

THE UNIVERSITY OF MANITOBA

SNOWMOBILING IN MANITOBA: PRESENT
USE AND PLANNING PROBLEMS

by

ANDREW DOUGLAS KIRK RAMSAY

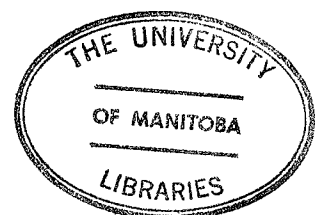
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**A dissertation submitted to the Faculty of Graduate Studies of
the University of Manitoba in partial fulfillment of the requirements
of the degree of**

MASTER OF ARTS

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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 2

LITERATURE REVIEWS AND RESEARCH DESIGN

SNOWMOBILE 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 adequately 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.

Chapter 3

SPATIAL PATTERNS OF SNOWMOBILE USE IN MANITOBA

Introduction

Snowmobiling for recreational purposes occurs in a large number of areas in and around Winnipeg. If any planning decisions are to be implemented then a comprehensive study of the areal use of snowmobiles must be made. Once the density and location of use are established some measure of the relative popularity or demand of the various areas can be assessed. In order to achieve the necessary information, the questionnaire (discussed in the previous chapter) asked particular questions relating to area and frequency of use. Some cross-relationships were attempted in the analysis. For example, the length of ownership of a snowmobile might influence the area of use as the owner gains in knowledge and experience, and whether an owner used a vehicle to transport his snowmobile might also affect the area used for snowmobiling. However, these relationships proved to be rather inconclusive.

It was assumed from the outset that the location of use for rural owners might differ markedly from Winnipeg owners, especially with regard to short rides. It was also thought that the frequency of use of snowmobiles might differ between the two groups. As a result separate analyses and tables are shown. Some of the data was subjected to t-tests in order to measure the significance of differences between the two samples.

The location of use is important to the planner for several reasons. Obviously without knowledge of the areal use of snowmobiles the planner cannot delimit areas and justify such a delimitation. Secondly the economic benefits to be gained from providing facilities must also be assessed and this cannot be achieved unless there is adequate pre-knowledge of the patterns and amount of use by snowmobilers. Thirdly, the environmental disturbance can only be measured when the location of use and frequency of use is known. Without such basic information planning cannot be satisfactorily undertaken.

This chapter then discusses the length of ownership as this could well affect the location of use and, thus, be a major factor in the areal distribution of snowmobiling areas. Such aspects as reason for purchase, frequency of use and distance travelled all contribute to the general picture of the spatial pattern of the selected snowmobiling areas. Finally, this chapter examines such factors as location of owned cottages, ownership of other recreation vehicles and location of summer and winter recreation areas of snowmobile owners. All these factors could play important contributions in the decision to snowmobile at one area.

Location of use

This section can be divided into two sub-sections: the first dealing purely with Winnipeg residents and their use of snowmobiles in the metropolitan area - a very important issue in view of the problem which urban snowmobiling causes - while the second deals with the use of snowmobiles throughout the rest of southern Manitoba.

Winnipeg residents (only) were asked how often per month they snowmobiled on the river in the metropolitan Winnipeg area, or on the floodway* and elsewhere within or close to Winnipeg. All snowmobilers were asked to name (in order of personal preference) their six most popular areas for snowmobiling including the metropolitan Winnipeg area. Respondents were also asked to indicate the approximate number of visits made to these areas each year. The results of these questions are tabulated in table 3.1.

Table 3.1

Use of Areas within Metropolitan Winnipeg

<u>Times per month</u>	<u>River</u>		<u>Floodway</u>		<u>Elsewhere in the city</u>	
	<u>Number</u>	<u>Per cent</u>	<u>Number</u>	<u>Per cent</u>	<u>Number</u>	<u>Per cent</u>
None	76	53.5	73	51.5	22	15.5
1-5	44	31	49	34.5	49	35
6-10	13	9	10	7	33	23.5
11-15	5	3.5	6	4	10	7
16-20	4	3	4	3	26	18.5
21-25	0	0	0	0	0	0
26-30	0	0	0	0	0	0
	<u>142</u>	<u>100</u>	<u>142</u>	<u>100</u>	<u>142</u>	<u>100</u>

*floodway - a man-made river diversion taking floodwater from the Red River around Winnipeg.

As can be seen from this table the majority of people snowmobile less than ten times per month (93.5% of those snowmobiling on the rivers and the floodway and 73% of those snowmobiling elsewhere in the city). It is interesting to note that over a quarter of Winnipeg respondents used their machines more than ten times per month elsewhere in the city whereas less than seven per cent used the river or floodway more than ten times per month. It is difficult to suggest reasons for this without more detailed information. It is possible that people use their snowmobiles close to their homes nearly every-day but do not make a special trip so often to the river or floodway.

Of those who used both the floodway and the river (110 of the respondents), seventy eight (71%) used only one or the other. A further 13% used both less than five times (see table 3.2 below). It is interesting to note that the floodway and the river are possibly used as substitutes for each other. Thirty six respondents used the river solely while forty two used the floodway solely. Ten per cent of the respondents used neither the river nor the floodway. Of the total number of respondents twelve (i.e. 13%) did not snowmobile at all within Winnipeg, four (4%) of these having purchased a snowmobile solely for racing purposes.

More generally, it was found that there were a large number of areas used for snowmobiling. This presented several problems for analysis. For Winnipeg owners areas used were grouped according to their general location. For example, the Whiteshell Provincial Park

was taken as one group instead of four presented by the respondents (see map 1). For rural respondents the amount of use close to the home area was analysed.

Table 3.2

Use of the River vis-a-vis Use of the Floodway by

Winnipeg Snowmobile Owners

		Times per month River used.				
		None	1-5	6-10	11-15	16-20
Times per month floodway used.	None	23	22	6	4	4
	1-5	22	3	1	1	1
	6-10	14	1	1	0	0
	11-15	4	1	0	0	0
	16-20	2	0	0	0	0

Respondents were asked to state their areas of snowmobile use in order of personal preference and the following table shows first choice areas.

Table 3.3

First Choice Areas

Winnipeg Owners			Rural Owners		
	<u>Number</u>	<u>Per cent</u>		<u>Number</u>	<u>Per cent</u>
Winnipeg area	56	40	Home area	26	65
Whiteshell	26	18.5	Whiteshell	3	7.5
Bird's Hill	16	11.5	La Salle	3	7.5
20-mile radius round perimeter (excluding Bird's Hill) Highway	14	10	Interlake	2	5
S.W. Manitoba	8	5.5	Race tracks	2	5
Lake Winnipeg	6	4.5	Bird's Hill	1	2.5
Interlake	4	3	Bissett	1	2.5
Southern Manitoba	3	2	Southern Manitoba	1	2.5
Beausejour	2	1.5	S.W. Manitoba	1	2.5
Race Tracks only	1	0.5			
Outside Manitoba	4	3			
	<u>140</u>	<u>100</u>		<u>40</u>	<u>100</u>

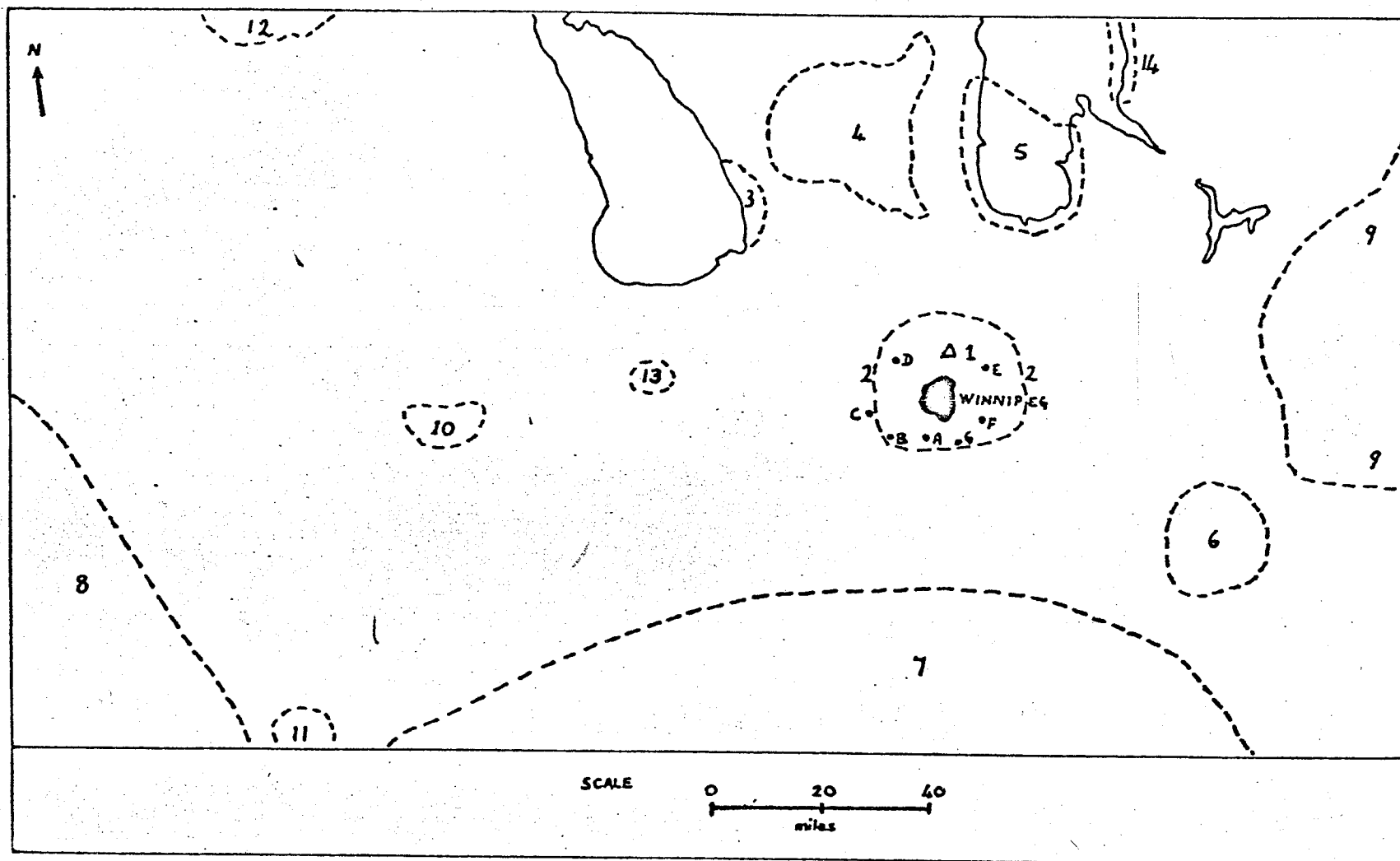
to face p. 24

Key to Map 1

1. Bird's Hill
2. 20-mile perimeter of Winnipeg
3. Twin Lakes - Oak Point, Lake Manitoba
4. Interlake
5. Lake Winnipeg
6. Sandilands
7. Southern Manitoba
8. South West Manitoba
9. Whiteshell
10. Spruce Woods
11. Turtle Mountain
12. Riding Mountain
13. Portage la Prairie
14. Lake Winnipeg East (Manigotogan)

Within 20-mile perimeter of Winnipeg

- A. La Salle
- B. Sanford
- C. Starback
- D. Rosser
- E. Oakbank
- F. Lorette
- G. St. Adolphe



Map 1: Main snowmobiling areas in 1971-72 and areas suggested for snowmobiling in Chapter 7

Along with tables 3.3 and 3.4 the accompanying pie charts (figure 1) show the first choice area and how the home area is in fact the most popular with 40% of Winnipeg and 65% of rural respondents preferring their local area. The explanation could be that the question was not put clearly enough and was consequently mis-interpreted. The planner would do well to bear this point in mind. Another important factor is the accessibility of the areas used. It is likely that an area with greater accessibility is found to be more attractive because it is nearer. This probably explains the large percentage indicating that their local area was their first choice area. On examining the amount of use it can be clearly seen that the home

Table 3.4

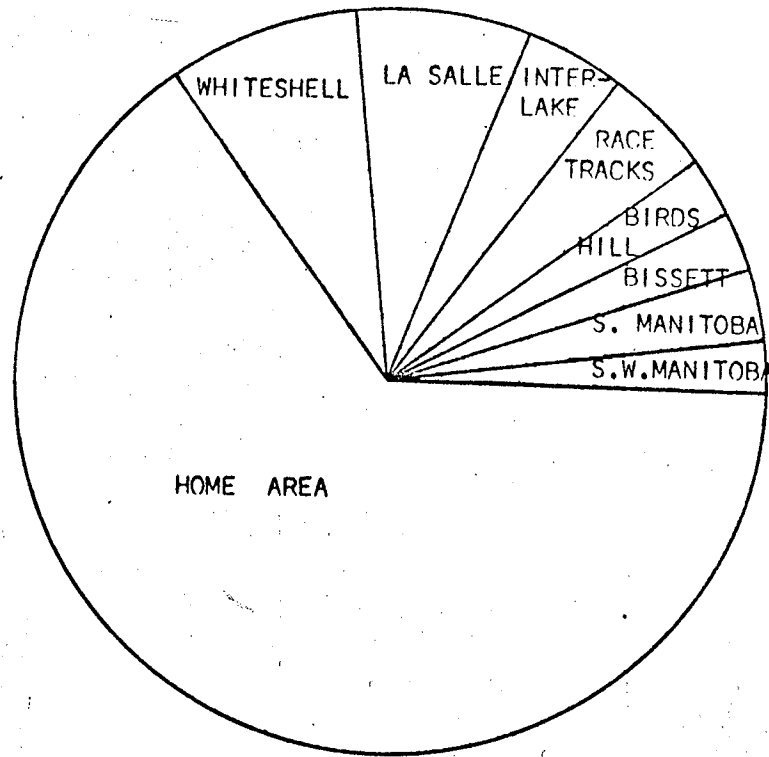
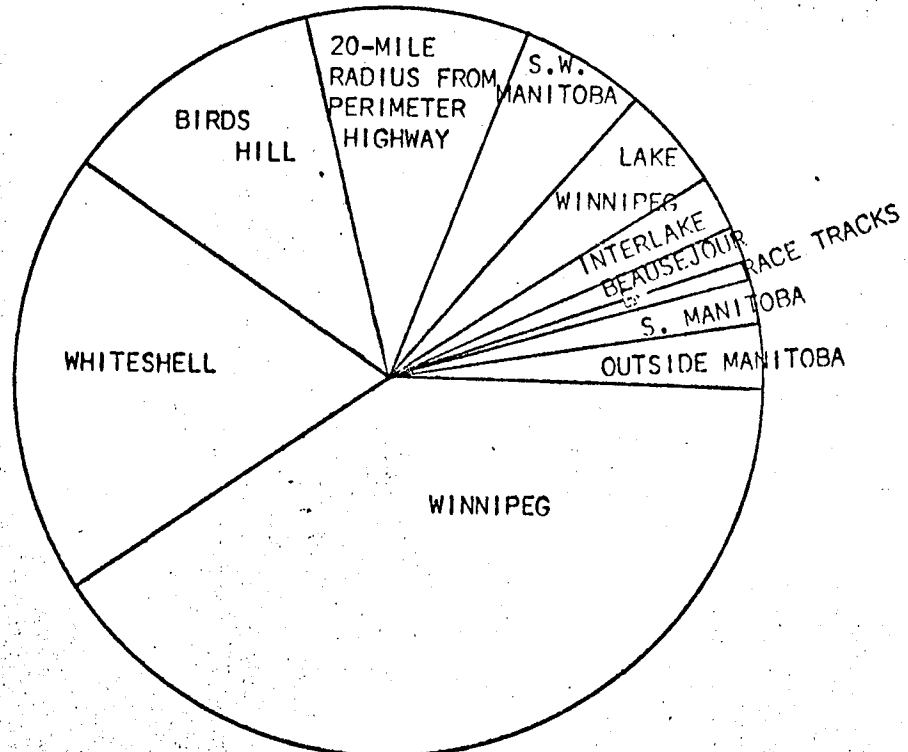
Number of Times First Choice Area Used per Year

Winnipeg Residents

	<u>Under 10</u>	<u>11-20</u>	<u>21-30</u>	<u>31-40</u>	<u>Over 40</u>
Winnipeg area	3	8	13	14	18
Whiteshell	20	6			
Bird's Hill	5	9	22		
20-mile radius of perimeter	2	8			1
S.W. Manitoba	7	1			
Lake Winnipeg	3	2	1		
Interlake	3	1			
Southern Manitoba	2	1			
Beausejour		2			
Race Tracks only		1			
Outside Manitoba	4				

Rural Residents

Home area		1	2	3	20
Whiteshell	3				
10-20 miles from home		2			4
Bissett	1				
Interlake			1		1
Race Tracks	1		1		

RURAL OWNERSWINNIPEG OWNERSFig. 1: First-choice areas for snowmobiling

area is used to a much greater degree than any other area. This is only natural, however, because it may not always be possible to travel to the most preferable area.

Length of Ownership

In Edmonton, Samoil (1971) discovered that snowmobilers had, on average, owned a snowmobile for 2.7 years. In Manitoba it is difficult to calculate the average length of ownership since the questions were open-ended (viz. Over 3 years length of ownership). It must also be remembered that because snowmobiles have only been on the market for a limited number of years direct comparison of length of ownership is difficult since the studies were undertaken in different years. As Table 3.5 shows one hundred and one (i.e. 70%) Winnipeg residents had owned snowmobiles for more than three winters while thirty-five (87.5%) of non-Winnipeg residents had owned snowmobiles for more than three winters.

Table 3.5

	<u>Winnipeg Residents</u>		<u>Rural Residents</u>	
	<u>Number</u>	<u>Per cent</u>	<u>Number</u>	<u>Per cent</u>
Less than 1 winter	10	7	1	2.5
1-3 winters	34	23	4	10
More than 3 winters	101	70	35	87.5
	<u>145</u>	<u>100</u>	<u>40</u>	<u>100</u>

The great majority, 136 owners out of 185, had owned snowmobiles for over 3 winters. It must be borne in mind, however, that the

population sample may be biased towards longer ownership since knowledge of the existence of the Manitoba Snowmobile Association may filter through snowmobiling circles and snowmobilers may tend to join the Association after owning a snowmobile for several years. It is also possible that the questionnaire may have led owners of less than a winter's duration into believing that they were not qualified to answer the questions due to some lack of knowledge of the snowmobiling situation.

Reason for Purchase

The survey attempted to find out the number of people who used snowmobiling for recreation and for racing. The sampled population is possibly more racing-oriented than the rest of Manitoban snowmobile-owners since the M.S.A. (Manitoba Snowmobile Association) to some extent encourages racing. However, only ten of the 142 Winnipeg respondents bought their snowmobiles solely for racing purposes while two of the forty non-Winnipeg population did so (see Table 3.6). In the rural areas the four respondents from Northern Manitoba (The Pas, Thompson and Churchill) all bought snowmobiles solely for recreation. Presumably scope for snowmobile-racing is very limited in this region. It is also of interest to note that almost two-thirds of the rural residents purchased snowmobiles for both racing and recreation. Of these twenty-six respondents, thirteen lived closer to Beausejour (where important races such as the Canadian Championships are held) than any of the Winnipeg residents.

Table 3.6Reason for Snowmobile Purchase

	<u>Winnipeg Residents</u>		<u>Rural Residents</u>	
	<u>Number</u>	<u>Per cent</u>	<u>Number</u>	<u>Per cent</u>
Racing only	10	7	2	5
Recreation only	66	46.5	12	30
Both	64	45	26	65
Other	2	1.5	0	0
	<u>142</u>	<u>100</u>	<u>40</u>	<u>100</u>

Another question considered was whether snowmobile owners transported their vehicles by car or truck for use at some distant location. Only five (12.5%) rural residents did not transport their snowmobiles, one of these being a student - the implication being that this group could least afford to transport their vehicles. However, numbers are so small that they are not significant. As far as the Winnipeg respondents are concerned only four (2.8%) did not use some form of transport to take their snowmobile to a favourite area. This suggests, then, that there is a desire to snowmobile away from Winnipeg and people will travel considerable distances to get to a favourable area. It is interesting to note that 78.5% of Ontario snowmobile owners purchased a snowmobile solely for pleasure compared to less than 50% in Manitoba (Vila, 1970, p. 32).

Frequency of use

How often a snowmobile is driven can be used as some measure of the popularity of snowmobiling as a form of recreation and, accordingly

respondents were asked how often they participated in snowmobiling. The results are shown in Table 3.7. One or two interesting patterns emerge from this table. As far as short rides are concerned, seventy per cent of rural residents compared to forty-three per cent of Winnipeg residents used their snowmobile more than eleven times per month. There is a contrast with regard to the number of whole week-ends per year that the rural and Winnipeg samples snowmobile. Only eight per cent of rural residents spent more than four week-ends away from home while forty-four per cent of Winnipeg residents spent more than four week-ends snowmobiling in a season. This figure can be explained by the fact that there is probably a greater tendency for rural residents to leave their home area for snowmobiling due to

Table 3.7

Frequency of Snowmobile Use

	<u>Winnipeg Residents</u>		<u>Rural Residents</u>	
a) <u>Short rides per month</u>	<u>Number</u>	<u>Per cent</u>	<u>Number</u>	<u>Per cent</u>
None	4	2.75	1	2.5
1-10	78	55	11	27.5
11-20	56	39.5	14	35
21-30	4	2.75	14	35
	<u>142</u>	<u>100</u>	<u>40</u>	<u>100</u>
b) <u>Whole days per month</u>				
None	26	18.5	5	12.5
1-2	58	41	15	37.5
3-4	22	15	12	30
5-8	36	25.5	8	20
	<u>142</u>	<u>100</u>	<u>40</u>	<u>100</u>

c) <u>Weekends per year</u>	<u>Winnipeg Residents</u>		<u>Rural Residents</u>	
	<u>Number</u>	<u>Per cent</u>	<u>Number</u>	<u>Per cent</u>
None	62	43.5	15	37.5
1-2	30	21	16	40
3-4	22	15.5	6	15
Over 4	28	20	3	7.5
	<u>142</u>	<u>100</u>	<u>40</u>	<u>100</u>

their proximity to the 'wilds' or wide open spaces. Another possible explanation is that a large percentage of Winnipeg owners owned and used cottages as a base for snowmobiling.

It is very necessary to examine the frequency of use of snowmobiling areas. This allows an estimation of the approximate density of use of areas by the respondents. Further discussion on these tables is found in chapter 7 (p. 97).

Tables 3.8 and 3.9 summarise the results for the Winnipeg and rural residents respectively.

Table 3.8

Frequency of Use of Snowmobiling Areas

<u>Winnipeg Residents</u>	<u>Number of people Using</u>	<u>Approximate No. of Visits per year</u>	<u>Approximate Average per Person</u>
Winnipeg	142	5,500	40
Bird's Hill	40	600	15
10-20 mile radius	60	540	9
Whiteshell	60	350	7.5
Lake Winnipeg	20	140	7
S.W. Manitoba	14	112	8
S.E. Manitoba	8	31	4
Southern Manitoba	8	30	4
N.W. Manitoba (Riding Mtn.)	4	14	3.5
Lake Manitoba	14	40	3
Interlake	4	20	5
Outside Manitoba	14	40	3
Elsewhere within Manitoba	8	31	4
	<u>388</u>	<u>7,424</u>	<u>19</u>

Table 3.9Rural Residents

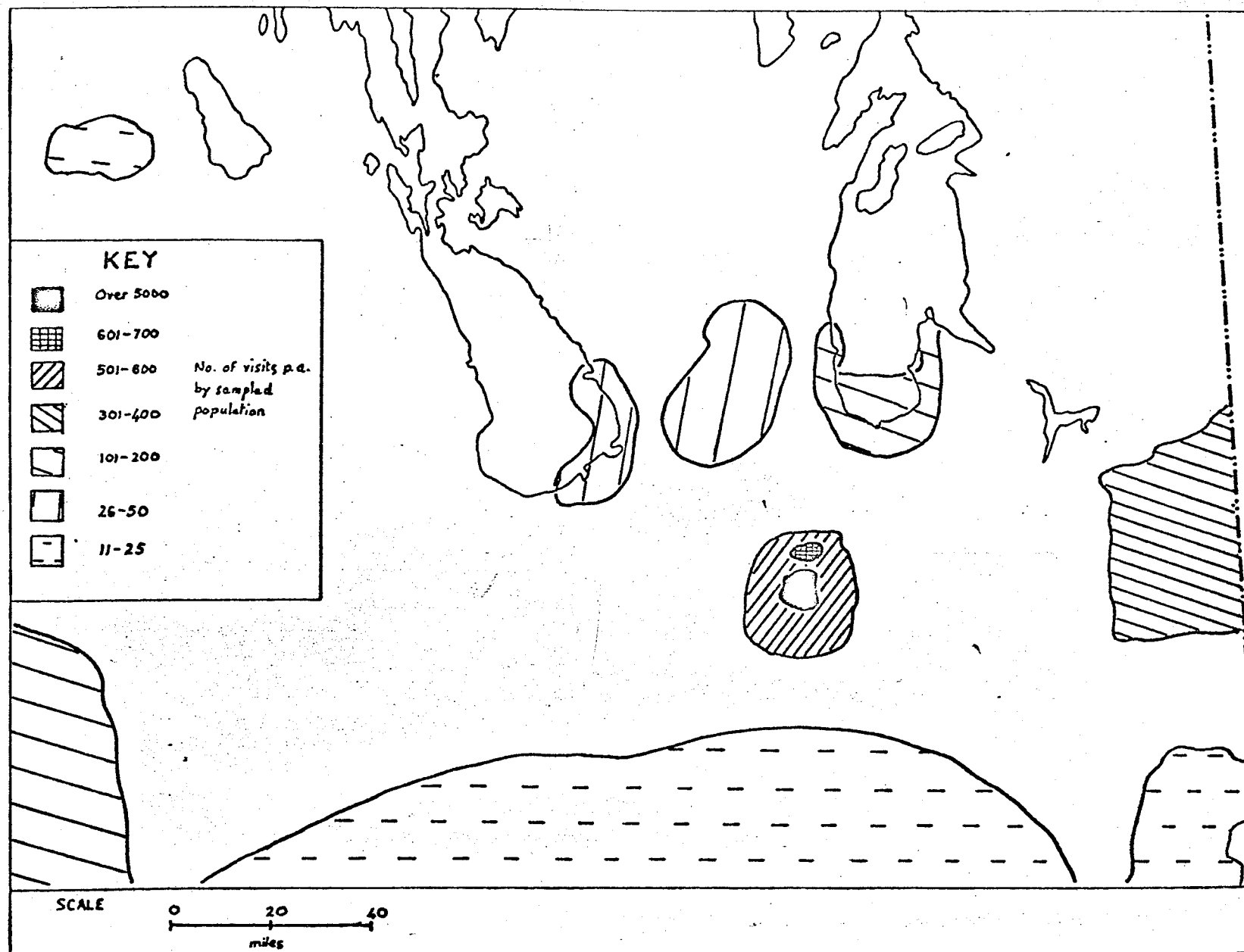
	<u>Number of Times Used per Year</u>				
	<u>Under 10</u>	<u>11-20</u>	<u>21-30</u>	<u>31-40</u>	<u>Over 40</u>
Home area	1	2	7	5	25
Whiteshell	5				
10-20 miles from home	2	6	2	1	8
Bissett	1				
Interlake	1		1		1
Race Tracks	1		1		
Winnipeg	1	2			
S.W. Manitoba	1	3			

These tables merely show the strikingly high use made of the home area (75% of all Winnipeg snowmobiling excursions are made within metropolitan Winnipeg while a further 15% are made within twenty miles of Winnipeg). Map 2 shows the importance of Winnipeg as a snowmobiling base. In the case of rural residents the home area is also very well-used, with twenty-five of forty respondents snowmobiling more than forty times per year in their home area (see table 3.9 above).

Distance Travelled for Snowmobiling

The planner is faced, consequently, with the accessibility factor and in view of this the question on the maximum distance a snowmobile owner will travel to use his snowmobile is now analysed. Table 3.10 shows the maximum distance which snowmobile owners will travel for short rides.

The interesting point about this table is the fact that rural residents appear to travel farther than Winnipeg residents. Considering the home area is the most popular for rural owners (65%) it is interesting that they will, in general, consider travelling further



Map 2: Density of snowmobile visits to main snowmobiling areas in Southern Manitoba, 1971-72

Table 3.10Maximum Distance Travelled for Snowmobiling

<u>Short rides</u>	<u>Winnipeg Owners</u>		<u>Rural Owners</u>	
	<u>Miles</u>	<u>Number</u> <u>Per cent</u>	<u>Number</u> <u>Per cent</u>	
	0-10	54 38	11 27.5	
	11-20	36 25	17 42.5	
	21-30	34 24	4 10	
	31-40	18 13	8 20	
		<u>142</u> <u>100</u>	<u>40</u> <u>100</u>	

than Winnipeg owners. It is possible that getting out of Winnipeg presents a problem (i.e. in terms of accessible areas for a short ride) and that the distance to travel from Winnipeg to the nearest suitable area has a greater effect than that area's attractiveness (i.e. accessibility becomes the major factor influencing the decision whether or not to travel). It must also be remembered that the sample contains a low number of rural respondents.

The next table (3.11) deals with the maximum distance travelled for whole-day excursions.

Table 3.11Whole-Day Excursions - Maximum Distance Travelled

<u>Miles</u>	<u>Winnipeg Owners</u>		<u>Rural Owners</u>	
	<u>Number</u> <u>Per cent</u>		<u>Number</u> <u>Per cent</u>	
0-25	14 10		4 10	
26-50	30 21		4 10	
51-100	64 45		29 72.5	
None	34 24		3 7.5	
	<u>142</u> <u>100</u>		<u>40</u> <u>100</u>	

There is obviously a great predominance of travel between 51 and 100 miles for a whole day's snowmobiling. It is interesting to note that while 24% of the respondents from Winnipeg did not go whole-day excursions, only 7.5% of rural owners did not go on a whole-day excursion. Kuehn (1971, p. 25) reported that 80% of Minnesota snowmobile owners travelled up to fifty miles for a whole-day's snowmobiling - a shorter distance than Manitoba owners.

The final table in this group (table 3.12) shows the maximum distance travelled for a week-end of snowmobiling.

Table 3.12

Maximum Distance Travelled for Weekends

<u>Miles</u>	<u>Winnipeg Owners</u>		<u>Rural Owners</u>	
	<u>Number</u>	<u>Per cent</u>	<u>Number</u>	<u>Per cent</u>
50-100	28	20	5	12.5
101-200	42	30	13	32.5
Over 200	10	7	4	10
None	62	43	18	45
	<u>142</u>	<u>100</u>	<u>40</u>	<u>100</u>

This table shows fairly close consistency between the rural population and Winnipeg population in terms of the maximum distance owners had travelled for a weekend of snowmobiling. It is important to think of these tables not so much in isolation but as part of the whole structure of the complex recreational process. Distances travelled are affected by several factors including time, site suitability, ownership of cottages and the like.

Cottage Ownership

One important factor influencing the choice of recreation site proved to be the areas in which some snowmobile owners had cottages. It was found that 32.5% (forty-six) of Winnipeg snowmobilers and 20% (eight) of rural snowmobile owners had cottages (Table 3.13). Seventy-four per cent (thirty-four) of the Winnipeg cottage owners and 50% (four) of the rural cottage owners actually used their cottages as a base for snowmobiling.

Table 3.13Cabins Owned

	<u>Winnipeg Residents</u>	<u>Rural Residents</u>
Winterised and <u>not</u> used for snowmobiling	6	2
Winterised and <u>used</u> for snowmobiling	22	2
Neither winterised <u>nor</u> used for snowmobiling	6	2
Not winterised but <u>used</u> for snowmobiling	12	2
	<u>46</u>	<u>8</u>
	(32.5% of Winnipeg sample)	(20% of Rural sample)

Of those who used their cottages for a snowmobiling base all snowmobiled more than three weekends per year. They also used their snowmobiles less frequently for short rides than other groups. The actual location of the summer cottages can be seen in Map 3 but are also included in table form below (table 3.14).

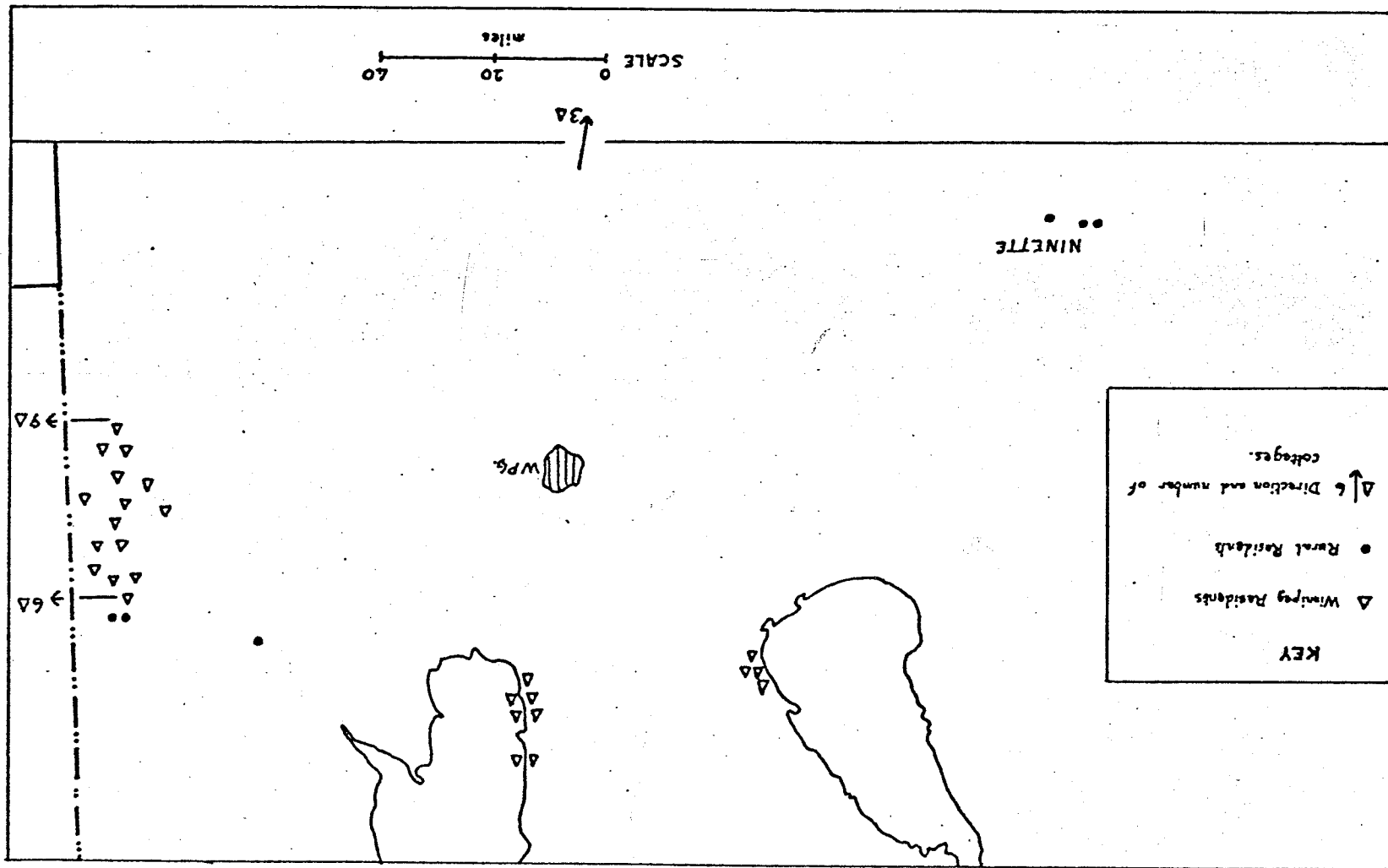
Table 3.14

Location of Summer Cottages

	<u>Winnipeg</u>	<u>Rural</u>
Outside Manitoba	18	
Falcon Lake and Whiteshell	15	2
Sandy Hook	4	
St. Laurent	4	
Whtewold	3	
Gimli	2	
Pelican Lake		2
Bird Lane		2
Lac River Falls		1
Local area		1

These summer cottages are highly clustered, those within Manitoba being located in four distinct areas. One of the areas, S.W. Manitoba, only had rural residents' cottages while both Lakes Winnipeg and Manitoba had only Winnipeg residents' cottages. The rural residents all lived within 75 miles of their cottage while Winnipeggers lived up to 140 miles away from their Manitoban cottage. The distance was considerably greater to several of the out-of-province cottages. Of the seventeen cottage owners in the Whiteshell, 14 snowmobiled there. All areas where summer cottages are located (see map 3 below)

Map 3: Location of summer cottages owned by sample population



were used in the winter by snowmobilers. Seven of the Lake Winnipeg cottages and three of the Lake Manitoba cottages were used as bases for snowmobiling. One of the south-western Manitoban group, one of the Bird Lake group (just north of the Whiteshell) and the Lac River Falls hut were used as bases for winter snowmobiling. The planning principles involved in this instance are interesting. The clustering of cottages in these areas is not limited to snowmobile owners and development of suitable facilities and municipal services on an annual rather than seasonal (i.e. summer) basis could develop the recreational potential of the area without using up too much valuable wilderness area.

Ownership of Other Recreation Vehicles

It was thought that since the snowmobile can be classed as a recreational vehicle respondents should be asked whether they owned other recreational vehicles - an all-terrain vehicle, aeroplane and/or powered boat. Table 3.15 shows the number of snowmobile owners owning one of these other recreation vehicles.

Table 3.15

Ownership of Other Recreational Vehicles

	<u>Number of Winnipeg Owners</u>	<u>Number of Rural Owners</u>
All-terrain vehicle	12	5
Aeroplane	4	0
Powered Boat	56	14

It is interesting to note that more than one-third of all snowmobile owners owned a powered boat. Lanier (1970, p. 66) found that

24% of snowmobile owners also owned a power-boat. This was not limited to the higher income groups although ownership of either of the other vehicles was so limited. It should also be pointed out that six respondents owned both an all-terrain vehicle and a powered boat, three both an aeroplane and a powered boat and one owned all three. There are few planning implications but one very important one. If a third of all snowmobile owners own a boat and a snowmobile (two-thirds of these people also owned a summer cottage), then planners must look at recreational habits more completely than in the past in an effort to save resources. The annual recreational cycle of individuals and groups should be examined in an effort to maintain the most efficient and useful land use. If it was found that summer and winter recreation areas were the same then this would provide a livelihood for local people on an annual basis if recreation planning operations were carefully planned.

Summer and winter Recreation

Respondents were asked to name any areas which they used for recreation in both summer and winter. The results are presented in Table 16 below.

As respondents were asked to name up to four areas the number of users is higher than the actual number of respondents. Seventy-eight Winnipeg respondents (55%) and twenty-four rural respondents (60%) used at least one area for both summer and winter recreation.

Further analyses of the data would have been possible but it is questionable as to its value. For example, further work could have

been done on cottage owners and whether they used the same areas in summer and in winter for recreation. It was felt that this type of information would be superfluous to the aims of this thesis since planning can be undertaken with the aid of the more general information recorded in table 3.16.

Table 3.16

Areas Used Both in Summer and in Winter for Recreation

<u>Winnipeg Residents</u>		<u>Rural Residents</u>	
	<u>Number</u>		<u>Number</u>
Close to Winnipeg	9	Within 25 miles of home	16
10-20 miles from Winnipeg	15	25-30 miles of home	11
Lake Winnipeg	30	Pelican Lake	1
Lake Manitoba	4	Grand Rapids	1
Southern Manitoba	6	Duck Mountain	1
South-Western Manitoba	4	Bissett area	5
Interlake	3	Whiteshell	6
Bissett	4	Pine Falls	1
Whiteshell	88	Outside Manitoba	1
Bird's Hill	24		<u>43</u>
Outside Manitoba	13		
	<u>200</u>		

This chapter has examined the areal use and frequency of use of the sampled snowmobile owners in southern Manitoba. For the purposes of this thesis the behaviour of the sampled population has been taken

to be typical of all snowmobile owners in southern Manitoba. Planning implications are discussed in chapter 7. However, at appropriate points in both the preceeding and succeeding chapters planning implications and problems are noted and briefly discussed. The physical perspective of the snowmobile owner has now been discussed and it is now essential to turn to the socio-economic characteristics of snowmobile owners as these do have several planning implications. The next chapter discusses the socio-economic characteristics of the sample.

Chapter 4SOCIO-ECONOMIC CHARACTERISTICS OF THE SAMPLED POPULATIONIntroduction

The ultimate aim of this thesis is a delimitation of recreation areas for snowmobile owners in the Winnipeg or Southern Manitoba area. Of prime importance to the fulfillment of such an aim is the study of the socio-economic characteristics and the related attitudes of the snowmobile owners. For example, it is unsuitable to provide facilities involving high direct costs to the user if the people using that area are from the lower income groups and cannot afford such facilities or if the users do not wish any facilities. In the final delimitation of areas various factors such as the attitudes to providing restaurant facilities, safety measures etc. must be taken into account.

One unknown factor is just how representative the members of the Manitoba Snowmobile Association are of snowmobilers as a whole. There is no apparent reason to suppose that their attitudes or socio-economic characteristics do differ markedly from non-members for there is a diverse range of opinions, income and education levels, occupations etc. in the sampled group.

Initially it was expected that the rural and Winnipeg populations might differ socio-economically and behaviourally. However, most t-tests to which the data have been subjected showed that there was not a significant difference in attitudes or socio-economic status.

Nevertheless, it has been decided to deal with the two groups separately so that the reader may be able to see any differences which do, in fact, exist.

This section of the thesis, thus, deals with the socio-economic characteristics and composition of the sample while an analysis of the various attitudes in relation to these characteristics has been attempted. Whether the snowmobile owner is truly representative - in attitudes and character - of the snowmobile user, is unknown and open to question. It is quite feasible that users who borrow or rent snowmobiles have different attitudes. However, it was felt that a study of users as well as owners would be much too time-consuming if it were, indeed, possible. The owner of a snowmobile is somewhat more of a problem to the planner than a user for the latter can more easily be channelled to recreation areas. The owner has much more freedom of use. Another factor is that the snowmobile owner may, in fact, be a parent whose children are the major users of the machine. The chapter finally relates attitudes to the factors discussed in the previous chapter.

This chapter examines socio-economic variables of the sample, preferences of respondents in relation to such factors as area type and these preferences vis-a-vis socio-economic characteristics.

A. SOCIO-ECONOMIC VARIABLES

Sex, Marital Status and Age

Early steps in analysing socio-economic data usually look at sex, marital status and age. This thesis is no exception and table 4.1 shows these characteristics of the sampled population.

Table 4.1Sex, Marital Status and Age of Sampled Populationa) Winnipeg Population

<u>Age</u>	<u>Male</u>			<u>Female</u>		
	<u>Single</u>	<u>Married</u>	<u>Total</u>	<u>Single</u>	<u>Married</u>	<u>Total</u>
Under 20	37	-	37	9	-	9
21-30	23	18	41	-	6	6
31-40	3	42	45	-	-	-
41-50	-	9	9	-	3	3
Over 50	-	3	3	-	-	-
	<u>63</u>	<u>72</u>	<u>135</u>	<u>9</u>	<u>9</u>	<u>18</u>

b) Rural Population

Under 20	11	-	11	1	-	1
21-30	10	7	17	1	2	3
31-40	-	5	5	-	-	-
41-50	1	2	3	-	-	-
Over 50	-	-	-	-	-	-
	<u>22</u>	<u>14</u>	<u>36</u>	<u>2</u>	<u>2</u>	<u>4</u>

c) Combined Winnipeg and Rural Population

<u>Age</u>	<u>Single</u>	<u>Married</u>	<u>Total</u>
Under 20	58	-	58
21-30	34	33	67
31-40	3	14	15
41-50	-	3	3
	<u>96</u>	<u>97</u>	<u>193</u>

The above tables are, more or less, self explanatory. Some conclusions can be drawn from the tables relating to the sampled population. There is a high percentage of single persons owning snowmobiles compared to the population as a whole. This, however, is partially offset by the high percentage of single persons being in the under 30 category and consequently still of a predominantly marriageable age! It is probably not in order yet to draw conclusions about snowmobiling being a 'jet-set' type of sport or recreation. These age characteristics may easily change when this type of recreation has become longer established and more accepted.

As might be expected the great majority (88.5%) of snowmobile owners are male. The one category where this may not have been so evident - viz. under 20 single - shows that only ten of the fifty-eight respondents were female. This is the category with the highest number of female owners and this figure of ten accounts for more than half of the female respondents. The number of female owners in Manitoba compares with the number in Edmonton where 6.5% were female owners (Samoil, 1971, p. 20).

It was envisaged that age might have a significant effect in determining attitudes and possible areas of use. The great majority of the population owning snowmobiles is under forty while nearly two-thirds (125 out of 193) are under 30. The average age for snowmobile owners in Edmonton was found to be 39.1 years (Samoil, 1971, p. 40) and, although no accurate average can be calculated it is

obvious from Table 4.1 that the average age of Manitoba snowmobile owners is at least ten years younger than their Edmonton counterparts. (In Manitoba 125 of 193 respondents were under 30.) One possible explanation is that it has become very easy, recently, for young people in Canada to obtain credit and they are, consequently, seeking modern and expensive recreational experiences. It must also be remembered that the Winnipeg sample was taken from members of the Manitoba Snowmobile Association while the Edmonton study was based on a ten per cent sample of licence holders living in the Edmonton area.

Education

It was thought that the level of education of snowmobile owners might have some effect on the area of use and, if this was shown to be the case, future trends in education could be related to future demands for outdoor recreation. Table 4.2 examines the levels of education of the sampled population.

Table 4.2

Level of Education

<u>Education</u>	<u>Winnipeg Population</u>	<u>Rural Population</u>	<u>Total</u>
Some high school	65	18	83
Graduated high school	48	18	66
Some university	24	1	25
Graduated university	13	2	15
Post-graduate university	-	1	1
	<u>150</u>	<u>40</u>	<u>190</u>

Any comparison with the Edmonton study is not easy with respect to comparative levels of education since that study used different, less easily definitive categories. The most striking feature of Table 4.2 is the number of people who live in Winnipeg and have had at least some university education compared to the rural population (37 as opposed to 4 or 25% compared to 10%). In Edmonton only 17.5% had college or university education while more than 23% of the sampled Manitoba population had university education. It is quite possible too, that others in Manitoba have had some form of college education. Respondents were not asked whether they had had any post high-school education other than university. It is obvious that the Manitoba snowmobile owners - for whatever reason - have a higher level of education than the Edmonton owners. It is even more striking when it is considered that the Manitoba population includes twenty per cent of rural owners who have a comparatively low level of education. With a high percentage of the sample under the age of thirty a considerable number of the snowmobile owners could easily achieve a higher level of education particularly with the recent expansion in enrolment in universities, colleges, etc. This is another example where time could alter the characteristics of the sampled population. In this case the pattern of education levels of owners could substantially alter. It could mean that, as a consequence of their higher level of education, snowmobile owners will be more aware of environmental problems and pressures created by recreation.

Income

Table 4.3 indicates the gross income per annum earned by the sampled population.

Table 4.3Gross Income (per annum)

<u>Income</u>	<u>Winnipeg Owners</u>		<u>Rural Owners</u>		<u>Total</u>	<u>Per cent</u>
	<u>Number</u>	<u>Per cent</u>	<u>Number</u>	<u>Per cent</u>		
None	33	22	8	21	41	22
Up to \$2,999	21	14	1	2.5	22	12
\$3,000 - 5,999	12	8	8	21	20	10
\$6,000 - 8,999	21	14	9	24	30	16
\$9,000 - 11,999	15	10	9	24	24	13
\$12,000 - 14,999	24	16	1	2.5	25	13
\$15,000 - 17,999	5	3	1	2.5	6	3
\$18,000 - 20,999	11	7	1	2.5	12	6
Over \$21,000	9	6	-	-	9	5
	<u>151</u>	<u>100</u>	<u>38</u>	<u>100</u>	<u>189</u>	<u>100</u>

A considerable difference does exist between the two samples with regard to gross income and the data was subjected to the t-test for significance. It confirmed that the differences between the two populations (Winnipeg and rural) are highly significant ($p < 0.01$) presumably because there are greater numbers of highly paid jobs within Winnipeg. There are also more students in Winnipeg and consequently a larger number of the sample with no or very low income.

Presumably the low income group (students) rely, in part, on their parents' income. Nearly one-third of the Winnipeg owners earn more than twelve thousand dollars while only eight per cent of the non-Winnipeg owners earn that amount. It would be interesting to obtain more information on income, how it is spent in Manitoba and what proportion is used for recreation. In Edmonton, Samoil (1971, p. 26) used slightly different income groupings but generally income levels were higher with more than 25% earning over fifteen thousand dollars. However, this highly inflated figure (i.e. in comparison to that of Winnipeg) is partly due to the fact that only five per cent earned less than five thousand dollars (compared to Manitoba's one-third less than three thousand dollars). It would appear that a large number of Manitoban parents, in fact, buy snowmobiles for their children. It is also possible that the situation in Alberta has substantially altered since 1969.

Occupation

Occupation can be a major characteristic in determining the type of recreational experience desired and the occupational distribution of the sample is shown in table 4.4.

Considerable differences exist between the Winnipeg and rural snowmobilers in terms of the occupational distribution. Understandably there is a higher percentage of businessmen and students in Winnipeg than in the rural areas and a considerably higher percentage of skilled workers among the rural owners. No retired people own snowmobiles and are also members of the Manitoba Snowmobile Association.

Table 4.4Occupation

<u>Type</u>	<u>Winnipeg Owners</u>		<u>Rural Owners</u>		<u>Total</u>	<u>Per cent</u>
	<u>Number</u>	<u>Per cent</u>	<u>Number</u>	<u>Per cent</u>		
Student	42	28	9	23	51	27
Skilled Worker	14	9	12	30	26	14
Labourer	5	4	2	5	7	4
Housewife	5	4	0	0	5	2
Professional, technical	14	9	5	13	19	10
Business, sales, accountants	46	30	5	13	51	27
Clerical, cashier, sales	6	4	1	3	7	4
Retired	0	0	0	0	0	0
Others	19	12	5	13	24	12
	<u>151</u>	<u>100</u>	<u>39</u>	<u>100</u>	<u>190</u>	<u>100</u>

The Edmonton study reported no students owning snowmobiles. The other large difference between the Edmonton and Winnipeg samples is the percentage of skilled workers. About 39% of the sample in Edmonton were skilled workers with 9% of the Winnipeg sample, 30% in rural Manitoba and 14% in Manitoba as a whole. The comparable figure with Edmonton's 39% is likely to be 9% since Winnipeg and Edmonton are both large cities. In Edmonton wages are high and this, in turn, stimulates a demand for recreation. During the long winter many of the skilled workers in Edmonton seem to snowmobile.

B. OCCUPATION AND SNOWMOBILE USE

The preceding sections of the chapter have attempted to give a summary of the socio-economic characteristics of the sampled population in Manitoba and to see how these compared to what was found by Samoil (1971) in Edmonton. The next section of this chapter will deal with some of the relationships between the socio-economic aspects of the sample and the physical perspective discussed in the previous chapter. It was decided to limit the discussion to only one of the socio-economic factors - occupation. Occupation was chosen because it, to varying degrees, reflects the other socio-economic factors.

The first table (4.5) shows the main use of snowmobiles related to type of occupation.

Table 4.5

Main Use by Occupation

<u>Winnipeg Sample</u>	<u>Racing</u>	<u>Recreation</u>	<u>Both</u>	<u>Others</u>
Student	0	17	24	0
Skilled Worker	0	5	9	0
Labourer	0	5	0	0
Housewife	0	5	0	0
Professional, technical	0	10	4	0
Business, sales, accountants	4	25	15	2
Clerical, cashiers	2	2	2	0
Retired	0	0	0	0
Others	2	6	11	0
<u>Rural Sample</u>				
Student	2	2	4	
Skilled Worker	0	4	8	
Labourer	0	4	0	
Housewife	0	0	1	
Professional, technical	0	0	6	

Table 4.5 contd.

<u>Rural Sample</u>	<u>Racing</u>	<u>Recreation</u>	<u>Both</u>	<u>Others</u>
Business, sales, accountants	0	0	3	
Cashiers, clerical	0	0	1	
Retired	0	0	0	
Others	0	2	3	

Although the sample is small it is interesting to note that one quarter of the rural students bought their snowmobile for racing while none of the Winnipeg students did so. Of the other respondents who bought their machines for the purposes of racing, six of the eight were white collar workers. In the rural areas generally, most respondents used their snowmobiles for both recreation and racing with only labourers using their machines for recreation purposes only. In Winnipeg about the same number of respondents use their snowmobile for recreation solely as use it for both recreation and racing. Only labourers and housewives use their machines solely for recreation. Thus, in both situations, labourers do not use their machines for racing, perhaps because of the cost factor involved in the machine preparation and in travelling to racing venues.

It was postulated that, as a result of the occupational differences within the sample this might in some way be reflected in the area of use and this is analysed in Tables 4.6 and 4.7.

These tables have been limited to Winnipeg respondents, Analysing the data presented by the rural respondents is difficult as a result

Table 4.6

First Choice Area by Occupation

<u>Occupation</u>	<u>Area</u>	Home area	Bird's Hill	Lake Winnipeg	Interlake	Lakes for Ice Fishing	20-mile radius of Perimeter Hwy.	S.W. Manitoba	Whiteshell	Beausejour	Southern Manitoba	Outside Manitoba	Race tracks	La Salle	Bissett	Lake Manitoba
Student	8	4	2	-	-	6	4	10	-	2	-	-	-	-	-	2
Skilled Worker	8	2	-	-	-	-	-	2	-	-	-	-	2	-	-	-
Labourer	-	2	-	-	-	2	-	-	-	-	-	-	-	-	-	-
Housewife	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Professional, technical	8	2	-	-	-	-	2	2	-	2	2	2	-	-	-	-
Business, sales	6	2	4	6	-	-	14	14	-	-	-	-	-	-	-	-
Clerical, cashier	4	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-
Others	8	-	-	-	2	2	-	-	2	-	-	-	-	2	2	-

of the areal distribution of their homes. Table 4.6, despite the size of the sample in relation to the size of the matrix, shows how relatively unimportant occupation seems to be when considering first choice area for snowmobile use. Most people tend to favour one or other of the following areas - home area, Bird's Hill, 20-mile radius of the perimeter highway, the Whiteshell Provincial Park and to a lesser extent S.W. Manitoba, the Interlake, and Lake Winnipeg regions. However, six of the twenty-two professional respondents preferred other areas (Southern Manitoba, race tracks and out of Province) where fewer people actually snowmobile. One other interesting feature is the importance of the Whiteshell, as a first choice area, to both students and businessmen, other groups being little or not at all represented there. It is difficult to offer an explanation.

Table 4.7 further exemplifies the importance of such areas as the home area, Bird's Hill, the Whiteshell, 20-mile radius of the perimeter highway and the Interlake-Lake Winnipeg area. However, not inconsiderable numbers of skilled workers (17%), businessmen (20%), professional and technical (23.5%) and housewives (42.5%) use the quieter areas such as Southern Manitoba and S.W. Manitoba. (It must be noted, however, that there were only sixteen housewife respondents). Some discussion on area type preference will be presented later in this chapter.

Table 4.7

All Areas Used by Occupation

<u>Occupation</u>	<u>Area</u>	Home area	Bird's Hill	Lake Winnipeg	Interlake	Lakes for Ice Fishing	20-mile radius of Perimeter Highway	S.W. Manitoba	Whiteshell	Beausejour	Southern Manitoba	Outside Manitoba	Race tracks	La Salle	Bissett	Lake Manitoba	Riding Mountain	S.E. Manitoba	Unspecified
Student		24	10	14	14	6	15	15	14	-	3	-	2	-	-	2	-	-	4
Skilled Worker		14	6	2	5	-	3	3	6	-	2	-	-	-	-	-	2	-	-
Labourer		-	2	2	-	-	2	2	2	-	-	-	-	-	-	-	-	-	-
Housewife		5	2	-	2	-	-	-	1	-	2	-	2	-	-	-	2	-	-
Professional, technical		8	4	3	-	-	-	4	7	-	4	4	2	-	4	-	-	2	-
Business, sales		25	20	7	14	2	4	18	30	-	12	-	2	2	-	2	-	2	-
Clerical, cashier		2	-	2	1	-	3	-	2	-	-	-	-	-	-	-	-	-	-
Others		10	2	-	2	1	5	2	4	2	2	-	-	2	-	-	-	-	-

The following tables (4.8, 4.9 and 4.10) show occupational types vis-a-vis the number of short rides per month, the number of whole day excursions per month and the number of week-ends per year spent snowmobiling. The rural sample has been included in the tabulation.

Within the two groups sampled there are no obvious differences regarding the number of short rides per month. Perhaps a bigger sample would reveal that more people in the 'others' category living in Winnipeg snowmobile nearly every day.

Table 4.9 shows the number of whole days per month used for a snowmobiling excursion by occupation of the respondents. The most significant features readily distinguishable from the Winnipeg sample in Table 4.9 are the comparatively high number of students (31.5%) and business men (30.5%) who spend more than four whole days snowmobiling per month. It must, however, be borne in mind how small the sample was in relation to this matrix. No comment is offered on the rural owners merely because of this factor.

Table 4.10 shows the number of weekend excursions per year by occupation. There are many factors which would complicate the conclusions which might be drawn from this table. For example, it is probable that a number of socio-economic factors interact to confuse the picture. Financial status is obviously important, as is leisure time available, weekend accommodation suitability (depending on income, area, whether single person or family) etc. However, the tables are included for reference. It is interesting to note that a particularly high proportion of students, businessmen and 'others'

Table 4.8

Number of Short Rides per Month by Occupation

Winnipeg Sample

<u>Number of Short Rides</u>	<u>Student</u>	<u>Skilled Worker</u>	<u>Labourer</u>	<u>Housewife</u>	<u>Professional</u>	<u>Business</u>	<u>Cashier Sales</u>	<u>Others</u>
None	-	2	-	2	-	-	-	-
1-10	22	2	4	-	8	34	-	4
11-20	16	8	-	2	6	12	2	2
21-30	-	-	-	-	-	-	-	4

Rural Sample

None	-	1	-	-	-	-	-	-
1-10	1	2	-	-	3	2	-	2
11-20	3	4	2	-	7	4	1	1
21-30	4	4	-	-	2	-	-	2

Table 4.9

Number of Whole Day Excursions per Month by Occupation

Winnipeg Sample

<u>Number of Whole Days</u>	<u>Student</u>	<u>Skilled Worker</u>	<u>Labourer</u>	<u>Housewife</u>	<u>Professional</u>	<u>Business</u>	<u>Cashier Sales</u>	<u>Others</u>
None	2	4	2	2	-	8	2	6
1-10	14	4	2	2	10	20	-	6
11-20	10	4	-	-	-	4	-	2
21-30	12	-	-	-	44	14	4	4

Rural Sample

None	2	1	-	-	1	1	-	-
1-10	2	6	2	-	1	4	1	1
11-20	5	3	-	-	3	-	-	3
21-30	1	1	1	-	1	1	-	1

Table 4.10

Number of Weekends Per Year Spent Snowmobiling By Occupation

Winnipeg Sample

<u>Number of Weekends</u>	<u>Student</u>	<u>Skilled Worker</u>	<u>Labourer</u>	<u>Housewife</u>	<u>Professional</u>	<u>Business</u>	<u>Cashier Sales</u>	<u>Others</u>
None	18	6	2	2	4	20	2	14
1-2	6	2	-	2	8	8	2	-
3-4	8	-	2	-	-	12	-	2
Over 4	6	2	-	-	4	8	2	2

Rural Sample

None	5	5	1	-	1	2	-	2
1-2	3	4	-	-	2	4	-	3
3-4	-	2	2	-	2	-	-	-
Over 4	-	1	-	-	1	-	-	-

did not go on any weekend excursions. Of these, many students and businessmen seem to undertake a considerably large number of day excursions (see discussion under Table 4.9).

C. PREFERENCES OF THE RESPONDENTS

The questionnaire was designed so that various preferential attitudes of snowmobilers could be determined. The particular questions asked to ascertain preference were numbers 10, 12, 13 and 14 (see appendix C for questionnaire). The first was concerned with the general importance to snowmobilers of such things as access to remote areas, access to forests, slopes etc. The results are a little difficult to analyse since respondents were asked to choose only one of six possibilities. A number of questionnaires were returned with more than one choice checked and these unfortunately had to be eliminated from the analysis. Some others did indicate the order of preference and consequently were included in the analysis. A series of complicated cross-relationships could have been included in the analysis but this has been rather limited as their usefulness proved questionable.

The first preference to be examined is the type of area in which respondents preferred to snowmobile. The data obtained is summarized in table 4.11.

The difference in preferences between the Winnipeg and rural owners was found to be significant to the 0.5 level when the data was subjected to a t-test. The relative importance within the two

Table 4.11Preferences for area types

<u>Choice of access to area type</u>	<u>Winnipeg Owners</u>	<u>Per cent</u>	<u>Rural Owners</u>	<u>Per cent</u>	<u>Total</u>	<u>Per cent</u>
Access to remote areas	38	27	11	27.5	49	28
Access to open areas	58	45	1	3.5	59	35
Access to frozen rivers and lakes	14	11	10	25	24	14
Access to roads	0	0	4	10	4	2
Access to forests	20	15	6	15	26	15
Slopes	2	2	8	20	10	6
	<u>132</u>	<u>100</u>	<u>40</u>	<u>100</u>	<u>172</u>	<u>100</u>

groups of access to open areas and access to remote areas should be noted. Nearly 63% of all respondents indicated their preference for one or other of these with 35% of the total preferring access to open areas. Among this group there was only one non-Winnipeg respondent. This might indicate, that because the non-Winnipeg snowmobilers already have access to open areas they may, in fact, tend to take open areas for granted. Thus, with further investigation it could transpire that locational setting of the home has a considerable effect on preferences. On the other side of the coin nearly one-half (45%) of the Winnipeg residents felt that access to open areas was the most important of the factors. It was hoped to investigate and analyse this further by relating preferences to first choice area but, because of complicating factors (e.g. one area having three or four of the factors so that it is not known which factor is the most

important, or whether, as seems likely, a combination of the factors is most important), this proved to be impossible. The rest of the table only shows minor differences between the two groups. It was thought, in view of television advertisements and the like, that slopes would have been an important factor but in fact only 6% of all respondents thought this. However, few slopes exist close to Winnipeg and this may have had a negative effect on the number of people indicating slopes as important to snowmobiling. Neither the Edmonton nor the Ontario studies looked at respondents' preferences in relation to snowmobiling and, as such, miss out an important element in the planning process. (The studies did not, however, purport to be done for the purposes of planning.)

The data in the above table was subjected to further analysis to see if any important socio-economic groups had different preferences. The results are presented in the following section of the chapter.

D. PREFERENCES AND SOCIO-ECONOMIC CHARACTERISTICS

The following table (table 4.12) summarizes preferences for area types vis-a-vis the sex of the respondent.

Table 4.12

Preferences for area type by sex

<u>Area type</u>	<u>Winnipeg Residents</u>		<u>Rural Residents</u>		<u>Total</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
Access to remote areas	34	4	9	1	43	5
Access to open areas	52	6	1	0	53	6
Access to frozen rivers and lakes	10	4	11	0	21	4
Access to roads	0	0	4	0	4	0
Access to forests	20	0	5	0	25	0
Access to slopes	2	0	6	1	8	1
Nothing	0	0	0	2	0	2
	<u>118</u>	<u>14</u>	<u>96</u>	<u>4</u>	<u>154</u>	<u>18</u>

Table 4.13

Preferences for Area Type by Age

<u>Preferences</u>					
<u>Winnipeg Owners</u>	<u>Under 20</u>	<u>21-30</u>	<u>31-40</u>	<u>41-50</u>	<u>Over 50</u>
Remote areas	7	7	12	3	-
Open areas	17	17	12	2	2
Frozen rivers	3	3	4	-	-
Roads	-	-	-	-	-
Forests	6	5	5	3	-
Slopes	-	-	2	-	-
Nothing	-	-	-	-	-
<u>Rural Owners</u>					
Remote areas	2	6	2	1	-
Open areas	1	-	-	-	-
Frozen rivers	5	6	1	-	-
Roads	3	1	-	-	-
Forests	2	2	2	-	-
Slopes	3	3	-	2	-
Nothing	1	1	-	-	-
<u>Totals</u>					
Remote areas	9	13	14	1	-
Open areas	18	17	12	2	2
Frozen rivers	8	9	5	-	-
Roads	3	1	-	-	-
Forests	8	7	7	3	-
Slopes	3	3	2	2	-
Nothing	1	1	-	-	-

Several conclusions can be drawn from this table showing preferences in relation to the age of the respondents. For example, it is clear that more than half of all age groups (except the 41-50) either prefer access to remote areas or access to open areas (as would be expected from Table 4.11).

In the 41-50 age group there was a very small number of respondents (8 out of 151) so that figures can not be subjected to statistical analysis. In relation to age, preferences show a remarkable uniformity especially in those groups favouring access to roads, open areas and forests as is shown in the table below (table 4.14).

Table 4.14

Preference for selected area types vis-a-vis age

Figures are expressed as a percentage within that preference.

<u>Preferences</u>	<u>Under 20</u>	<u>21-30</u>	<u>31-40</u>	<u>41-50</u>	<u>Over 50</u>
Access to open areas	34	33	25	4	4
Access to roads	32	28	28	12	0
Access to forests	30	30	20	20	0

It seems that there are similar numbers from each age group favouring each access type. It would appear that age does not have a significant effect on the preferences of snowmobilers concerning access to special environment types.

Education is a significant factor in determining attitudes and preferences in a number of fields. Consequently, data for preference for area type vis-a-vis education is presented in table 4.15.

Table 4.15

Preferences for Area Type by Education

<u>Winnipeg Owners</u>	<u>Some High School</u>	<u>Graduated High School</u>	<u>Some University</u>	<u>Graduated University</u>	<u>Post Grad University</u>
Access to remote areas	11	9	4	3	-
Access to open areas	23	14	7	3	-
Access to frozen rivers and Lakes	6	3	2	2	-
Access to roads	-	-	-	-	-
Access to forests	9	6	2	-	-
Access to slopes	-	-	-	2	-
Nothing	-	2	-	-	-
<u>Rural Owners</u>					
Access to remote areas	5	3	-	2	-
Access to open areas	-	1	-	-	-
Access to frozen rivers and Lakes	6	3	-	-	-
Access to roads	-	3	-	-	-
Access to forests	3	2	-	-	-
Access to slopes	3	3	-	-	-
Nothing	1	-	-	-	-
<u>Total</u>					
Access to remote areas	16	12	4	5	-
Access to open areas	23	15	7	3	-
Access to frozen rivers and Lakes	12	6	2	2	-
Access to roads	-	3	-	-	-
Access to forests	12	8	2	-	-
Access to slopes	3	3	-	2	1
Nothing	1	2	1	-	-

The vast majority of the sampled population (80%) had only had high school education (see Table above). Almost half (48%) had only had some high school education and of these more than half (58%) had a preference for either open areas or remote areas. In the more highly educated groups (viz. those with at least some university education), 65% had a preference for access to remote or open areas, virtually the same percentage as over the total sample. Although figures are rather small they would tend to indicate that attitudes in relation to environment type are not governed to any great degree by the level of education attained by the respondents.

The following table deals with preferences and income. The large matrix, in terms of the number of respondents, makes interpretation of the tables rather awkward. When the data were grouped and plotted it appeared that preferences for area types was not affected by income.

Table 4.16

Preferences for Area Types by Income

<u>Winnipeg Owners</u>	Under \$3,000	\$3,000- 5,999	\$6,000 8,999	\$9,000 11,999	\$12,000 14,999	\$15,000 17,999	\$18,000 20,999	Over \$21,000	None
Access to remote areas	3	2	2	4	6	-	3	3	6
Access to open areas	8	2	6	4	8	3	3	2	11
Access to frozen rivers and lakes	-	2	3	2	-	2	-	2	3
Access to roads	-	-	-	-	-	-	-	-	-
Access to forests	3	3	2	3	3	-	-	-	3
Access to slopes	-	-	-	-	-	-	2	-	-
Nothing	-	-	3	-	-	-	-	-	-
<u>Rural Owners</u>									
Access to remote areas	-	3	-	4	-	1	-	-	2
Access to open areas	-	1	-	-	-	-	-	-	-
Access to frozen rivers and lakes	-	2	4	2	-	-	-	-	3
Access to roads	-	2	4	2	-	-	-	-	3
Access to forests	-	-	-	3	1	-	-	-	1
Access to slopes	1	-	3	1	-	-	-	1	1
Nothing	-	-	1	-	-	-	-	-	1
<u>Total</u>									
Access to remote areas	3	5	3	8	6	1	3	3	8
Access to open areas	8	3	6	4	8	3	3	2	11
Access to frozen rivers and lakes	-	4	7	4	-	2	-	2	6
Access to roads	-	2	1	-	-	-	-	-	-
Access to forests	3	3	2	6	4	-	-	-	4
Access to slopes	1	-	3	1	-	-	2	1	1
Nothing	-	-	4	-	-	-	-	-	1

Table 4.17 shows the number of respondents in various occupations preferring certain areas types. In general the type of occupation and choice of area type are partially related (see table 4.18).

Table 4.17

Preference for Area Type by Occupation								
	Student	Skilled Worker	Labourer	Housewife	Professional, technical	Business	Cashier Sales	Others
<u>Winnipeg Owners</u>								
Access to remote areas	9	-	2	-	2	12	2	3
Access to open areas	14	5	2	2	8	9	2	8
Access to frozen rivers and lakes	3	2	-	-	2	3	2	-
Access to roads	-	-	-	-	-	-	-	-
Access to forests	3	3	-	-	-	6	-	3
Access to slopes	-	-	-	-	-	2	-	-
Nothing	-	-	-	-	-	2	-	-
<u>Rural Owners</u>								
Access to remote areas	2	1	1	-	3	1	1	2
Access to open areas	-	1	-	-	-	-	-	-
Access to frozen rivers and lakes	3	4	2	-	-	-	-	1
Access to roads	-	3	-	-	-	-	-	1
Access to forests	1	2	-	-	1	1	-	-
Access to slopes	1	1	-	-	1	3	-	-
Nothing	1	-	-	-	1	-	-	-
<u>Total</u>								
Access to remote areas	11	1	3	-	5	13	3	5
Access to open areas	14	6	2	2	8	9	2	8
Access to frozen rivers and lakes	6	6	2	-	2	4	2	1
Access to roads	-	3	-	-	-	-	-	1
Access to forests	4	5	-	2	1	7	-	3
Access to slopes	1	1	-	-	1	5	-	1
Nothing	1	-	-	-	1	2	-	-

The following table applies percentages by columns to the preceding table.

Table 4.18

Preferences for area type vis-a-vis occupation

Figures are expressed as percentages of columns and include both the rural and Winnipeg owners.

<u>Preference type</u>	<u>Student</u>	<u>Skilled Worker</u>	<u>Labourer</u>	<u>Housewife</u>	<u>Professional, technical</u>	<u>Business</u>	<u>Cashier, sales</u>	<u>Others</u>
Sample size	37	22	7	4	18	40	7	19
Access to remote areas	29.7	4.5	42.9	0	27.8	32.5	42.9	26.3
Access to open areas	37.8	27.3	28.6	50	44.4	22.5	28.6	42.1
Access to frozen rivers	16.2	27.3	28.6	0	11.1	10	28.6	5.3
Access to roads	0	13.6	0	0	0	0	0	5.3
Access to forests	10.8	22.7	0	50	5.6	17.5	0	15.8
Access to slopes	2.7	4.5	0	0	5.6	12.5	0	5.3
No preference	2.7	0	0	0	5.6	5	0	0
	<u>99.9</u>	<u>99.9</u>	<u>100.1</u>	<u>100</u>	<u>100.1</u>	<u>100</u>	<u>100.1</u>	<u>100.1</u>

Despite the small samples it is easy to see that approximately one-third of all groups desired access to open areas although more than 40% of the professionals and others favoured this area type. Allowing for the small samples many of the groups show similar preferences. Skilled workers, however, do seem to diverge from the other occupational groupings with a very low percentage (4.5) preferring remote areas (in all other groups except the four housewives between 26.3% and 42.9% preferred this area type).

The general conclusions which can be drawn from the examination of preferences in relation to socio-economic characteristics are rather weak in view of the sample of snowmobile owners being rather small. From the information obtained it appears that such factors as age and occupation have little effect on snowmobiling attitudes in relation to preference for certain area types.

E. PREFERENCES BY AREA OF USE

It was thought that a check on the validity of the results discussed in the attitudes section and more importantly a general idea of areal use in relation to attitudes held would be a valuable exercise. The results are presented in Table 4.19 below.

Table 4.19Preferred Area Type by First Choice Area

<u>Winnipeg Owners</u>	<u>Remote areas</u>	<u>Open areas</u>	<u>Frozen Rivers</u>	<u>Roads</u>	<u>Forests</u>	<u>Slopes</u>
Winnipeg area	7	29	7	-	9	-
Whiteshell	10	7	2	-	7	-
Bird's Hill	4	6	2	-	2	
20-mile radius	6	8	-	-	-	-
S.W. Manitoba	2	4	-	-	-	-
Southern Manitoba	2	1	-	-	-	-
Lake Winnipeg	2	-	4	-	-	-
Interlake	2	2	-	-	-	-
Beausejour	-	2	-	-	-	-
Outside Manitoba	-	2	2	-	-	-
<u>Rural Owners</u>						
Home area	8	-	7	3	4	
Bird's Hill	-	-	-	1	-	
Whiteshell	1	-	-	-	1	
La Salle	-	1	1	-	1	
Interlake	1	-	-	-	-	
Bissett	-	-	-	1	-	
Southern Manitoba	-	-	1	-	-	
S.E. Manitoba	1	-	-	-	-	

These tables bring out several important points. The first is that more than half the Winnipeg owners who used Winnipeg as their first choice area preferred open areas. The two are not compatible and it may be that open fields surrounding the suburban developments are an important lure for the Winnipeg snowmobiling public. All of the seven Winnipeg owners who indicated a preference for frozen rivers used the rivers in Winnipeg as their first choice area for snowmobiling. Four of the six Winnipeg owners for whom Lake Winnipeg was the preferred area thought that snowmobiling on frozen rivers and lakes was preferable to the other areal types. Some evidence for a close connection between attitudes and first choice area thus exists in the case of Winnipeg owners although it is difficult to explain the attitudes of those who used the Winnipeg area in preference to all other areas. It is apparently much more difficult to explain the attitudes of the rural owners in relation to their preferred area of use, partly due to the size of the sample and partly due to the fact that 25 of the 36 respondents preferred their home area to others. A more detailed analysis of what type of area the respondents lived in revealed little clue to the reasons and it is postulated that ease of access is perhaps more important than area type. Similarly with Winnipeg respondents who preferred their home area (i.e. Winnipeg) it is possible that accessibility is the most important factor to their snowmobiling. This could explain several of the apparent anomalies but, unfortunately, more research needs done on this aspect before any conclusive proof can be obtained.

This chapter has attempted to examine the socio-economic characteristics of the sampled population. What is perhaps most surprising about this group is the large number of students, young people and low income earners. The relationship between preferences for different area types and socio-economic variables was examined in some detail. Generally, these characteristics did not appear to substantially affect preference for area type. As a result of the low number of respondents in each category complicated statistical analysis was not possible even if desirable.

The final analysis of the questionnaire deals with responses to questions relating to the provision of parks and facilities, and whether these should be developed. The following chapters deals with this report.

Chapter 5ANALYSIS OF QUESTIONNAIRE DATA RELATING TO THE PROVISION OF
PARKS AND FACILITIES FOR SNOWMOBILING IN MANITOBA

It was felt important to know whether snowmobile owners actually desired parks and areas set aside for their use. If owners were amenable to restrictions on area of use this would facilitate the Provincial Government's job. Another important consideration was the location of possible parks and the views of future users were thought to be valuable. This chapter analyses the data relating to these factors.

Respondents were asked whether they wished to have parks and facilities for snowmobiling in Manitoba and Winnipeg (question 12 in the questionnaire). The results are shown in table 5.1.

Table 5.1Number of Respondents Wishing Parks and Facilities for Snowmobiling

	<u>In Winnipeg</u>	<u>In Manitoba</u>	<u>Nowhere</u>
Winnipeg owners	104	114	4
Rural owners	7	33	6
	<u>111</u>	<u>147</u>	<u>10</u>

It must be remembered that respondents were not asked here to choose between Winnipeg and Manitoba and there are consequently a larger number of responses than the total number of respondents. There are only a few persons who did not wish any facilities. There is a similar number of respondents wanting facilities in Winnipeg and

elsewhere in Manitoba from the Winnipeg sample. It is only when the rural sample is considered that there is a large difference. Ninety-two per cent of the rural respondents answered this question (33 out of 36), wishing facilities in rural Manitoba while only 19% (7 out of 36) wished any in the city of Winnipeg. This is quite natural when it is considered that only three rural owners used Winnipeg for snowmobiling.

Snowmobilers in Ontario were asked whether they were satisfied with facilities available and an overwhelming majority (78.9%) indicated that they were. As suggested in the Department of Tourism and Recreation, Government of Ontario Report on Snowmobiling (1971, p. 26) this question is rather subjective; 'the feeling of satisfaction is a relative value between an expectation and a factual experience or realization'. Table 5.1 may indicate that only 10 respondents were satisfied with the present facilities in Manitoba. However, much direct comparison is impossible due to the nature of the questions involved.

Respondents were then asked to name up to three areas where they would like to see facilities, if they wished any, in Manitoba. The results are to be found in Table 5.2 below. The low number of respondents wishing development in the Bird's Hill area is perhaps because the park is already laid-out with some facilities, although a large percentage of rural residents (25.5%) indicated that Bird's Hill should be developed. It is sufficient to say here that it is obvious that a large majority of snowmobile owners would like to see parks

and facilities developed. The data, as thought, bore no relation to socio-economic factors.

Respondents were, in addition, asked whether, faced with a choice, they would prefer to see parks with facilities in Manitoba or Winnipeg. As Table 5.3 shows (not surprisingly) more people preferred parks in rural Manitoba (113 to 63). What is more surprising, in fact, is the large number of snowmobile owners preferring Winnipeg parks and the planner must make due note of this.

Table 5.2

<u>Areas Where Facilities are Desired in Manitoba</u>				
<u>Area</u>	<u>Winnipeg</u>	<u>*Percentage Total</u>	<u>Rural</u>	<u>*Percentage Total</u>
Bird's Hill	12	6	13	25
Lake Winnipeg	32	16.5	11	21.5
Whiteshell	34	17.5	11	21.5
Bissett area	32	16.5	3	6
10-20 mile radius	32	16.5	1	2
Lake Manitoba	16	8	3	6
Interlake	22	11	1	2
S.W. Manitoba	8	4	3	6
S.E. Manitoba	8	4	5	10
Nowhere preferred	42	10	10	10
	<u>238</u>	<u>100</u>	<u>61</u>	<u>100</u>

*This is a percentage of the total number of areas indicated and does not include those people who had no preference. If one person indicated 3 areas where facilities were wanted then, in this table, that becomes equivalent to three persons.

Table 5.3Given a choice would you rather see parks with facilities inRural Manitoba or in Winnipeg

	<u>Manitoba</u>	<u>Winnipeg</u>
Winnipeg owners	80	60
Rural owners	<u>33</u>	<u>3</u>
	<u>113</u>	<u>63</u>

Respondents were asked what type of facilities they would like to see provided in any future parks. The results are tabulated in table 5.4.

Table 5.4What facilities would you like to see in any parks?

<u>Facility</u>	<u>Winnipeg Owners</u>	<u>Rural Owners</u>	<u>Total</u>
Car Parking	60	12	72
Sign-posted trails	98	20	118
First-aid posts	52	12	64
Overnight accommodation	68	16	84
Restaurants	88	13	101
Police supervision	1		1
Trail shelters	1		1
Repair facilities		2	2
Facilities in some remote areas	1		1
None	7	4	11

(Multiple responses were possible)

It is important and significant that only seven Winnipeg owners and four rural owners ~~either~~ left this question blank or expressed the view that no facilities were necessary. The five given facilities had considerable appeal, with three quarters of those answering those questions requesting sign-posted trails and restaurants. This information serves as a useful guide to the planner and should be examined in relation to Burton's work on 'Outdoor Recreation Enterprises in Problem Rural Areas' (1967). Burton states that there are two types of recreation enterprises - market and non-market. Burton was, however, concerned with market enterprises and these should be examined with a view to providing such for snowmobilers in Manitoba. 'It is not sufficient to assume that the establishment of outdoor recreation enterprises in a problem rural area will necessarily lead to an increase in economic activity and, hence, to a growth of rural prosperity'. (Burton, 1967). Some study in detail has to be done in an area where a recreation enterprise is proposed. The objectives of planning recreation enterprises in problem rural areas are to raise the standard of living and to re-distribute productive resources. However, social problems can arise and care must be taken to understand and take into account the views and needs of individuals in the local population. Otherwise the introduction of new development may fail. This is one point where this study of snowmobiles is lacking and the Provincial Planning Department would have to approach people in any areas where 'snowmobile' parks were proposed.

There are two important advantages which problem rural areas have for the development of outdoor recreation facilities:

- '1) The saturation and over-development of existing tourist resorts in Britain could lead to a growing use by holiday makers of other less-developed areas.
 - 2) The physical and geographical characteristics of most of these areas make them especially suitable for outdoor recreation.'
- (Burton, 1967).

The first advantage, although applied by Burton to Britain, could equally be applied to Manitoba. Burton finally concedes that the success (or failure) of the recreation developments depends upon the numbers and types of visitors.

It is important, therefore, that further research by the appropriate authority must be carried out. Much of rural Manitoba is a problem area, according to Burton's definition. An area is a problem rural area if it has some or all of the following characteristics.

- '1) low per capita incomes relative to rest of economy.
 - 2) Relatively low population densities - often declining.
 - 3) Predominance of primary industry.
 - 4) Underemployment of labour and land.
 - 5) Shortage of capital.
 - 6) Lack of receptivity to technical, social and economic change.'
- (Burton, 1967).

Rural Manitoba often experiences at least conditions 1, 2, 4 and 5. Consequently, planning for their improvement is essential and it is felt that recreational development may hold the key to this planning for improvement. Local communities could provide labour, supplies and accommodation for snowmobilers as well as for summer visitors. The possibilities are further explored in the chapter 7.

It can be seen from the data presented above that respondents to the questionnaire wished both parks and facilities in Manitoba and Winnipeg. Demand for these obviously is far in excess of supply and planners should cater to this. The actual location of new parks is subject to a number of constraints. One of these, the effect of snowmobiles on the environment, is discussed in the next chapter.

Chapter 6NUISANCE FACTORS - THE DETRIMENTAL EFFECTS OF
SNOWMOBILES ON THE ENVIRONMENT

One of the most critical problems facing today's planning authorities and government departments is that of pollution and subsequent planning to maintain the lowest level of pollution possible. It is becoming more and more imperative in today's highly industrialised and urbanised society to conserve our resources to the best of our ability. Man constantly mistreats and mismanages the environment and nature's balance is constantly threatened and is being challenged at a greater rate than ever before. As a result, all planners and land management bodies must be aware of the crisis facing Man: a crisis which is created every time Man causes changes in the landscape by some form of industrial development.

The reasons for the destruction of our environment are fairly well-known and documented. Industrialisation and the technological revolution have significantly contributed to environmental imbalance and destruction. Greater industrialisation has led to two other factors which are important to this particular study both affecting environmental degradation. The first is the increasing mobility of our population who have, as a result of increased leisure time, extensively utilised this mobility. This increase in leisure time and the use to which it is put is one concern of this thesis. The use of snowmobiles is largely a leisure-time activity. Snowmobiles are used in some rural and northern districts by trappers and for

transport. However, in such areas their density is low. This thesis is examining the recreational aspects of snowmobile use. The effects of pollution by power toboggans, and the subsequent ramifications for planning for areas for snowmobile use, must, therefore, be of major concern.

It is the object of this thesis to first examine snowmobiles and studies on their effect on the environment before suggesting possible planning procedures. The effect of the snowmobile on our complex environment is not yet fully understood although enough empirical data seems to have been collected to suggest that the machines have a degrading effect on the environment. Although snowmobiles have only been on the market for about ten years, researchers, particularly in Minnesota, have been concerned with their effect on the ecology. This particular problem is, of course, of relevance to geographers. 'Ecology is the science which seeks to elucidate the principles governing the interactions of the natural processes of land, water and all living things'. (Arvill, 1965, p. 10). Geographers study the distribution of space and the numerous spatial interactions on the earth's surface. Consequently, geographers must be concerned with ecological stress caused by increasing urbanisation and industrialisation.

In this study concern with the environment is of prime importance to the eventual planning decisions to locate snowmobiling areas. The recreation planner is required to consider the provision of snowmobile trails, facilities and the like only after examining the

ecological effect of the use of snowmobiles. He has a responsibility not only to recreationists but to the whole human race and to the environment itself. Provision for future generations must be ensured.

Several studies have been done on the impact of snowmobiling on some parts of the environment. W.J. Wanek appears to have done more research than any other researcher. He presented a paper discussing 'the impact of snowmobiles on vegetation, temperatures and soil microbes' at a Symposium on Snowmobile and off-the-road vehicle research at Michigan State University, June 15th, 1971. He argues that 'snowmobile traffic may significantly alter the soil temperature regime by compacting natural snow cover thereby altering its insulative properties'. (Wanek, 1972, p. 18). This could result in a slowing down of the decomposition of organic matter and thus cut down drastically humus formation. Plant survival would, as a result, be jeopardized due to a deep freezing and it is likely that this would lead to significant changes in the natural vegetation.

Using a control site in 1971 Wanek discovered that temperatures in the soil under compacted snow were up to eight centigrade degrees colder than those of the control (viz. the undisturbed site). As far as the effect on vegetation is concerned, Wanek naturally felt it was too early to draw conclusions since less than one growing season had been experienced during the research period. Some damage to trees had also been observed.

Wanek produced an interim report on 1st July 1971 on his research which was due at that date to continue for a further two years.

In his conclusion he stated that 'snowmobiles do have an impact on the physical environment, soil microbes, and vegetation'. As a result of snowdrifting and filling in of tracks in forest communities it was found that more harm was done to vegetation below these tracks than to the vegetation under areas of virgin snow. 'However, only one traverse over undisturbed snow cover can drastically affect the physical environment as well as physically damage important plants, such as conifer seedlings'. (Wanek, 1971, p. 16). Wanek also stated that:

..... snowmobile noise emissions are high and could be damaging to the hearing of the driver. The sound carries well into the environment, a fact that should be considered when developing snowmobile trails. Deer yarding areas should be widely skirted and the advisability of developing trails into many wilderness areas is questionable. The interaction of snowmobiles, deer and their predators needs further study as does the effects of snowmobiles on little decomposition in soil microbes, spring sphenerals and other important organisms.

Dr. William Pruitt, Jr. also claims that 'snowmobiles are more dangerous to plants and animals living under the snow than they are to people and plants above it,' (Winnipeg Free Press, January 29, 1971, p. 2). Pruitt has undertaken research into snow and its effect on the various life-forms living below the snow. Snow is an emulsion of air and small, complex ice crystals which insulates the earth beneath it and provides warmth for some plants and small animals. If the snow is packed it loses its insulating properties and this results in the death of some life forms. Snowmobiles, Pruitt claimed, quickly pack snow so that its insulating quality is lost. This is evident on golf-courses, especially on the greens where snowmobile trails show up as yellow streaks of damaged turf in the spring.

Pruit's research into the effect of snow-compaction by snowmobiles proved that the ecology below snowmobile tracks was liable to substantial alteration (Pruit, 1971). It appears that one pass over an area of undisturbed snow compresses the snow to such an extent that the pukak (sub-nivean) layer is destroyed. In other words the layer of snow which is loosely packed immediately above ground level is compacted and thus the insulating and 'breathing' layer is destroyed. Pruit discovered that fifty people on showshoes were more or less equivalent to one pass by a snowmobile although they did not completely destroy the pukak layer.

Little work has been done on the effect of snowmobiling on the habits and lives of the fauna and avifauna living in previously noise-free areas. It has been said by many that animals are greatly disturbed. On the positive side, more than 38% of snowmobilers interviewed by Wilkins and Hill (from Cornell University) reported instances of wildlife using snowmobile trails. 'A hard-packed snowmobile track was seen as especially advantageous to deer'. (Hill, 1972, pers. comm.). On the negative side, considerable numbers of actions detrimental to wildlife were observed. These included intentional harassment of deer and damaged trees and crops. Snowmobilers themselves said 'the positive and negative physical effects of snowmobiling on the environment were about equally prevalent'. This is, of course, a very subjective statement and stands up to no statistical testing.

Continued snowmobile use is thought to possibly drive away animals so that ~~with~~ urban land areas constantly spreading, the

increasing mobility of the urban populations and the desire for solitude expanding, animals retreat further and further into the wilderness. Not only does this limit enjoyment of our environment but it is possible that in the long term it could have serious effects upon it. It is exceedingly difficult to ascertain the effect of snowmobiling on the animal and bird populations of the forests. It may be that the only possible way is subjective and vague - but that is not a good enough foundation on which to build planning decisions.

Another nuisance factor caused by the ability of certain types or groups of people to reach the wilderness is the increase in vandalism of summer cottages, in trespassing and destruction of fences etc. Admittedly this is a small minority as is usually the case but nevertheless it is an important factor. It may be possible to limit this by inducing snowmobilers to areas away from these summer cottages or to provide year-round facilities and policing in the areas of summer cottages. Trespassing could be partially solved by limiting the area of use by recreational snowmobilers. Such aspects as enforcement are discussed in the final chapter.

Public opinion pertaining to snowmobilers is varied and generally very much against certain actions of snowmobilers. Many people do not own or ride snowmobiles and from media reports appear to view them either with apathy or as a nuisance only very rarely with sympathy. As was suggested by Thompkins at a Public Hearing in California the basic issues for legislating and, thus being an important component

of the nuisance factor are 'noise, speed, and keeping off the highways' (Dept. of the Interior, 1971, p. 21). Research by workers into the attitudes of the non-snowmobiling public is non-existent. However, this thesis assumes that snowmobiles can be termed a 'nuisance' to many people and coping with this 'nuisance' should, accordingly, be adequately planned for.

The physiological effects of snowmobiling on snowmobilers are another nuisance factor. For example, deafness can be caused by long exposure to the engine-noise. However, these medical aspects although they can be controlled by legislation, do not and should not affect planning decisions. They should be controlled before planning for the location of snowmobiling areas is undertaken.

Thus, it has been shown that there are numerous nuisance factors all of which have to be taken into account when any decision as to the location of parks, trails etc. for snowmobiling is made. A major problem is the lack of empirical data on which to base decisions. However, it is felt that enough information has been provided by such workers as Pruitt and Wanek to suggest that prudent decisions are required and required urgently. The ecological effect of snowmobiling appears to be sufficiently detrimental to the environment to ensure that, at worst, some limitation be put on the areas of use and, at best, there be strict areal control and banning from all areas which could be classed as 'fragile' in terms of snowmobile use. The important ecological aspects to be considered are the effect on the environment caused by snow compaction and the effect on the wildlife popula-

tions caused by the noise and indiscriminate areal use of snowmobiles and the polluting effects of exhaust fumes. In conjunction with these it is essential to consider the 'nuisance' factors, such as disturbance to other recreationists and disturbance by noise to the public when snowmobiling is carried on close to human habitation.

The following chapter attempts to relate the results of the questionnaire survey and the 'nuisance factors' in order to plan for snowmobile use.

Chapter 7DELIMITATION OF POSSIBLE SNOWMOBILING AREAS

This is undoubtedly the most difficult section of the thesis to write for it is concerned largely with subjectively-based decisions. To have had maximum value the research would need to have concentrated not only on one very small part of land use but also with the whole field of land use in southern Manitoba. This would have been totally impossible for one worker. However, on important consideration is that because snowmobiling is a winter sport it clashes with fewer activities than would a summer activity using similar types of machines (e.g. all-terrain vehicles). The value of this particular work, it is felt, lies in its concentration on a new activity and in the attempt which is made to integrate this activity into the highly complex pattern of land use which has evolved - with regard to outdoor recreation - particularly in the last twenty-five years.

This chapter should also be seen as a drawing together of the facts and statistics presented in the earlier chapters. It is essential that adequate consideration be given to all the elements and factors under study. One problem always present for the planner is the system of priorities or of integration of land use types into the complex tapestry of land use. What should benefit at the expense of something else? Why should snowmobilers have areas developed at the expense of wildlife (if indeed, it is an expense)? It is essential

for not only the recreation planner, but for all planners, to make as objective analyses of their information as possible. Consequently, it is felt that, while an attempt has been made to be objective, there must, unfortunately, be an element of subjectivity in the succeeding decisions. This subjectivity is based on careful consideration of all the facts.

Why should the government provide areas for snowmobiles? This question will undoubtedly be asked by many people. Under the present system snowmobiles go everywhere. They are virtually uncontrolled. There are a few provisions and parks for snowmobiles in southern Manitoba, but these have been set up for one of two reasons. The first is for economic gain, e.g. La Salle snowmobile parks, while the second is to control access to public parks, e.g. Whiteshell and Bird's Hill where trails have been laid out. (Approximately 600 visits are made to Bird's Hill annually by forty of the 140 Winnipeg respondents. If this is a representative sample then the considerable use made of Bird's Hill is immediately apparent). With an increasingly complex pattern of land use as Man puts more and more pressures on the environment, it is essential to have an overall plan. The following extract from Robinson (1967, p. 38) puts the position very succinctly.

'Recreation is a merit service and is often supplied by government so as to control quality. The major goal of such programs is not, however, a redistributive one. Some type of rationing scheme is urgently required to protect the resources from overcrowding deterioration Outdoor recreation is an important part of the American heritage and a legitimate concern of government. Public ownership and operation can be justified quite dispassionately and it can be put on a perfectly sound

financial basis. Over the long run this approach is more likely to protect and promote this heritage than is the usually wholly emotional appeal to non-economic criteria⁶.

Snowmobiling is now an integral part of this 'heritage'. However, Robinson is perhaps a little extreme in his view with regard to stress on non-economic criteria. The importance of snowmobiling and its effect both on the environment and local community should not be underestimated. Now that research on aspects of outdoor recreation and its environmental effect is being undertaken more objective argument and analysis is possible. For example, Chapter 6 reviews the research (most of which is still being undertaken) being done on the environmental impact of snowmobiles. Consequently, a more objective decision-making process is available to the planner than before. His judgements can be based on non-economic as well as economic criteria.

The present situation in Manitoba is analysed by Potton (1972). The Manitoba Government is anxious to provide opportunities for snowmobiles in some of the provincial parks. They are also anxious 'to minimize the conflict' between snowmobiling and other activities (Potton, 1972, p. 1). Potton (1972, p. 1) stated 'although the Province of Manitoba has not developed a comprehensive plan for parks and outdoor recreation it has the necessary tools and legislation to develop such a plan as time and needs arise'. (The Act referred to is the Provincial Park Lands Act and is reproduced in Appendix A).

Cesario (1969, p. 34) looked at the provision of new sites for recreation. He suggested that any particular site is part of the

whole recreation system and defines this system in terms of an operations research-type diagram. He was particularly interested in the system of establishing a new park within that system. Taylor (1969, p. 7) expanded upon this idea of the **recreation system**, suggesting that it is divided into a number of sub-systems. Snowmobiling and parks for their use can be one of these sub-systems.

The Parks Branch, Government of Manitoba, is concerned with the recreation system in Manitoba. One of their objectives is to establish Manitoba Parks as examples of

'.....harmonious land use and 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' (Potton, 1972, p. 3).

Uncontrolled snowmobile use in the Parks conflicts with this objective. The Manitoba Government has had to evolve some policy for all outdoor recreation vehicles on Crown Lands in Manitoba. Potton (1972, p. 10) suggested that a cross-Canada 'uniform approach' to policy formulation be adopted since 'there are a number of basic ingredients including designation, zoning, master planning and legislation and regulation'. These are now discussed in more detail.

Designation within the 'new Parks Act' (see Appendix A) allows for several types of areas to be delimited. Only two of the twelve types of areas will allow snowmobiles viz. provincial natural parks and provincial recreation parks. However, snowmobiles will also be limited by zoning in these park land units.

Zoning is absolutely necessary if the objectives of the Park Branch are to be met. These are five major zones in Manitoba Parks,

ranging from special areas to intensive use areas. Snowmobiles are only permitted in the intermediate zones. Another important aspect of recreation planning in general and planning for snowmobiles in particular is the master plan for each major park. Development of detailed plans should be so directed that a 'co-ordinated theme will evolve for the total park complex' (Potton, 1972, p. 11).

Finally, it is very necessary to have legislation and regulation. Such factors as operating regulations, fees, safety etc. are covered by legislation or regulation. Manitoba has comparatively strict laws. Several Manitobans have hailed those as the finest on the North American continent (see Winnipeg Tribune, 15th Dec. 1973, p. 17). Manitoba has chosen to recognise snowmobiles as legitimate forms of recreation and has legislated accordingly. However, the Province has yet to provide adequate park land for the snowmobile user. It is hoped that this thesis has provided some rationale and statistical basis for future park delimitation.

In order to determine the criteria for locating the snowmobiling area it is important to know what type of snowmobiling use and the amount of use to which the area will be subjected. A useful classification to use is that of Clawson and Knetsch (1966, p. 36-38). Using their classification for recreation areas provision of parks for snowmobiling could be both user-oriented and resource-oriented. The former category would require the provision of a park normally close to the metropolitan Winnipeg area and would be intensively developed

and managed. Resource-oriented areas would be located in semi-wilderness locations with little or no development. It would be hoped that rural parks or areas would cater not only to snowmobiling but also to other winter sports and would be suitable for certain recreational types in the summer. If a curling rink which takes up little area was built close to the park base along with a **restaurant** (see p. 76 Table 5.1 where 147 of 193 respondents wished parks with facilities in Manitoba) this could recover some of the cost of the park. In the summer the park could be utilized as a picnic area, for boating and bathing if a lake was located in the park, and even for camping.

What locational aspects must be considered before areas are delineated? For user-oriented areas, location 'is critical' (Clawson and Knetsch, 1966, p. 150). However, due to the somewhat unique nature of snowmobiling as a recreational activity; to the fact that this thesis argues that government control is essential; and that other winter sports may be involved in the delineated areas, it is felt that location is less critical particularly if snowmobiles are to be controlled on a province-wide basis. Adequate delimitation is only possible after various aspects of the questionnaire such as the threshold distance to be travelled for each category of snowmobiling (viz. short distance, day trips and weekend trips) are examined. Due to the wording of the questionnaire, the threshold distance in fact is not known but actual distances travelled are known. It is the belief of this author that planned areal delimitation would perhaps

necessarily increase threshold distance, especially when planning for the resource-oriented (particularly weekend) areas. 'Resource-based outdoor recreation areas are located where one finds them, and people must travel to them as necessary' (Clawson and Knetsch, 1966, p. 152). However, it would be important to note G. Taylor's (1966) work on the effect of travel time on the use of recreational enterprises. He found that, in general, people were prepared to travel one-way trips of 30-45 minutes for intensive day use week long, 2-2½ hours for intensive day use at weekends and 4 hours for intensive weekend overnight use (Taylor, 1966, p. 131).

The first category to be dealt with is that of short rides on snowmobiles. Obviously a different philosophy for development is necessary compared to that for whole day or longer excursions. Few facilities such as restaurants are required at areas being used by snowmobilers for short rides. There must be many more areas for short than for whole day excursions. It would therefore be desirable to have parks within or close to the Winnipeg area. High use is expected in such areas. Over 40% of Winnipeg respondents snowmobiled on more than eleven days per month for short rides (see p. 30, Table 3.7). If this sample is representative then some 4,500 snowmobilers would use their machines on more than eleven days per month for short rides. It is also advisable to provide areas for short-period snowmobiling close to other centres in Manitoba, e.g. Brandon, Portage la Prairie, Selkirk, Beausejour, etc. As can be seen from Table 3.7

(p. 30) 70% of rural respondents used their snowmobiles on more than eleven days per month for short rides (and 50% of these or 35% of the total used them on more than twenty-one days per month).

With regard to Winnipeg it would be best to use areas of limited use and as far from housing as possible. There seems to be no legitimate reason for not developing the floodway at least once per month (see Table 3.1, p. 21)). However, care must be taken to control access to the floodway as it is used by other winter sports enthusiasts (e.g. skiing, toboggans). Such essentials as campgrounds, first aid posts etc. should be placed at strategic intervals. Other possible ribbon developments could be along the rivers with restrictions on the time of use so as not to disturb neighbouring houses. Development should not take place in such areas as La Barriere Park which are important sanctuaries for both wildlife and human beings. Obviously these developments will not meet demand and it is essential to provide open areas (possibly used as grain fields in the summer) close to the perimeter highway. Perhaps ten or twelve of these areas extending over several square miles will cater for the demand. These areas should also be fully utilised in the summer, not necessarily as recreation areas. Jurisdiction over the floodway and rivers resides with the City of Winnipeg (see Appendix B for regulations).

The Manitoba government should delineate other areas as parks under the terms of reference of the Parks Act so that maximum use is made of them. Naturally there are a number of constraints such as

cost, public concern, environmental hazards etc. It is the interaction of these constraints which make the ultimate decision of exactly where to locate the areas in part a subjective one. Another very important consideration is the actual level of use and how many snowmobilers will be using facilities on any one day. Further research is necessary but it is likely that somewhere in the region of 7,000 snowmobilers would now use at least one of the areas and its facilities at least once per week, normally at weekends. (This figure is based on the assumption from questionnaires that 45% of all respondents have at least 3-4 day trips per month (see Table 3.7, p.30). Thus, of the 15,000 or so registered snowmobile owners approximately half would snowmobile once per week on a day trip.) Obviously demand increases each year as more and more people purchase snowmobiles and expansion must be allowed for when the final delimitation takes place.

As can be seen from Table 3.11 (p. 34) almost half the population sampled travel between 51 and 100 miles for a day's snowmobiling. (This will be assumed to be round trip although this was not stated in the questionnaire). Nearly three quarters of the rural residents travelled the same distance (Table 3.11, p. 34). Consequently, areas for snowmobiling should be located largely between 25 and 50 miles distant from Winnipeg, and, if possible, a similar distance from other centres (as catchment for 'rural' residents). However, with government control the threshold distance could be increased. For example, if otherwise optimum snowmobiling areas were located sixty miles from

Winnipeg snowmobilers would use these partly because there would be no (or very few) other areas available for snowmobile use and partly because factors other than accessibility would be optimum. It should also be remembered that 50 miles is not the threshold distance. (The questionnaire only asked for actual distances travelled).

This band of parks for daily trip use at the 25-50 mile radius from Winnipeg may attract as many as 7,000 snowmobile owners per week (see p. 31) and some study on the carrying capacity of the parks would have to be undertaken, bearing in mind that by far the busiest day of the week would be Saturday and Sunday.

As far as parks for the weekend visitor are concerned these should preferably be located between 51 and 200 miles from Winnipeg (see Table 3.12, p. 35). Such areas would also cater for the few rural respondents (20.5%) who go on a weekend snowmobiling trip more than three times per year (see Table 3.7, p. 30). It is envisaged that some of these may also be used for day trips, especially those closer to Winnipeg, by the more venturesome of the snowmobile owners. However, to make parks more viable enterprises it is suggested that in one or two select areas a whole winter recreation complex be built, catering to curlers, skiers, ice hockey teams and the like. Feasibility studies on the viability of such projects would have to be undertaken. It appears that curling, ice-fishing and ice hockey are sports which attract snowmobilers.

On the snowmobilers' side it is important to consider their preferences when making the final areal selection. Table 4.11 in Chapter 4, (p. 62) shows the various area types which snowmobile owners prefer. The table is divided into Winnipeg residents and rural residents and is adapted here as percentages of the total number of respondents.

Table 7.1

Percentage of Respondents Preferring Access to Various Area Types

Access to remote areas	29
Access to open areas	34
Access to frozen rivers and lakes	14
Access to roads	2
Access to forests	15
Access to slopes	6
	<u>100</u>

As a rough measure of the optimum number of parks with each criterion a crude index based on the above percentages was calculated - giving 13:15:6:1:7:2 for the criterion of 'access to remote areas'; 'to open areas'; 'to frozen rivers and lakes'; 'to roads'; 'to forests' and 'to slopes'. It should, however, be advantageous to include as many of these criteria in one park as possible. The index essentially is a measure of popularity of the different criteria.

The problem now is to locate the areas which have the necessary criteria and are relatively wildlife-free. It is also important to

locate areas which will suffer least from snow compaction and possible pollution (see Chapter 6). Obviously a sandy soil or sand will suffer least from snow compaction because there are fewer soil animals and plants to be destroyed. The ultimate location depends upon feasibility studies which should be undertaken prior to the setting-up of a park with facilities. Map 1 (p. 24) shows possible as well as existing areas. A short explanation is given for each choice (p. 110). It is exceedingly important to allow the park administrator to be responsible for limiting use in any area depending upon weather, wildlife, snow cover, etc. Concentrations of the levels of recreational activity are a problem facing the management side of the areas. The 'wilderness' areas are by definition more fragile landscapes tending to be altered more drastically by environmental degradation. Consequently controls on the number of snowmobilers must be more strict than controls to other, less fragile, areas. Some index of fragility must be worked out to restrict the number of snowmobilers and this can only be done by further research undertaken by ecologists and soil scientists.

Other important factors which should be taken into account by the recreation area manager are time patterns of recreation activity (concentration of use on public holidays, weekends, etc.) and the area of use within the park.

At this point of the thesis it is assumed that adequate research has been done to estimate participation in snowmobiling in any 'average' month. The real problem is determining the participation at any

parks which may be developed. To undertake a cost estimate for a given park or series of parks would be difficult. However, any planning authority should attempt to do this. It is necessary before an upper limit on fees for visits to a park can be established. This introduces the idea of placing a value on outdoor recreation. This is discussed at length by Clawson (1959) who stated that 'rational planning of resource development requires a value on recreation wherever it is one of the major uses of land and water' (p. 4). Clawson (1959, p. 5) felt that 'while monetary valuation (of outdoor recreation) can be useful for sound resource planning, too heavy reliance should not be placed upon monetary values'. He suggested this because he felt recreation may be in the same category as education, health, etc. It can, consequently be argued that planning for snowmobiles is necessary from several points of view. It is necessary for the snowmobilers themselves; for various property owners at present adversely affected by snowmobiling; for the well-being of the environment and for freedom from noise for the non-snowmobiling public. Is it possible to put a real monetary value on the effects of snowmobiling on the environment (both the natural and the human environments)? This author suggests this is not possible. However, some costs could be recovered by adequate planning procedures. In addition it may be difficult to measure, in monetary terms, the social benefit to people in problem rural areas.

Adequate planning procedures are taken to mean efficient use of land and resources for economic and social gain. Understood in this

definition is the importance of multiple land use management. It is necessary to study each area in detail and to look at the possible social and economic benefits to the local community. It is even more important to try to predict accurately any adverse effects on the community.

Manitoba ~~parks~~ are 'established largely to provide recreation for our (Manitoban) own citizens and are planned with this objective in mind'. (Danyluk, 1970). Consequently, planning for snowmobiling and for other winter sports for Manitobans is in line with government policy on more general recreation planning. Danyluk further stated that 'the combined flow of cash for services, repairs, accommodation, fees, wages, etc. contributes quite substantially to Manitoba's economy'. (He was referring to the economics of the Whiteshell Provincial Park). He also stated the need to develop Lake Winnipeg as a major recreation area. 'Businesses lying along tourist destination routes experience substantial gains' (Danyluk, 1970) once the tourist areas has become established. This contributes, in no small way, to the economic improvement of problem rural areas.

'Conflicts will become much more severe if an adequate planning approach is not apparent. An adequate planning approach can avoid most of the destructive conflicts only if controls are available in a positive form.

.....Regional planning for outdoor recreation land use in North America should provide an optimum balance between public, commercial, collective and private types of recreation site development'. (Parker, 1964).

Before final delimitation of areas for further investigation it is important to consider present government policy and recommendations.

As can be seen from the letter reproduced as Appendix B the City of Winnipeg considers the use of snowmobiles within the city in need of considerable control and accordingly By-Law No. 293/73 (see Appendix B) was passed in April 1973. The Parks and Recreation Department, under the directorship of M.E. Benum are responsible for the use of parks, golf courses and other recreation sites within Winnipeg. The Parks Department states that it wishes 'to eliminate all power toboggan travel in any of the parks and golf courses' for two reasons. The first is the damage that snowmobiles inflict on 'young plantings and special areas' while the second deals with conflicts with other recreational types (see Appendix B). It is obvious that strict control is desired by the Parks Department whether it is implemented by 'Federal, Provincial or Civic Governments' endeavors'.

In Manitoba, the Provincial Government has established several trails for snowmobiles which are listed in table 7.2 below (see p. 106). However, there is no master plan that includes snowmobiling and 'at present controlling use has been through an 'ad hoc' approach' (Neil Nixon, 1973)*. Appendix A shows the Provincial Parks Lands and Snowmobile Act for interest. (It should be noted that all present Government of Manitoba snowmobile trails are in Provincial Parks.)

Areas already used by snowmobile owners must be taken into account when snowmobile parks are being planned. These areas are

*Neil Nixon, Director, Department of Tourism, Recreation and Cultural Affairs, Govt. of Manitoba. Pers. Letter dated 25th September 1973.

shown in table 3.3 (p. 25), in table 3.8 (p. 31) and on map 2 (p. 33).

It would be advantageous to provide for snowmobiling in the areas mentioned in these tables. The areas are listed below in table 7.2 along with areas where the Manitoba Department of Tourism and Recreation has already established snowmobile trails. Corresponding areas have been set opposite each other. Some areas are well-provided for but there are considerable gaps.

Table 7.2

(see map 1 on p. 24)

<u>Areas used for snowmobiling by respondents</u>	<u>Areas where trails already established</u>
Winnipeg	Falcon Lake, Rennie,
Bird's Hill	West Hawk Lake
20-mile radius round perimeter	Bird's Hill
S.W. Manitoba	Sprue Woods, Turtle
Lake Winnipeg	Mountain
Interlake	Grand Beach
Southern Manitoba	
Bissett	
S.E. Manitoba	
N.W. Manitoba (Riding Mountain)	Riding Mountain
Lake Manitoba	

Table 3.8 (p. 31) shows the frequency of use of various areas by the respondents. Winnipeg is 'top of the poll' with approximately 5,500 visits per annum. The area 10-20 miles from the perimeter highway with 540 visits/year, Lake Winnipeg with 140 visits/year and Southern and S.E. Manitoba with 61 visits/year are under-developed in terms of facilities for snowmobiling. The number of visits is important to the planner and park manager. Table 3.7 (p. 30) shows the number

of short rides, day trips and weekend trips made by snowmobilers. The areas used for short rides are all within forty miles of the home base with nearly two-thirds within twenty miles (see Table 3.10, p. 34). Thus, the majority of areas for short-ride use should be developed very close to Winnipeg if, at all, possible. The average number of short rides (by Winnipeg residents) was found to be between 9 and 12 per month. Therefore, the 142 respondents took approximately 1420 short rides/month. There were approximately 5,500 registered snowmobiles in Winnipeg in 1971 and if this data was correct for the whole population then Winnipeg snowmobile owners would undertake approximately 55,000 short rides ($5,500 \times 10$) per month. As just under two-thirds of these (36,667) were undertaken within twenty miles of the home base this has considerable implications for planning. This clearly shows the big demand for snowmobiling close to Winnipeg.

As far as day trips are concerned the average number per month for Winnipeg residents was approximately three. Thus, about 425 day trips were undertaken by the respondents and if this use was reflected by the whole Winnipeg population there would be approximately 16,000 day trips. About one-half of these trips are made at distances of 51-100 miles from Winnipeg (see table 3.11, p. 34).

Snowmobilers travelled between 50 and 200 miles for the great majority of all weekend trips (see table 3.12, p. 35). Consequently planners must be aware of this distance factor when providing such facilities as overnight accommodation, restaurants and the like.

Another worth-while planning consideration is the location of summer cottages, particularly as table 3.16 (p. 41) shows that nearly three quarters of the Winnipeg cottage owners used their cottages as bases for snowmobiling. Approximately one-third of all Winnipeg snowmobile owners also owned cottages. Consequently, if one-third of the registered Winnipeg owners owned cottages and nearly three-quarters of these were used as snowmobiling bases, there would be approximately 1300 cottages used as based. Much of the activity would be in the Whiteshell area where twelve of the fifteen cottages owned by Winnipeg respondents were used for snowmobiling.

It is important to consider the desires of the snowmobile owners with regard to possible location of parks. Table 5.2 (p. 78) shows the areas preferred by both the Winnipeg and rural respondents. The desire to locate parks near bodies of water becomes evident when the table is examined closely. Another important conclusion which may be drawn from this table is the number of respondents (48) who desired parks in comparatively remote areas (Bissett, S.W. and S.E. Manitoba). The demand for parks relatively close to Winnipeg is also evident with 58 of 399 replies wishing park development either at Bird's Hill or within twenty miles of the perimeter highway. Planners should attempt to cater to the various groupings in this table.

As can be seen from table 3.15 (p. 39) fifty-six (40%) of Winnipeg respondents owned a powered boat. When this is considered along with table 3.16 (p. 41) the importance of bodies of water in the recreation

system within Manitoba can be identified. Map 3 (p. 38) shows the location of summer cottages and these are again clustered around bodies of water. Thus, to satisfy the demand several areas which are planned as year-round recreation parks should cater to the tastes of snow-mobilers. Consequently the presence of lakes should be an important planning consideration.

These factors have all been taken into account when the following areas for establishing trails were suggested. Exact location of trails were suggested. Exact location of trails and facilities would depend on certain environmental constraints such as those suggested previously in this thesis, particularly in chapter 6. Discussion of this was felt to be outside the scope of this thesis.

AREAS FOR ESTABLISHING GOVERNMENT TRAILS

- Winnipeg : Some limitation is necessary (see Benum's letter, Appendix B). Waste areas, parks on the floodway and river system should be developed.
- Bird's Hill: (2 trails)
Whiteshell: (7 trails)
Spruce Woods: (2 trails)
Turtle Mountain: (3 trails)
(S.W. Manitoba)
Riding Mountain: (3 trails)
- : All these areas have already been developed as snowmobiling areas. Trails have been established with 'blazers and directional, caution and regulatory signals'. (Nixon, 1973). Snowmobiling in these areas can provide employment for a local population if facilities are set up. Further trails could be developed as demand warrants it. Controlled access to limited areas in the Parks would cause limited damage and noise pollution.
- Sandilands
Southern Manitoba : These are considered important enough snowmobiling areas already to merit parks or trails with facilities. The exact location should be worked out by a group of specialists in the various fields - botany, zoology and soil science.
- Portage : A trail or set of trails in the Portage la Prairie region would provide not only for Winnipeg snowmobilers but also for the local population.

Twin Lake-Oak Point
(Lake Manitoba)
Gimli-Whytewold
(Lake Winnipeg)

: These would be considered as ribbon developments utilising the beaches and lakes. The areas are very important tourist areas in the summer and development could produce more permanent employment to these economically depressed areas.

Interlake

: Trails in this region would have to be located so as to cause least disturbance to wildlife and, hopefully, to maximise labour (Indians and Metis).

Lake Winnipeg East

: This may prove to be the most controversial area. The area south of Manigotogan could be considered a remote 'wilderness' area. Use of the beach is considered to be relatively harmless.

La Salle (private snowmobiling park already)
Sanford
Starbuck
Rosser
Oak bank
Lorette
St. Adolphe

: These areas would provide the basis for short ride snowmobiling for Winnipeg residents and extent in a circle round the city so that at least one 'short-ride area' outside Winnipeg is within easy reach of all residents of the city.

The above list caters for short-rides at Winnipeg, Bird's Hill and the La Salle to St. Adolphe group, day trips for the majority of snowmobile owners at Spruce Weeds, Whiteshell, Sandilands, Portage, Lakes Manitoba and Winnipeg and the Interlake region and for weekend trips at the Whiteshell, Riding Mountain, S.W. Manitoba and Lake Winnipeg East. The fairly large number of areas for day trips allows for expansion of snowmobiling as a recreation activity and may ease environmental strains and conflicts.

The location of summer cottages is shown on map 3 (see p. 38). The above list suggests parks close to all the summer cottages, those which are most distant from suggested areas are in the Ninette area and are nearly equidistant from Spruce Woods and Turtle Mountain (approximately thirty-five miles distant).

Lakes are found in most of the areas listed and summer recreation in the form of boating and bathing would be well catered for in these areas. Consequently development in the suggested areas would provide virtually year-round recreation areas.

Criticism will be levelled at these areas. Anyone would have come up with similar areas without any statistical basis. However, it must be remembered that many planning decisions can be predicted and that these areas have been chosen with as much empirical basis behind the decisions as possible.

This is not intended to be either a complete list or a list to be implemented without serious consideration. It is intended to be

a list (based upon some empirical basis) which may be considered useful when areas for snowmobiling are set up. It is also very necessary for the planning departments to look closely at each area prior to establishing any type of recreation parks.

This chapter concludes with a brief discussion of possible facilities to be provided for snowmobilers. This is an important planning consideration when local employment and economic opportunities are being assessed. Table 5.4 (p. 79) lists the various facilities which respondents would like to see in parks. The most popular facilities were sign-posted trails and restaurants, while overnight accommodation was requested by nearly half of all the respondents. Perhaps rather surprisingly, only about one-third of respondents felt that first-aid posts should be provided. Only seven (of 182) respondents did not answer this question, perhaps indicating the large demand for at least some facilities. These are important factors to be considered by planners and by park managers. Some employment could be generated for local people.

The final chapter is a brief summary of the thesis and suggests possible areas for further research.

Chapter 8SUMMARY AND CONCLUSIONS

This thesis has examined problems for snowmobiling planning in southern Manitoba. It is by no means intended to be complete - it is doubtful if any research project could be complete when dealing with such a vast and controversial issue as planning. Obtaining data for planning for snowmobiles is particularly difficult for various reasons. How does one measure the impact of snowmobiles on wildlife? Chapter 6 has barely scratched the surface of this question. Although it is possible to measure the effects of the snowmobile on the environment over which it passed, it is very difficult to measure the effect of noise on the fauna and avifauna of a region. It is easy to make sweeping generalisations, as many individuals do, that snowmobiles are driving such animals as deer further and further into remote areas and denuding large tracts of forest of game and other wildlife. This may, indeed, be true but it must be researched and proved to be the case.

How does one measure the nuisance effect of the snowmobile on households, workers and the like close to snowmobile routes? Can the nuisance effect be offset, at least in part, by making the machines much quieter? With strict control at the manufacturing stage of the snowmobile industry the noise and pollution factors could be substantially reduced. The government must control both the consumer and the snowmobile-manufacturer. Clearly more research is required in these areas.

The final decision creates difficulties for planners since varying degrees of subjectivity are entertained, depending on the particular project. It may be possible to argue from quantitative data until the final decision. This almost always creates controversy since the subjectivity is often biased towards the particular planner's beliefs (e.g. political leanings).

Further research is also absolutely essential with regard to the effect on the local community of establishing a snowmobile park, both the economic and environmental effects. In relation to this further work should be done on the possibility of multiple land use management - whether the snowmobile park could be used for some forms of summer recreation and whether it would be economically necessary to establish not merely a snowmobile park but an area for other winter sports as well.

Finally, it would be appropriate to end on a quote from one of Manitoba's recreation planners.

'We should recognise that a park system is not founded solely on economic judgements nor to return purely economic benefits. To disregard this fact inevitably leads to a deterioration of the quality of our recreation product as well as to a destruction of the basic resource'. (Danyluk, 1970).

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APPENDIX A



Province of Manitoba
Department of Tourism, Recreation & Cultural Affairs
 Research and Planning Branch

43 Legislative Building
 Winnipeg, Manitoba
 R3C 0V8

September 25, 1973

Mr. Andrew D. K. Ramsay
 Department of Educational Planning
 O.I.S.E.
 252 Bloor Street West
 TORONTO 5, Ontario.

Dear Mr. Ramsay:

In your letter dated September 13, you requested information on the official position and policy of our Department with regard to snowmobiling in Manitoba. To partially answer the "official" aspect of the topic, I am enclosing copies of the Provincial Park Lands and Snowmobile Act. In these Acts are contained the rules and regulations that apply exclusively to snowmobile operators.

There are several established snowmobile trails throughout Manitoba. Each trail is marked with blazers and directional, caution and regulatory signals. In the Eastern Region there are seven trails mostly originating from Falcon Lake. In the Central Region there are two trails at Birds Hill Provincial Park. In the Western Region there are three trails at Riding Mountain National Park, two trails at Spruce Woods Provincial Park and three trails at Turtle Mountain Provincial Park. For more information about these trails consult the 1973 Manitoba Vacation Handbook or write to the Manitoba Government Travel, Mall Centre Building, 491 Portage Avenue Winnipeg, Manitoba.

As far as I can gather from the Parks Planning Branch people several other areas are currently being considered for snowmobile tracks. As yet there is no master plan that includes snowmobiling and at present controlling use has been through an "ad hoc" approach. To gain more information on this aspect I would suggest you correspond with Dennis Moffatt at Parks Planning Branch. Also I would suggest you get in touch with Barry Hewett, the Snowmobile Safety Office, with the Department of Highways. Mr. Hewett has long been associated with most aspects of snowmobiling in Manitoba and could give you further insight into the planning problems involved.

Our Research and Planning Branch is mainly concerned with the tabulation of snowmobiling statistics. In the near future we hope to have gathered enough data to prepare a report.

Yours sincerely,

Neil Nixon

PROVINCIAL PARK LANDS

S.M. 1972, c. 67 — Cap. P20

- (j) respecting the fees and rentals payable in respect of permits, leases, licences, certificates, authorizations, and rentals in respect of land or buildings within, or entry to, or remaining within, provincial park lands, including, without limiting the generality of the foregoing, the fixing of any fee or rental at a percentage of gross receipts, or at a land rental, or at a recovery for services or development costs incurred, and the making of assessments or special levies, or any combination thereof;
- (k) respecting the use of provincial park lands for purposes other than those mentioned in subsection (3) of section 2;
- (l) restricting or prohibiting any act or thing within provincial park lands, or relating to the administration of provincial park lands.

Regulations by minister.

12 (2) In addition to the regulations made under subsection (1), the minister, in the administration of this Act, may make regulations that are not inconsistent with this Act or the regulations made under subsection (1), and every regulation made under, and in accordance with the authority granted by, this section has the force of law; and, without restricting the generality of the foregoing, the minister may make regulations, not inconsistent with any other provision of this Act or the regulations made under subsection (1),

- (a) respecting the public safety and the preservation of order in, and the conduct of persons residing in, or making use of, provincial park lands;
- (b) respecting health and sanitation within provincial park lands, and pollution thereof by dust, litter, garbage, human or mechanical waste, or other offensive or injurious substances or material, abandoned or discarded objects, or noise;
- (c) respecting the use, setting out, extinguishing and protection from fires in provincial park lands;
- (d) respecting the use, erection, posting or other display of notices, signs, sign-boards and other advertising devices in provincial park lands;
- (e) respecting the licensing, regulating, restricting, or controlling the use of any area within provincial park lands by pedestrians or operators of automobiles, trucks, trailers, tractor-trailer units, houseboats, vessels, motorboats, over-the-snow vehicles, canoes, sailboats, aircraft, hydroplanes, hovercraft, all-terrain vehicles or other conveyances and of mobile equipment attached thereto;
- (f) respecting the preservation, management, control, or improvement of all things of value within provincial park lands, whether animal, vegetable or mineral and whether natural or otherwise;
- (g) respecting the maximum periods of stay of persons, vehicles, boats, vessels, trailers, campers, aircraft, over-the-snow vehicles, houseboats, canoes, sailboats, hydroplanes, hovercraft, all-terrain vehicles or other conveyances and any equipment thereof during which any provincial park lands or a specified portion thereof may be used for any specified purpose;
- (h) respecting the use of public facilities within provincial park lands including parking areas, camping sites, trailer sites, picnic sites, winter sports facilities, interpretive centers, museums, visitor centers, comfort facilities, shelters, roads and trails, and all others;

S.M. 1972, c. 67 — Cap. P20

PROVINCIAL PARK LANDS

- (i) respecting public beaches, shoreline, swimming, boating and other uses of water within provincial park lands;
- (j) respecting the imposition of restrictions respecting the speed of vehicles and other matters relating to vehicles within provincial park lands other than on Provincial Trunk Highways and Provincial Roads;
- (k) respecting the prohibiting, regulating, and controlling the keeping of, or use of horses, dogs, cats and other animals in provincial park lands and for licensing or permitting persons keeping or using horses, dogs, cats or other animals in provincial park lands;
- (l) respecting the use, control and regulation of firearms, explosives or other weapons and for the licensing or permitting of persons in possession of firearms, explosives, or other weapons in provincial park lands;
- (m) respecting the zoning of any portions of provincial park lands in order to regulate or confine the various uses of land, resources and water therein;
- (n) if there is no express provision to the contrary herein, authorizing the doing of such acts, matters and things relating to the administration of any provincial park lands as may be deemed essential and desirable.

Application of regulations.

12 (3) Any regulation made under this section may be made to apply to all provincial park lands, or to any specified provincial park lands, or to any specified type of provincial park lands as described in the regulations.

S.M. 1972, c. 67, s. 12.

Rules by park officer.

13 The senior resident officer in charge of any provincial park lands, or the officer designated by the minister as being in charge of any provincial park lands, may make rules not inconsistent with any provision of this Act or any provision of regulations made under section 12, prohibiting or restricting any act, matter or activity within the provincial park lands of which he is in charge; and, if notice of the rule is conspicuously posted in areas intended to be affected by the rule, it has the force of law notwithstanding that it is not filed under The Regulations Act; but no such rule shall remain in force for a period of more than one month.

S.M. 1972, c. 67, s. 13.

Offence.

14 Every person who contravenes, or fails to comply with, any provision of this Act or of the regulations, or any order or direction of an officer given pursuant to this Act, or any rule made in compliance with section 13, is guilty of an offence and liable, on summary conviction, to a fine of not more than two hundred dollars, or to imprisonment for not more than thirty days, or to both such fine and such imprisonment.

S.M. 1972, c. 67, s. 14.

Cap: S160

SNOWMOBILE S.M., 1970, c. 59

Certain operations prohibited.**25.1** No person shall operate a snowmobile

- (a) on private property without the express or implied consent of the owner or other person having lawful possession or control of the property; or
- (b) within one hundred feet of a dwelling between the hours of twelve midnight and seven o'clock in the morning, except within one hundred feet of a dwelling on his own property or property under his control or as an invited guest; or
- (c) at a speed greater than five miles an hour when within one hundred feet of a person engaged in ice fishing or a fishing shanty or shelter; or
- (d) within one hundred feet of a slide, ski or skating area that is in use at the time, unless the area is enclosed or fenced or unless the snowmobile is required for the maintenance or operation of the ski area.

En. S.M. 1971, c. 34, s. 4.

Authority to cross roadway.

26(1) The operator of a snowmobile, if he is over the age of sixteen years and holds a valid subsisting driver's licence, chauffeur's licence, or motorcycle operator's licence may operate the snowmobile directly across a roadway from one side to the other

- (a) at or within fifteen feet of an intersection of two or more roadways;
- (b) at any other place where the distance between the nearest intersection of roadways is two or more miles; or
- (c) at any place designated by the traffic authority of the highway by by-law or regulation as a place on the highway where snowmobiles may cross the roadway; or
- (d) along any highway, or portion thereof, which the traffic authority has, by by-law or regulation, permitted snowmobiles to cross without regard to location.

Clear view of crossing.

26(2) No person shall cross any roadway if he does not have a clear view of traffic for a sufficient distance to determine whether he can cross the roadway in safety.

S.M., 1970, c. 59, s. 26.

Rules before crossing roadway.

27(1) Before crossing a roadway, the operator of a snowmobile shall

- (a) bring the snowmobile to a stop before entering on the roadway; and
- (b) yield the right-of-way to pedestrians crossing the roadway and to traffic that is approaching and that is so close that it constitutes a hazard;

and, after stopping and having yielded the right-of-way he may proceed to cross the roadway with caution.

Crossing roadway at ninety degree angle.

27(2) Where an operator of a snowmobile crosses a roadway, he shall enter and cross the roadway at an angle of approximately ninety degrees to the direction of the roadway.

S.M., 1970, c. 59, s. 27.

APPENDIX B



THE CITY OF WINNIPEG

PARKS AND RECREATION DEPARTMENT

3RD FLOOR, • 100 MAIN STREET • WINNIPEG • MANITOBA • R3C 1A5

IN REPLY PLEASE REFER TO

M. 1 - 3.

September 21, 1973.

Mr. Andrew D.K. Ramsay,
Dept. of Educational Plan-
ning,
O.I.S.E.,
252 Bloor Street, West,
Toronto, Ontario.

Dear Mr. Ramsay:

Further to your letter dated September 13th, there is no official policy on snowmobiling aimed primarily at Parks and such recreational sites. The official policy of the City of Winnipeg is stated in By-Law No. 293/73. As the Director of Parks and Protection, I am responsible for the administration of this by-law. A copy of same is attached for your information.

Under the by-law, no park lands may be used for snowmobiling unless so named. Site names may be removed or added to this list or Schedule "A" to By-Law No. 293/73, as time passes.

Basically, the Parks Department wishes to eliminate all power toboggan travel in any of the parks and golf courses. There are a great number of young plantings and special areas which cannot be specifically screened or flagged to render them safe from mishap. There are "wilderness" park areas where snow-shoeing, cross-country skiing and hiking are encouraged and power tobogganing actually conflicts with these activities. This department feels strongly that separate specific areas should be set aside for Off-Road Recreation Vehicles, and it is our hope that these be realized before long, whether they be products of the Federal, Provincial or Civic Governments' endeavors.

I hope that this information will be of some assistance to you. Please contact me again if you have further questions.

Yours very truly,

Att.
MEB/sb

M.E. Benum, Director,
Parks and Protection.

EXPLANATION FOR COUNCIL RE BY-LAW NO. 293/73

This By-Law provides for the operation and control of snowmobiles on any park, recreation grounds and on any other property owned or controlled by the City and generally to regulate or prohibit the operation of snowmobiles within the City boundary.

THE CITY OF WINNIPEG

BY-LAW NO. 293/73

A by-law of The City of Winnipeg
to regulate the operation and control of snowmobiles on the public parks or any other property under the jurisdiction of the Council.

WHEREAS Section 34 of The Snowmobile Act, being Chapter 59 of the Statutes of Manitoba, 1970, provides as follows:

"34. Rules supplementary to, or in addition to, but not contrary to any other provision of this Act or the regulations made under section 50,

- (a) prescribing periods of the day, or of the year, during which snowmobiles shall not be operated;
 - (b) prescribing areas in which snowmobiles shall not be operated; and
 - (c) preventing operators of snowmobiles from making excessive noise;
- may be made
- (d) in respect of municipality, by the council thereof;
 - (e) in respect of land of which the Metropolitan Corporation of Greater Winnipeg is the owner or that is under the control of the Metropolitan Corporation of Greater Winnipeg, or in respect of highways of which the Metropolitan Corporation of Greater Winnipeg is the traffic authority Metropolitan Corporation of Greater Winnipeg;
 - (f) in respect of a local government district by the resident administrator thereof;
 - (g) in respect of a community in Northern Manitoba for which a community council has been established under the Northern Manitoba Affairs Act, the community council thereof through the Commissioner of Northern Affairs; and

- (h) in respect of any area not within a municipality, a local government district, or a community in Northern Manitoba in which a community council has been established or in respect of any Crown lands within a municipality or a local government district, or such a community in Northern Manitoba, by the Lieutenant Governor in Council."

AND WHEREAS by virtue of The City of Winnipeg Act, being Chapter 105, Statutes of Manitoba, 1971, The City of Winnipeg is the successor to and continuation of the area municipalities, including The Metropolitan Corporation of Greater Winnipeg.

NOW THEREFORE THE CITY OF WINNIPEG in Council assembled, enacts as follows:

1. (1) No person, under the age of sixteen years, shall at any time of the year, operate a snowmobile in or upon any land, within the territorial limits of, and/or owned or leased by The City of Winnipeg, except the following areas:

- (a) private property with the express consent of the owner or other person having lawful possession or control of the property;
- (b) all areas as are listed in Schedule "A" attached hereto and which Schedule forms a part of this By-law and shall be identified by the signature of the City Clerk;
- (c) In other areas which the Committee on Environment may approve at the specific request of the appropriate community committee involved and which may, from time to time, be added to or deleted from Schedule "A";

(2) No person shall operate a snowmobile:

- (a) withier than 9 A.M. or later than 9 P.M., and
- (b) within one hundred feet of a dwelling,

in those areas where use of snowmobiles is permitted in subsection (1).

(3) No person under the age of sixteen years shall operate a snowmobile

2. This By-law shall be administered by the Director of Parks and Recreation who shall hereinafter be referred to as the "Director".

3. The Director may, from time to time, make rules and regulations, not inconsistent with this By-law, governing the operation of snowmobiles within those areas as the designated areas for snowmobile use.

4. (1) No person shall without the written permission of the Director first had and obtained:

- (a) Conduct any snowmobile rides;
- (b) Give any snowmobile demonstration or display on any property owned by the City, or otherwise.

(2) A person applying for a written permission to the Director shall submit with his application:

- (a) Evidence satisfactory to the Director that there is in force a liability insurance policy for a minimum of \$100,000.00 for the day or days on which snowmobile rides or displays will be conducted;
- (b) Plans for the protection of spectators;
- (c) Specifications of the area to be used for the rides, races or the displays;
- (d) Such other information as may be required by the Director.

5. Any Peace Officer shall have the power to summon and take before any competent Court within the City of Winnipeg, any person or persons who shall be found violating any of the provisions of this By-law or the rules and regulations made pursuant hereto.

6. Any person who contravenes or fails to comply with any of the provisions of this By-law is guilty of an offence and liable on summary conviction, to a fine of not less than Twenty-five (\$25.00) Dollars or more than One Hundred (\$100.00) Dollars, or in default to imprisonment for a period not exceeding thirty (30) days.

7. Any and all by-laws, regulations, resolutions, and order in force within the City on the coming into force of this by-law, regulating the use of snowmobiles in pursuance of the said Section 34 of The Snowmobile Act, are hereby repealed, including the following:

- (a) The City of West Kildonan, By-law numbered 11/71/A;
- (b) The City of St. James-Assiniboia, By-law No. 231/69;
- (c) The Parks Board of The City of St. Boniface By-law Nos. 5 and 10;
- (d) The City of St. Vital By-law No. 80732;
- (e) The Parks Board of the City of Transcona By-law No. 1/66 and amendments thereto.

DONE AND PASSED in Council assembled this 4th day of April, A.D. 1973.

(Sgd.) S. Juba.
Mayor

(seal)

(Sgd.) W. A. Quayle
City Clerk

Certified as to form:

(Sgd.) D. C. Lemnox
City Solicitor

"Schedule "A" to By-law No. 293/73 of The City of Winnipeg.

(Sgd.) W. A. Quayle.
City Clerk

SCHEDULE "A"

The following are the areas designated for snowmobile use under Section 1 of the By-law:

- (a) The Charleswood Sewage Lagoon;
- (b) The Maple Grove Park Area;
- (c) The St. Vital South End Sewage Treatment Plant Area;
- (d) Area north and west of the Glenboro Sub-division line in St. James-Assiniboia;
- (e) West of the east limit of Perimeter right-of-way and south of the north limit of the Marte Sub-division railway right-of-way and west of the east limit of McCreary Road.

APPENDIX C

(Please do not indicate
your name and address).

This questionnaire has been sent to you so that future snowmobiling needs may be identified. It is imperative to provide access to large tracts of land and to plan for safe snowmobiling.

With very many thanks indeed.

ANDREW D. K. RAMSAY

Section 1

- Questions No. 4-6 For Winnipeg Residents only

- 4) How often do you snowmobile on the river in the Metro Winnipeg area?
_____ times/month
- 5) How often do you snowmobile on the floodway? _____ times/month
- 6) How often do you snowmobile elsewhere within or close to the Metro
area? _____ times/month

For all snowmobilers

- 7) What areas (in order of personal preference) do you use for snowmobiling?
(Please include Winnipeg in this list).

	Approx. number of visits/year
1.	()
2.	()
3.	()
4.	()
5.	()
6.	()

- 8) What is the maximum distance (in miles) which you have travelled for:

a short ride _____
 a whole day excursion _____
 a week-end trip _____

- 9) How often do you use the snowmobile for:

a short ride _____ times/month
 a whole day excursion _____ times/month
 a week-end excursion _____ times/year

- 10) Which one of the following factors is most important to your snowmobiling?

access to remote areas	()
access to open areas close to Winnipeg	()
access to frozen rivers and lakes	()
access to roads	()
access to forests	()
slopes	()

- 11) If you have ever used overnight accommodation on snowmobile trips where have you spent the night?

	Estimate No. of nights
My own cottage	()
Hotels or motels	()
Ski or snowmobile club facilities	()
Home/cottage of friend or relative	()
Other facilities	()

- 12) Would you like to see parks and trails (with facilities) made available for snowmobiling in:

a) Winnipeg Yes () No ()
 b) Manitoba Yes () No ()
 If b) is Yes where in Manitoba? 1) _____
 2) _____
 3) _____

- 13) If you had to choose between provision being made for parks and trails in either Manitoba or Winnipeg which would you choose?

Manitoba ()

Winnipeg ()

- 14) What amenity factors would you like to see at any future planned snowmobiling areas

car-parking ()

Overnight accommodation ()

sign-posted trails ()

restaurants ()

first-aid posts ()

Other (please specify _____)

- 15) Do you own a summer cottage? Yes () No ()

- 16) If so, where is it located? _____

- 17) Is it winterised? Yes () No ()

- 18) Do you ever use it as a base for snowmobiling Yes () No ()

- 19) Do you own a) an All Terrain Vehicle Yes () No ()

b) an aeroplane Yes () No ()

c) a powered boat Yes () No ()

- 20) Name any areas which you visit BOTH for recreation in the summer and for snowmobiling. 1) 3)
2) 4)

- 21) What other winter sports do you pursue? Please specify. _____

- 22) Which town or village do you live in? _____
If Winnipeg, please specify postal district, e.g., Fort Garry is Winnipeg 19.

- 23). Further comments and suggestions.

Section 2

This section will be used purely for statistical purposes and all replies will be strictly confidential. Indeed this questionnaire cannot be identified.

Please check the most appropriate category. Thank you.

- 1) Sex Male ()
Female ()

- 2) Marital status Single ()
Married ()

3) Age

Under 20 ()
 21 - 30 ()
 31 - 40 ()
 41 - 50 ()
 Over 50 ()

4) Level of Education so far attended.

Some high school ()
 Graduated high school ()
 Some university ()
 Graduated university ()
 Post graduate university ()

5) Gross income

2
 Up to \$2,999 ()
 \$ 3,000 - 5,999 ()
 \$ 6,000 - 8,999 ()
 \$ 9,000 - 11,999 ()
 \$12,000 - 14,999 ()
 \$15,000 - 17,999 ()
 \$18,000 - 20,999 ()
 Over \$21,000 ()

6) Occupation

Student ()
 Skilled worker ()
 Labourer ()
 Housewife ()
 Farmer ()
 Professional, technical ()
 Business, sales accountants ()
 Clerical, cashier, secretary ()
 Retired ()
 Others. ()