Lake Winnipeg, for instance, cannot be based entirely on empirical information.

In addition this study sets out to critically examine those studies related to the effect of snowmobiles on the environment for without this information any planning body (e.g. Parks Branch) cannot meet their objectives in maintaining park quality for future generations. Chapter 6 examines this aspect.

In summary four major areas of concern have been brought about by the snowmobile or its operator. These are:

1. Environmental impact problems.
2. Conflicts arising between other recreational uses and between other land uses;
3. Health and safety of the participants; and
4. Law enforcement and related legal problems. (Potton, 1972, pp. 6-9).

The first two of these concerns make up the large part of this thesis. The latter concerns are important but are essentially outside

the scope of a geographically-oriented study. They tend also to deal with the actual operation of snowmobiles once areas for their use have been established.

This thesis, then, sets out to examine the spatial use of snowmobiles, the attitudes of their operators and the environmental effects of snowmobiling. Finally, the data obtained is collated and presented so that areas for snowmobiling can be delimited.

The following chapter examines literature relevant to snowmobile research. The techniques and design of the research are also set out in this chapter. The spatial use of snowmobiles is described and analysed in Chapter 3 while the following chapter deals with socio-economic characteristics of the sampled population. Chapter 5 analyses the preferences of the respondents in relation to choice of area for park delimitation and provision of facilities. Research already undertaken on the environmental effect of snowmobiles is reviewed in chapter 7 which is titled "Nuisance Factors - the Detrimental Effect of Snowmobiles on the Environment". The penultimate chapter attempts to take the results from the research and delimit suitable and feasible general areas for establishing parks and/or trails for snowmobiling. Finally, a concluding chapter summarizes the findings and makes some recommendations for future research.

Chapter 2LITERATURE REVIEWS AND RESEARCH DESIGNSNOWMOBILE RESEARCH

Few studies are available on snowmobile and off-the-road vehicle research. No study relating directly to the provision of recreation areas for snowmobiles is known. However, it is worth discussing several related studies.

Perhaps the first research on the location and use of snowmobiles was that by Samoil (1971). Samoil worked on a sample of Edmonton snowmobile owners in the winter of 1968-69. The study merely described the location and use of snowmobiles and did not attempt to relate the information to planning. In general, it was found that snowmobiling was largely a family activity and that use was concentrated within a 25-mile radius of the base. Samoil's thesis, it is suggested, did achieve more or less what it set out to do and, as such, is at the data collection stage of recreation geography. It omits data analysis and policy recommendations, two stages which are exceedingly important and are discussed below (p. 12). The study had little theoretical framework partly as it was a recording of data. The results are discussed whenever appropriate in the succeeding chapters of this thesis.

In 1970 Minnesota, Michigan and Ontario all undertook snowmobile studies. They were all concerned with tabulation of the location and density of use and with socio-economic characteristics

of users. They did not set out to solve the planning problems created by snowmobile use. These studies are also at the data collection stage.

The most useful study in many ways is that of Don Kowal who undertook a feasibility study of the construction of snowmobile trails in Manitoba. The particular area of study, the Sandilands area, was chosen because its characteristics were very favourable for snowmobile use. Kowal was concerned with the legal implications, the economic impact, the environmental effects and a land capability study of the entire area should trails be established. The rationale for each of these concerns was clearly indicated and it would be valuable to discuss these at this point.

The first concern was the economic impact. Kowal (1972, p. 19) felt that at present "employment is generated through the existence of large snowmobile manufacturing industries or through the existence of snowmobile clothing industries and other such snowmobile accessory industries". There are many economic aspects to snowmobiling and it is worth examining the overall dollar amount generated in Manitoba for the 1970-71 season (16,241 registered snowmobiles). The figures are as follows: (from Kowal, 1972, p. 22).

Registration fee (per year)	\$ 81,200
Machines (5% tax on 10,000 machines at \$1,100 each)	\$550,000
Gasoline (\$13,800 x 2.3 average fill/week x 30 weeks)	\$952,000
Oil (\$16,240 x 2.3 x 30 weeks x 0.05 tax)	\$ 56,000
Repairs (\$16,240 x 35 x 0.05 tax)	\$ 29,000
Accessories - trailers (5% tax on 6,000 units at \$230/unit)	\$ 69,000
Clothing (5% tax on 16,240 suits at \$100 each)	\$ 81,200
	<hr/>
	\$1,818,400

This 1.8 million dollars does not include monies spent on accommodation, food and other related expenditures. It can be seen that there is a considerable generation of economic activity.

Since this particular study looks, in more detail, at the environmental effects of snowmobiling no discussion of Kowal's treatment of these will be made. Nor will this study discuss Kowal's treatment of the legal implications.

Kowal examined the land capability based on the Canada Land Inventory. He stated (p. 29): "the principle aims in delineating the land capability of the area are twofold; first to identify areas that could possibly result in conflicting land use or conflict through people related problems, and second, with the help of experts to set out exclusion areas and buffer zones around areas where snowmobiles should not be allowed". The concept of the buffer zone was developed in order to keep snowmobiles an adequate distance from particular wildlife and botanical habitats. The basis of the Canada Land Inventory classification of land for recreation "is the quantity of recreation land use which may be generated and sustained per unit acre of land per year, under perfect market conditions" (Kowal, 1972, p. 39).

Kowal developed specifications for snowmobile trails. For example, such factors as length and width of the trail, snow depth, turning radius, visibility etc. are all important at the micro-planning level but not for planning for recreational areas at the provincial level.

These particular studies show that data collection has been proceeding in several important snowmobiling areas. The last study has attempted to examine the need for snowmobile trails in a particular area, from the point of view of those aspects affected by snowmobiling rather than for the snowmobiler himself.

OTHER THEORETICAL METHODOLOGICAL STUDIES

This section reviews some important general methodological studies. The first, by Campbell, is concerned with the conditioning effects of socio-economic influences on recreational travel. Campbell felt that "recreation studies have three essential components worthy of study" (1967, p. 5), so that there were three possible approaches to a study of a specific recreation activity such as snowmobiling. The first is to consider the recreationist and his activities at the site. This is a rather limiting and limited type of study. The second method is to examine the movements of the recreationists in an attempt to find adequate facilities (Samoil, 1971, p. 12). However, it was felt that only by an examination of both the site and the movements of recreationists can facilities be adequate planned for. This, the third approach, is a mixture of the other two. Campbell (1967), in using the third approach, felt that there were three components worthy of study; viz. the character of the participator, the quality and physical characteristics of areas designated to meet the needs of that individual and the form

of transport between residence and recreation area. There is obviously a complicated interaction between these components and, although Campbell understood all to be spatial this author believes that the third component introduces the spatial element and, as such, is essentially the geographical nature of the approach.

Campbell (1967, p. 6) stated that recreation is radial from an urban base and usually within two hours' drive of that base. He argued that since the city is "the generator of recreation demand", it should be the starting point for research. However, there are two arguments against this. The first is that even if the city does generate some demand the recreation site, its size and value in terms of its use also generates demand. Secondly, as a follow-on from the first, research of a geographical (and planning) nature would be incomplete without some work on the nature of the site or sites. This, naturally, does tend to be determined by the research being undertaken.

It would be appropriate at this point to consider Burton's (1971) recent work. In his book he provided "an illustration of a theory for the provision of recreation facilities", (p. 30&). Initially, however, he briefly outlined five basic stages involved in the decision-making process, appropriate to this type of problem; viz. the identification of policy needs, the development of the research methodology and theory, the gathering of data, the analysis of the data and the recommendations for policy. These five stages will be logical guidelines for recreation planning research in particular.

The first stage (identification of policy needs), as Burton mentioned, is based on the assumption that a body "exists which is competent to make decisions and to act on the basis of them or, at least, to press for action to be taken" (Burton, 1971, p. 308). In many cases this will be a government department or body or groups of these. In others, competence to press for action (or inaction) by legislators will be assumed by lobbying groups of enthusiasts. The initial step must be to determine exactly what the decision-making body wants to know and this must be related to what it is capable of doing, what decisions it is capable of taking. Within the parameters of this thesis it is essential to provide the information required by local planning authorities. As a consequence the parameters, though by no means limitless, can be fairly broad.

Once the policy requirements are defined the researcher must think about possible ways to meet these requirements. It is up to him to decide upon those variables and sets of information which are important in building up a picture of the real situation. He must, in fact, be a model-builder. Burton (1971, p. 309) felt that this need not be quantitative or deterministic. Here the lack of data must be apparent and thus the third stage follows on naturally.

The third stage is the gathering of the data. Various methods are possible, depending on the nature of the data required. For the present study a questionnaire survey was chosen not only because it appears to be the easiest and least expensive method but because

this was probably the only way to obtain a sample of responses which was as random as possible. The nature of the data required also warranted some kind of survey so that the crucial point about this stage was the actual type of survey. The personal interview method was felt to be too costly in terms of time - even had the addresses of snowmobilers been available for random sampling.

The fourth stage is the data analysis. Some statistical analyses on the data gathered provided some of the necessary results for the final stage of policy recommendations. This thesis, not answerable directly to a planning authority or government department does not go as far as policy recommendations. It does, however, put forward tentative suggestions regarding possible sites for future developments in winter recreation in particular with special reference to providing recreation areas and possible facilities for the snowmobiling population of metropolitan Winnipeg and for southern Manitoba.

This thesis will consider social and behavioural aspects of the recreationists in an attempt to determine possible future patterns of development. Any work which does focus on the socio-psychological aspects of the activity must be concerned with such variables as time, kinds of activities and space. A considerable amount of work on consumer space preferences has been undertaken by Huff (1959) who suggested that two major groups of variables precondition an individual's response to a third group of variables which are present at a store site. These variables Huff put under three major headings

- social class, consumer preferences and attributes of the source of satisfaction. These categories were sub-divided as follows:

Social class	- education occupation income
Consumer preferences	- personality traits age sex stimulus situation location ethnic group
Attributes of source of satisfaction	- reputation sales force amenity price of goods (or services) breadth of merchandise services rendered parking cost travel cost travel time

A very complicated interaction exists between the various components of these three categories. For example, travel time depends on all the components of its own group (attributes of source of satisfaction) as well as of the components of the other groups (e.g. location some in the Consumer preferences group). In the field of recreation it is important to consider these consumer space preferences with which Huff is concerned. For example, the travel time to a recreation site will depend upon the amenities available. Obviously for a person wishing to snowmobile in an area with a restaurant, travel time will depend upon the availability of restaurants in suitable snowmobiling areas. The actual amenities desired will depend, to a large extent, on the socio-economic characteristics of the individual.

It is important to note that there are wide individual space preferences and it would be preferable to provide for these to some degree.

Related to this was the work done in a "Program for Outdoor Recreation Research" (Burton, 1968). This programme stated that groups of people can be classified according to such factors as social class, age, life style or the socio-economic factors. This corresponds closely to Huff's first category (social class). A second set of factors is related to geographic location consisting of urban, suburban or rural residence and high or low density occupance. This programme enumerated several other sets of factors including existing preferences, as well as primary and secondary group ties as possibilities for classifying groups. The programme finally commented upon barriers to participation in outdoor recreation and came up with five possible categories. The first category - social - is largely dependant on the home background. To put it simply, an individual will not snowmobile if he has neither the means nor the inclination to do so. Psychological mechanisms such as fear of the unknown can be barriers to participation. A third category is financial. The geographic or locational factors are the fourth category. Facilities can be placed too remotely and thus will be used little or not at all. It is the planner's job to discover where these facilities should be located. The final category is a physiological one and concerns whether there are special fitness requirements for this activity. As far as snowmobiles are concerned there are few fitness requirements.

This chapter has attempted to draw attention to some of the research conducted in the field of recreation demand, snowmobile studies and finally in areas relevant to the methodology of this study. The following section deals with the research design of the study.

This section deals with the methods and processes followed in the collection and analysis of the data collected for this study.

RESEARCH DESIGN

The Questionnaire and Sample

A mailed questionnaire survey was chosen for a number of reasons. The ease with which data could be collected was a major consideration. Originally it had been hoped to mail a questionnaire to every seventh snowmobile owner registered as a Winnipeg resident with the Manitoba Department of Highways. Unfortunately the list of registered snowmobiles was found to be inaccessible and an alternative method was found. The Manitoba Snowmobile Association mailed a questionnaire along with one of their regular newsletters to each of its members.

Interpretation of the collective response to a mailed questionnaire present difficulties. In the first place there is the response rate. Normally the response rate is around 30% and rarely as high as 50%. However, this particular survey had a response rate of 52%. One problem concerning the mailed questionnaire is that of interpretation of individual questions by the respondents. Ideally a questionnaire should have adequate pilot testing before it is distributed for the survey.

These limitations lead to the problems of bias and how to overcome this. Burton stated that with a mailed questionnaire (with a response rate of 30-50%) the "chances of statistical bias are very high" (Burton, 1971, p. 45). Bias is in favour of the literate". Measurement of the bias is in many cases virtually impossible and this study was no exception to this.

The questionnaire was designed and modified after consultation with several members of the Geography Department, University of Manitoba. The design of the questionnaire attempted to establish immediate interest in the topic while the more 'controversial' personal questions were left until the later stages. There was an attempt to keep the questionnaire as short as possible. One or two of the questions appear, in retrospect, to have been a little ambiguous. These are noted in the following chapter. However, it is felt that the questionnaire did serve its purpose adequately. A copy of the questionnaire can be found in Appendix C.

The response rate of 52% represents approximately 1.3% of all snowmobile owners in Manitoba in February, 1972 when the questionnaire was mailed. (In late 1971 there were approximately 15,000 licenced snowmobilers in Manitoba). The information obtained from the questionnaire is, hopefully, fairly representative and has, of necessity, been treated as such.

Analysis

Just as it is important to set up and collect suitable data to meet the objectives of the study it is even more essential to analyse

the data so as to show what patterns and trends exist or possibly don't exist. At the operational level data was coded and tabulated on coding sheets, each questionnaire representing one row.

Rural owners and Winnipeg owners were treated as two distinct groups although many of their habits and preferences revealed little or no difference. However, the data was tabulated both by the Winnipeg and the rural sample so that the reader might be more fully aware of the data gathered. Where appropriate a table for the whole sample has been included.

The initial step in the analysis was to divide the questionnaire into three sections, each section representing one of the following three chapters. The first is concerned with the use of power toboggans in Manitoba, particularly the location of use and the frequency of use. The second section deals with the socio-economic characteristics of the sample and analyses the occupational characteristics in relation to the location and frequency of use of snowmobiles. The third and final section looks at parks and facilities and where these are desired by the sampled population.

Simple statistical tests such as tests for significant differences between the rural and Winnipeg samples, were attempted but generally proved to be inconclusive. The data is presented in an unsophisticated form, partly for this reason, and partly because the percentages (which are extensively used throughout the analysis) portray the data in a method most useful for planning. More sophisticated analysis of the data was thought to be unnecessary within the terms of reference of this study.