HUNTER IMPACT IN WHITESHELL PROVINCIAL PARK

GAME HUNTING AREA 36

By

IVAN M. DIDIUK

A Practicum Submitted
In Partial Fulfillment of the
Requirements for the Degree, Master
of Natural Resource Management

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ABSTRACT

This practicum reviews hunting policies in Manitoba and examines hunting issues in its provincial parks. Whiteshell Provincial Park game populations (moose, white-tailed deer, black bear, migratory game birds and upland game birds) are analyzed and discussed. Relationships are identified between hunters and other park users. Alternative hunting schemes which may reduce hunting related conflicts in the park are suggested and examined to determine the feasibility of their implementation.

It was found that conflicts between hunters and other park users exist in Whiteshell Park primarily because of the location of hunting activities near and within built-up areas. These conflicts constitute a reduced quality of a non-hunter's recreational experience and reduced hunting quality of hunters. Any population fluctuations within the park do not seem to be the result of hunter overharvest. The public's opportunity to view wildlife in the summer is not affected by hunting. Conflicts between hunters and other park users may be reduced by a regulatory zoning system or by developing designated hunting trails.

ACKNOWLEDGEMENT

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TABLE OF CONTENTS

	Page
ABSTRACT	i
ACKNOWLEDGEMENT	ii
LIST OF FIGURES	v
LIST OF TABLES	vi
CHAPTER I - INTRODUCTION	
A. Problem Statement	1
B. Objectives	1
C. Delimitations	2
D. Methodology	2
CHAPTER II - PROBLEM BACKGROUND	
A. Policy Review	3
B. Problem Review	5
CHAPTER III - WILDLIFE RESOURCE AND HUNTER USE IN WHITESHELL PROVINCIAL PARK	
A. Moose	
1. Population Monitoring	7
2. Hunter Activity	8
3. Moose Harvest	16
4. Moose Hunting Conflicts	18
B. White-tailed Deer	
1. Population Monitoring	20
2. Deer Habitat	20
3. Hunter Activity	22
4. Deer Hunting Conflicts	29
C. Black Bear	
1. Population Monitoring	32
2. Hunter Activity	32
3. Bear Hunting Conflicts	34
D. Migratory Game Birds	
1. Population Monitoring	34
2. Hunter Activity	34
3. Alf Hole Wild Goose Sanctuary	35
4. Waterfowl Hunting Conflicts	36

Page

E. Upland Game Birds

1. Population Monitoring 36

2. Hunter Activity 37

3. Upland Game Hunting Conflicts 37

CHAPTER IV - ALTERNATIVE HUNTING SYSTEMS

A. Introduction 38

B. Split Season Hunting 39

C. Zoning 40

D. Designated Hunting Trails 41

E. Primitive Weapons 42

F. Shotgun Slug Hunting 42

G. Regulations 43

H. Draw Systems 44

I. Temporal Restrictions 45

CHAPTER V - CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions 46

B. Recommendations 48

REFERENCES CITED 50

APPENDIX I - WHITESHELL PROVINCIAL PARK -- STUDY AREA 53

APPENDIX II - RECREATIONAL HUNTING POLICIES OF THE DEPARTMENT OF RENEWABLE RESOURCES AND TRANSPORTATION SERVICES 58

LIST OF FIGURES

Page

1. Moose Kill Locations in Whiteshell Provincial Park, 1971 9
2. Moose Kill Locations in Whiteshell Provincial Park, 1972 10
3. Moose Kill Locations in Whiteshell Provincial Park, 1974 11
4. Moose Kill Locations in Whiteshell Provincial Park, 1975 12
5. Moose Kill Locations in Whiteshell Provincial Park, 1976 13
6. Designated Power Toboggan Trails in Whiteshell Provincial Park 15
7. Categories of Moose Harvested in Whiteshell Provincial Park, 1971-1976 19
8. Estimated Deer/km.^{2} in Whiteshell Provincial Park, 1972-1977 21
9. Timber Cut Areas Prior to 1977 in Whiteshell Provincial Park 23
10. Deer Kill Locations in Whiteshell Provincial Park, 1971 24
11. Deer Hunter Locations in Whiteshell Provincial Park, 1972 25
12. Deer Kill Locations in Whiteshell Provincial Park, 1972 26
13. Deer Kill Locations in Whiteshell Provincial Park, 1977 27
14. Temporal Distribution of Deer Hunters and Kills in Whiteshell Provincial Park, 1971 31

LIST OF TABLES

Page

1. Moose Hunting Statistics in Whiteshell Provincial Park, 1971-1976 17
2. Deer Kill Locations in Whiteshell Provincial Park, 1971..... 28
3. Whiteshell Provincial Park Deer Hunting Statistics for 1971, 1972 and 1977 30
4. Bear Information for Whiteshell Provincial Park 1970-1976 33
5. Cottage Developments in Whiteshell Park Prior to 1977 56

CHAPTER I

INTRODUCTION

A. Problem Statement

Whiteshell Provincial Park is the most intensively utilized and developed provincial park in Manitoba. The number of people using the Whiteshell area for a variety of recreational purposes is increasing. Concerned individuals and groups are strongly expressing opposition to hunting within Manitoba's provincial parks and government officials are attempting to address this conflict. Provincial park policy guidelines require examination to determine how recreational opportunities, including hunting, may be allocated. The provincial park hunting issue is complex because not all information is available, hindering a valid analysis of the hunting issue. A variety of viewpoints exist between hunters, non-hunters and government officials. Whiteshell Provincial Park has been chosen as the study area for this practicum because alleged conflicts of interest exist between hunters and other park users during the hunting seasons.[1]

B. Objectives

This practicum shall:

1) review policies relating to hunting in Manitoba and discuss the application of these policies in provincial parks.
2) document and review issues relating to hunting in Manitoba's provincial parks.
3) analyze and discuss game species (moose, white-tailed deer, black bear, migratory game birds and upland game birds) populations in Whiteshell Park.

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1 Appendix I contains a description of the study area.

4) identify the relationships between hunters and other park users in Whiteshell Park.

5) suggest alternative measures which may alleviate any identified hunting conflicts in Whiteshell Park and examine the feasibility of implementing these measures.

6) determine how effectively these measures may be applied to other provincial parks in Manitoba.

C. Delimitations

This study shall concentrate on hunting issues associated with Whiteshell Provincial Park. Moral and ethical questions of hunter rights or privileges as a form of recreation will not be considered. This practicum shall proceed on the assumption that hunting is a valid recreational experience and that hunting will continue to be allowed in Manitoba's provincial parks. Measures to reduce hunting conflicts are proposed with this consideration in mind. The economic value of wildlife resources and recreational experiences will not be determined in this study.

D. Methodology

Data on game populations and hunting practices in Whiteshell Provincial Park was compiled from government files and libraries.[1] Other provincial government departments and state agencies in the United States provided additional information. The analysis and interpretation of this material was reviewed by government officials and their views were recorded and utilized in the preparation of this practicum.

[1] These government departments were the Departments of Renewable Resources and Transportation Services; Tourism Recreation and Cultural Affairs (Parks Branch); and Mines, Resources and Environmental Management.

CHAPTER II

PROBLEM BACKGROUND

A. Policy Review

In Manitoba the Department of Renewable Resources and Transportation Services and Parks Branch of the Department of Tourism, Recreation and Cultural Affairs formulate recreation and wildlife policy guidelines allowing the allocation and regulation of recreational opportunities.[1] The Department of Renewable Resources has developed minister approved policy objectives for recreational opportunities based on wildlife, including recreational hunting. These objectives are applicable to the entire province.

A major problem encountered by government departments is the allocation of recreational hunting opportunities.[2] The future of recreational hunting in Manitoba has been threatened due to increased anti-hunting sentiment, poor public image and reduced hunting opportunities.[3] In the past the Department of Renewable Resources has been concerned with protecting the wildlife resource in Manitoba from excessive harvest and has attempted to increase wildlife populations and land available to them. Although these are still important considerations of the department, it has recently become concerned with the problem issues associated with hunting. Appendix II records policies dealing with recreational hunting developed by the Department of Renewable Resources.

Parks Branch of the Department of Tourism, Recreation and Cultural Affairs does not have minister approved policy guidelines concerning

---

[1] Parks Branch defines policy guidelines for Manitoba's provincial parks.

[2] Recreational hunting does not include subsistence or native hunting.

[3] Some Manitobans have posted their lands to prohibit hunting.

recreational hunting although Parks Branch recognizes the policies of the Department of Renewable Resources as being valid. Parks Branch follows those guidelines established by The Provincial Park Lands Act R.S.M. 1972, c.27, which states that:

> "Provincial park lands shall be developed and maintained:
>
> (a) for the conservation and management of flora and fauna therein;
>
> (b) for the preservation of specific areas and objects therein that are of geological, cultural, ecological or other specific interest; and
>
> (c) to facilitate the use and enjoyment of outdoor recreation therein."

One interpretation of these statements may be that while efforts should be made to manage and preserve wildlife in provincial parks, recreational opportunities including hunting shall be facilitated. The Act seems to imply that while recreational activities are encouraged they should not interfere with conservation and management principles.

Regulations governing hunting in Manitoba, including provincial parks, are recorded in The Wildlife Act, R.S.M. 1970, c.W140. This Act deals with all aspects of wildlife utilization in Manitoba. The federal Migratory Birds Convention Act, R.S.C. 1972, c.M-12, regulates migratory game bird hunting. The Provincial Park Lands Act, R.S.M. 1972, c.27, provides additional regulations regarding wildlife use in provincial parks. Regulations referring specifically to Manitoba's provincial parks are discussed in Chapter IV.

The institutional framework of wildlife is based upon legislation and administration. Manitoba's game acts are primarily concerned with controlling the harvest of this resource and maintaining population levels. Attention should also focus on regulating the multiple use of wildlife in

a flexible manner. An important function of natural resource planning is to adapt management policies to changes in both resource and resource demand factors (Shaw, 1974). Social processes that determine the demand for different uses of a resource are subject to constant change. An understanding of how and why wildlife policies should be changed involves an investigation beyond the resource to an analysis of the human factors which determine the demand for different types of use and management policies (Shaw, 1974). Hunting in provincial parks provides an example of how an investigation of public demand for wildlife could be beneficial. Wildlife management policies may be improved if the demand and value placed upon wildlife by different park users was known. Talhelm (1973) supports this view by stating that wildlife management for the benefit of hunters and other wildlife users may be improved if the benefits people derive from wildlife resources is investigated.

B. Problem Review

Wildlife management may be defined in several ways. Giles (1969) states that wildlife management is the science and art of changing the characteristics and interactions of habitats, wild animal populations and man in order to achieve specific human goals by means of the wildlife resource. Most game managers profess that wildlife management is also people management, with the human element possibly being dominant (Hendee and Potter, 1971). Four categories of wildlife problems according to Fuller (1961) are when wildlife endangers man or damages his interests, problems or preserving essential habitat, regulating the harvest in order to perpetuate the supply and educational, political, sociological or philosophical problems. All four categories of wildlife problems and therefore management, involve people.

The basic products of wildlife management are human satisfactions and the primary goals should be to produce desired and worthwhile human experiences (Hendee and Potter, 1971). Conflicts between wildlife users, such as hunters and non-hunters, arise because of differing values of wildlife. The activity of a wildlife user such as a hunter, may also detract from the recreational experience of someone not specifically utilizing wildlife such as a weekend cottager.

Hunting is a recreational experience where wildlife is harvested. There are two principal ways in which wildlife is valued which do not entail harvesting of the resource. The aesthetic values of wildlife are the pleasures or satisfactions derived from viewing, hearing, photographing or studying wild animals (Shaw, 1974). Other values are benefits derived from simply knowing that wildlife exists and that the option to view them will be preserved for the future (Shaw, 1974). The incompatibility of hunting and non-hunting recreational activities in Whiteshell Park is a result of these two opposing uses and attitudes toward wildlife. According to Kitney (The Winnipeg Tribune, November 13, 1976) non-hunting park users in Manitoba are concerned that:

a) hunting as a recreational sport is contrary to the preservation philosophy of provincial parks. Non-hunters argue that animals are not commonly viewed by the public because hunting activities drive game into hiding or reduce their numbers.

b) greater hunting pressure has been experienced in provincial parks.

c) use of snowmobiles, all-terrain vehicles, private aircraft and C.B. radios diminishes sportsmanlike and humane ethics of hunters.

d) hunting in provincial parks is dangerous for non-hunting park users.

These issues will be discussed in later chapters.

CHAPTER III

WILDLIFE RESOURCE AND HUNTER USE IN WHITESHELL PROVINCIAL PARK

A. Moose

1. Population Monitoring

Moose (*Alces alces*) populations are monitored annually in Whiteshell Provincial Park by aerial surveys. Information obtained from these surveys are statistically analyzed permitting resource managers to estimate the allowable harvest of animals for a given year. Annual population estimates are not indicative of the true populations due to the inability to cover the entire park because of fiscal and time constraints. The estimates are conservative and do not reflect absolute changes in population numbers over the years. At best the surveys provide minimum population estimates for the park.

Resource managers have divided the park into high, medium and low density areas and base their surveys according to area representation within the total park area. According to Thompson (1972a) the location of the population density areas is based on local park staff's knowledge of moose distribution, examination of habitat in the field, and moose range classification in the park. Variables affecting the accuracy of the survey are weather conditions, timing of the survey, total area covered, terrain, pilot and observer experience. Even under ideal conditions 30-40% of the animals are not observed (Thompson, 1972a). Considering these variables sufficient information can be obtained enabling resource managers to annually appraise the status of Whiteshell Park's moose herd allowing appropriate harvest regulation.

Additional information used to monitor the moose population is collected

by park staff during the annual moose hunting seasons. Statistics regarding big game hunts provide essential indices which are imperative to monitor and maintain the herds. Objectives of this information collection are to observe the effect of hunting on the level and sex-age structure of the moose population, measure hunter parameters such as total effort, success and dispersal, and determine the effect of timing and length of hunting seasons. Whiteshell Park moose hunters are surveyed at check stations operated during the moose season. Hunters complete a questionnaire indicating the results of their hunt. Hunters not passing through a check station are contacted personally. Lower jaws of moose are requested from hunters in order to determine the age of the animal.

2. Hunter Activity

Moose hunting begins in late November and is usually of one week duration. Moose hunting is permitted in all areas of Whiteshell Park with the exception of Alfred A. Hole Wild Goose Sanctuary and Pointe du Bois Game Refuge.[1]

Figures 1 to 5 illustrate 1971 to 1976 (excluding 1973) moose kill locations in the park. These figures indicate that for these years only five moose were shot near roads and built-up areas.[2] The mean distances from an accessible road to a moose kill for these years ranged from 6 to 10 km. (Thompson, 1971a; 1972b). Moose are not generally hunted in built-up areas because these areas lack prime moose habitat. Thompson (1974)

[1] Hunting of game species other than moose is not allowed in the Game Bird Reserve south of the C.N.R. railway tracks.

[2] According to the Provincial Park Lands Act, R.S.M. 1972, c.27, a 'built-up area' means any portion of provincial park lands in which buildings, tents, or any structures have been erected for residential, administrative or commercial use, and includes all man-made developments within the park.

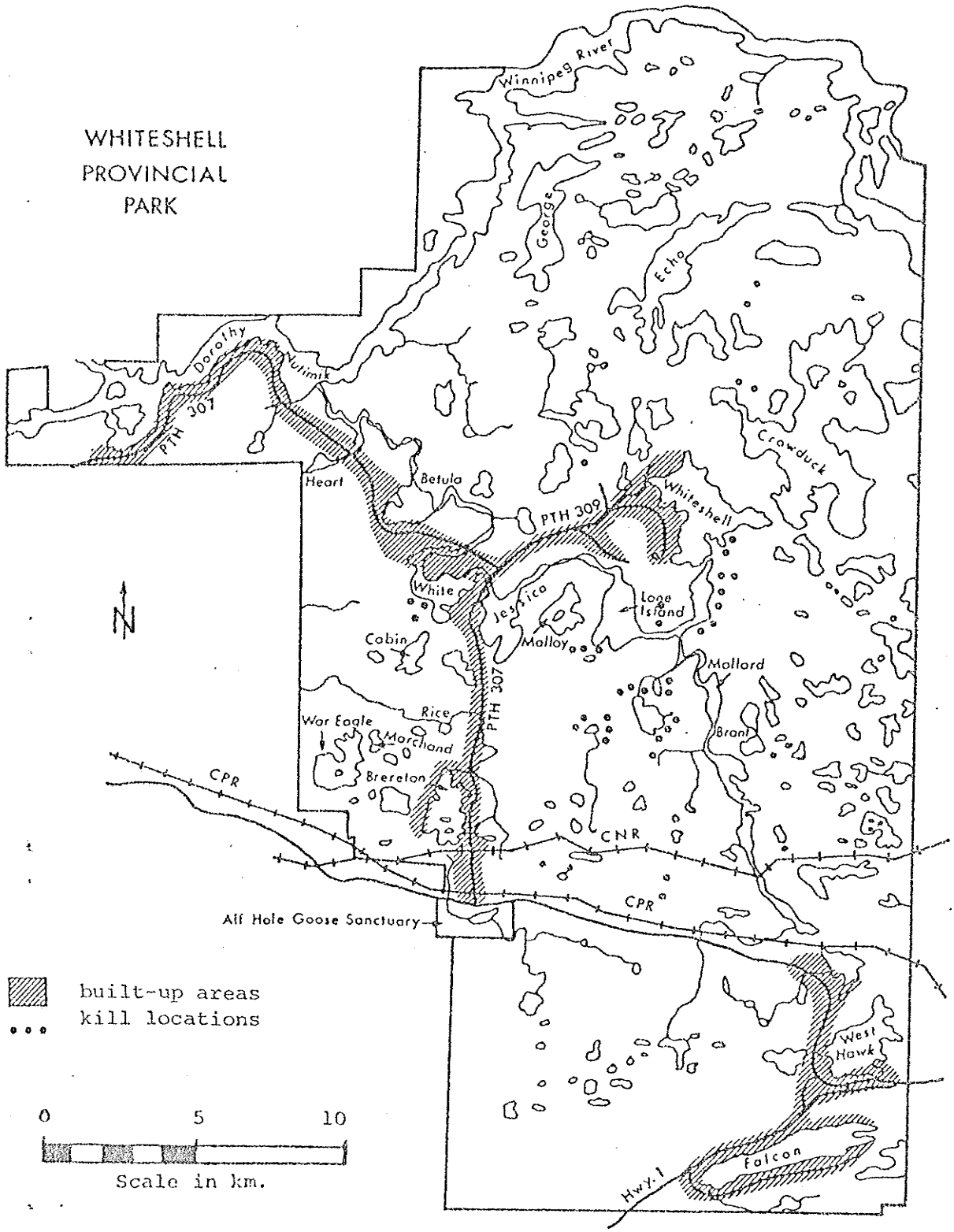

Figure 1. Moose Kill Locations in Whiteshell Provincial Park, 1971.

Source: Thompson, R.C., 1971a. Whiteshell Provincial Park Moose Hunt, 1971. Unpublished report, Manitoba Parks Branch.

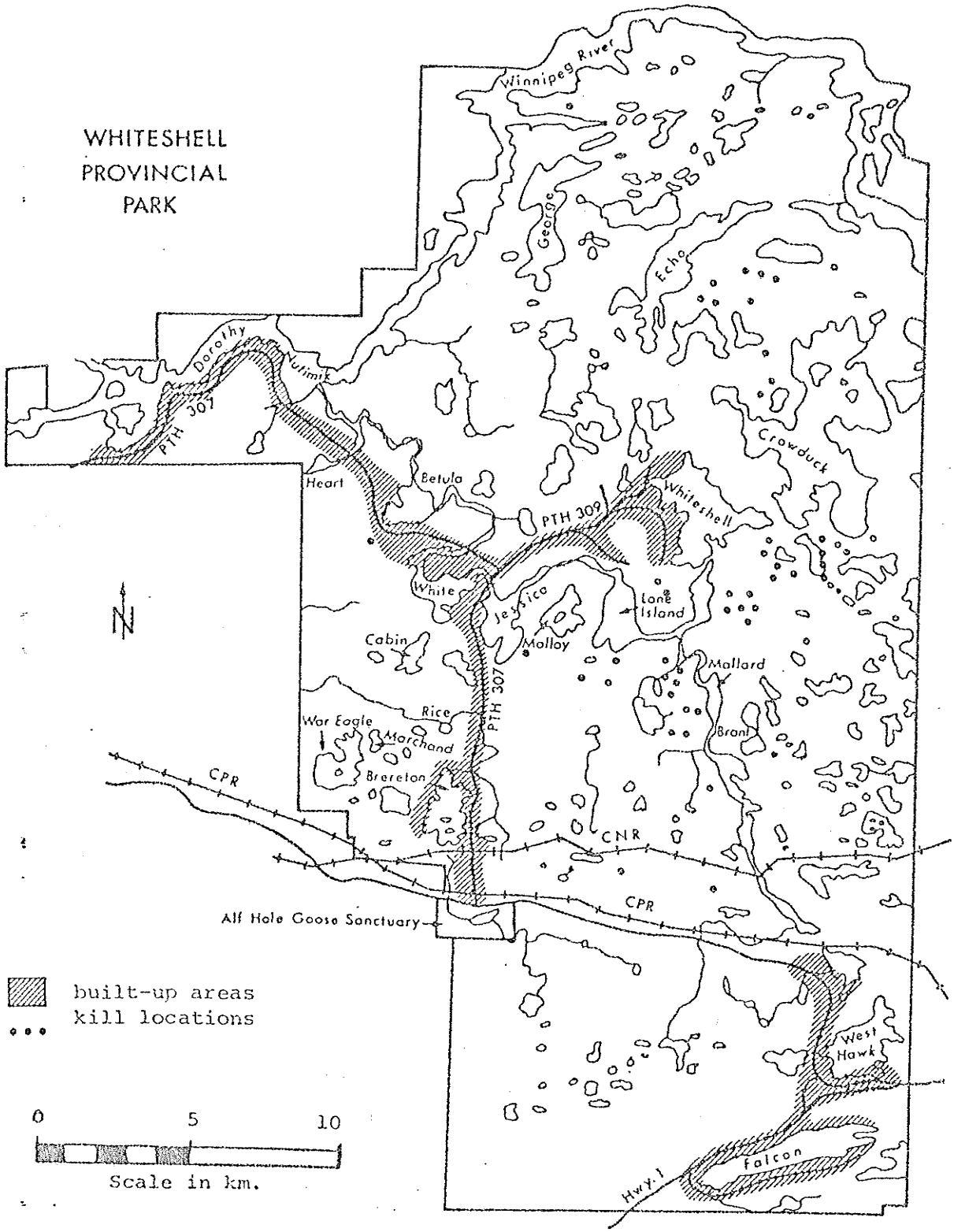

Figure 2. Moose Kill Locations in Whiteshell Provincial Park, 1972.

Source: Thompson, R.C., 1972a. Whiteshell Provincial Park Moose Hunt, 1972. Unpublished report, Manitoba Parks Branch.

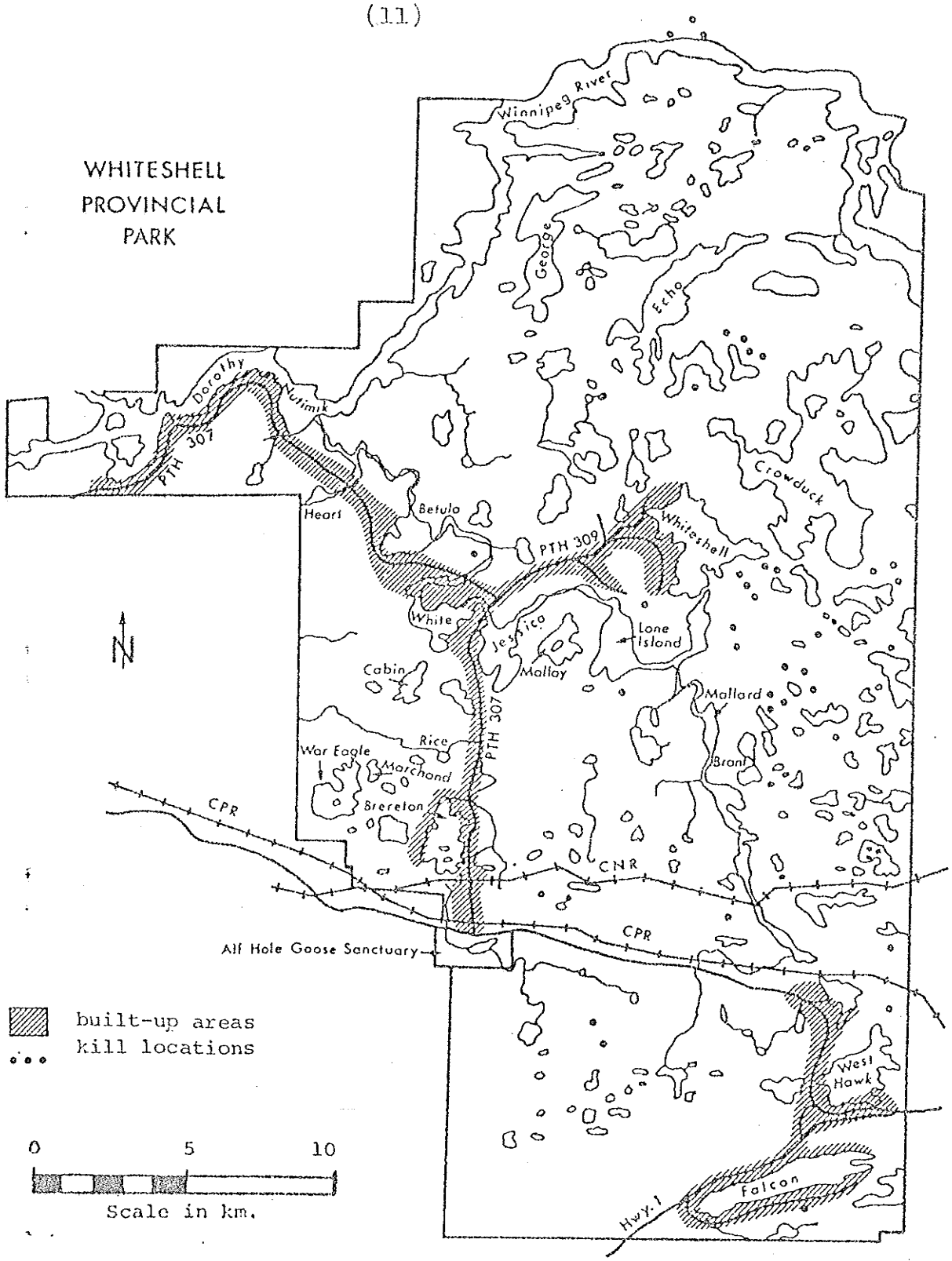

Figure 3. Moose Kill Locations in Whiteshell Provincial Park, 1974.

Source: Imrie, M., 1974a. Whiteshell Park Moose Hunt, 1974. Unpublished report, Manitoba Parks Branch.

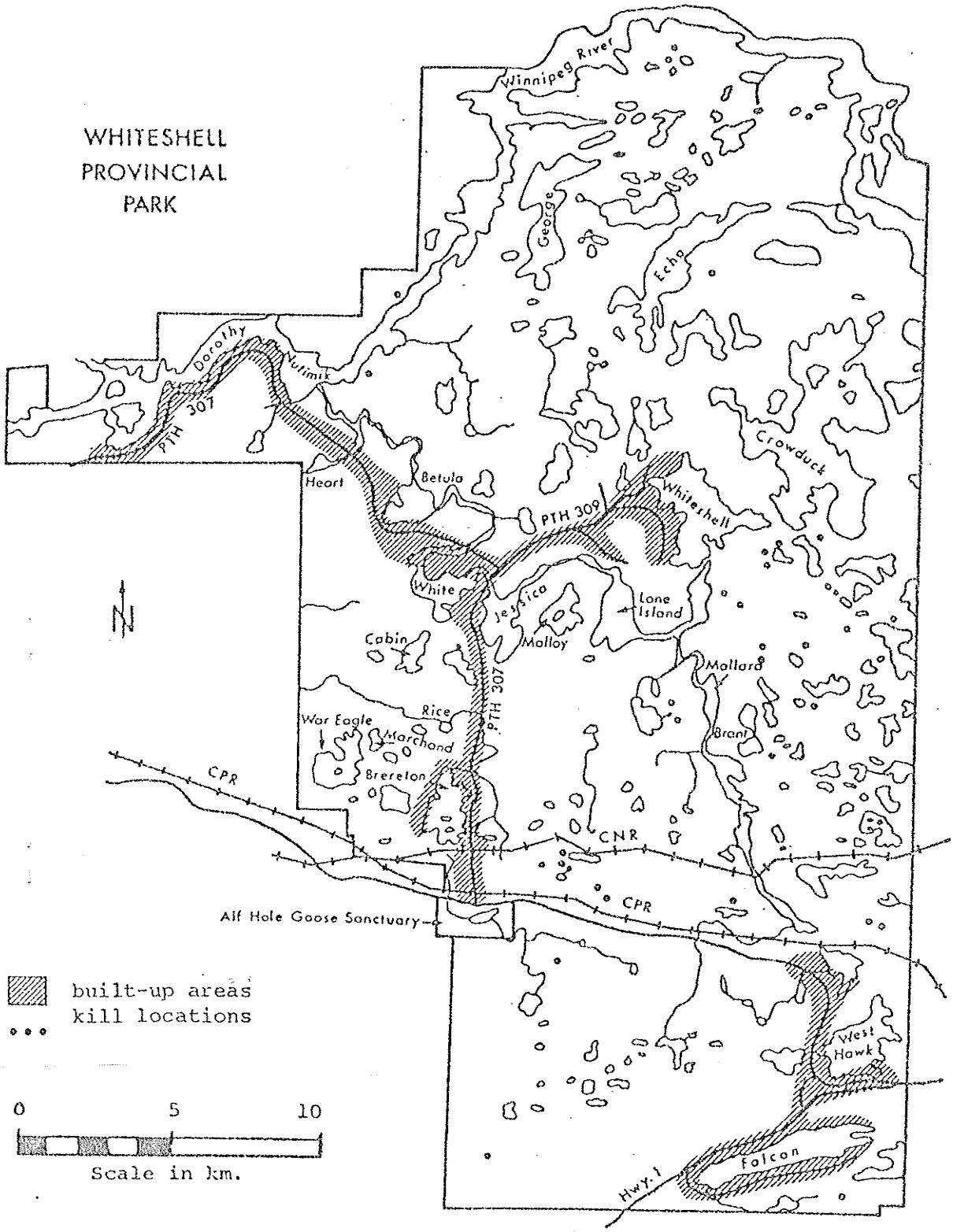

Figure 4. Moose Kill Locations in Whiteshell Provincial Park, 1975.

Source: Imrie, K., 1975. Analysis of the 1975 Moose Hunting Season, Game Hunting Area 36. Unpublished report, Manitoba Parks Branch.

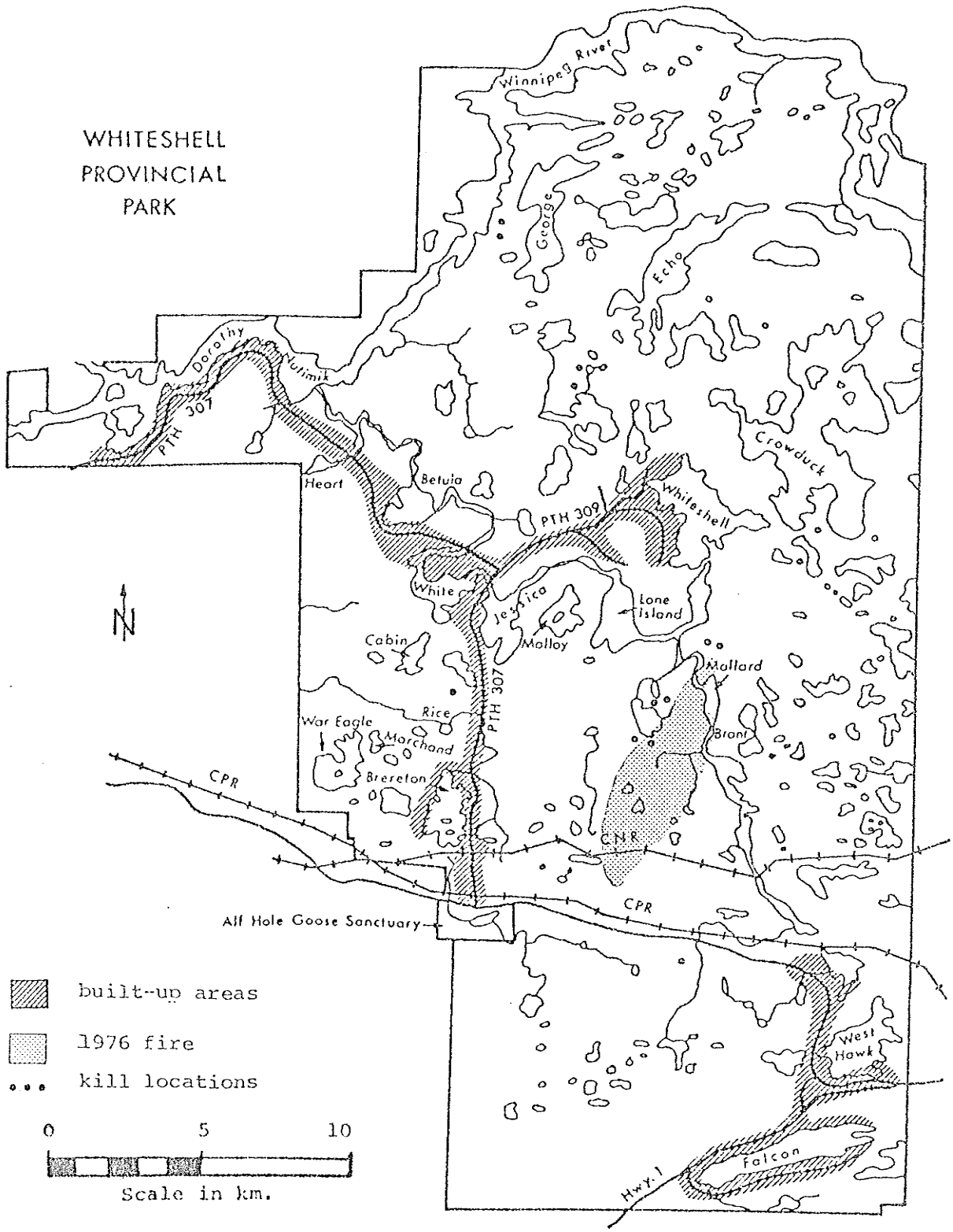

Figure 5. Moose Kill Locations in Whiteshell Provincial Park, 1976.

Source: Imrie, M. and K. Shipley, 1977. Analysis of the 1976 Moose Hunting Season, Game Hunting Area 36. Unpublished report, Manitoba Parks Branch.

states that moose are shy animals and in the Whiteshell are commonly found in areas far removed from public use corridors.[1]

Prior to 1974 the heaviest concentration of moose hunting occurred in the east-central portion of the park. In 1961 a 13,000 hectare fire in the Echo Lake area and large timber operations during the 1950 to 1965 period created prime moose habitat. This may account for the concentration of hunter activity in this area prior to 1974. From 1974 to 1976 there was an easterly shift in hunting pressure. This shift to previously distant and inaccessible areas may be attributed to increased mobility of hunters, favorable weather conditions and willingness of some hunters to travel to remote hunting areas.[2] Figure 5 delineates a 1976 forest fire. Six moose were shot near this burn area and hunters reported sighting several moose in the area. In general, moose are consistently harvested in high density moose areas located in the eastern portions of the park.

Moose hunters travelled from access roads predominately by power toboggans. A major factor determining the dispersal of hunters from the roads was weather, particularly snow and ice conditions.[3] Figure 6 depicts power toboggan trails in the park. Moose kill locations were near these trails indicating that hunters used these trails to gain access to their hunting areas.

Table 1 compares hunting statistics for the moose hunting seasons 1971 to 1976. Prior to 1974 there were no restrictions on moose licence

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[1] This provides a possible explanation why moose are not regularly viewed by the public in Whiteshell Park.

[2] Imrie, M., 1977, personal communication. Resource Technician, Whiteshell Park, Manitoba Parks Branch.

[3] Power toboggan travel is difficult with inadequate snow cover and late lake freeze-up. Hunter dispersion from roads is decreased if these conditions are not adequate during the moose hunting season.

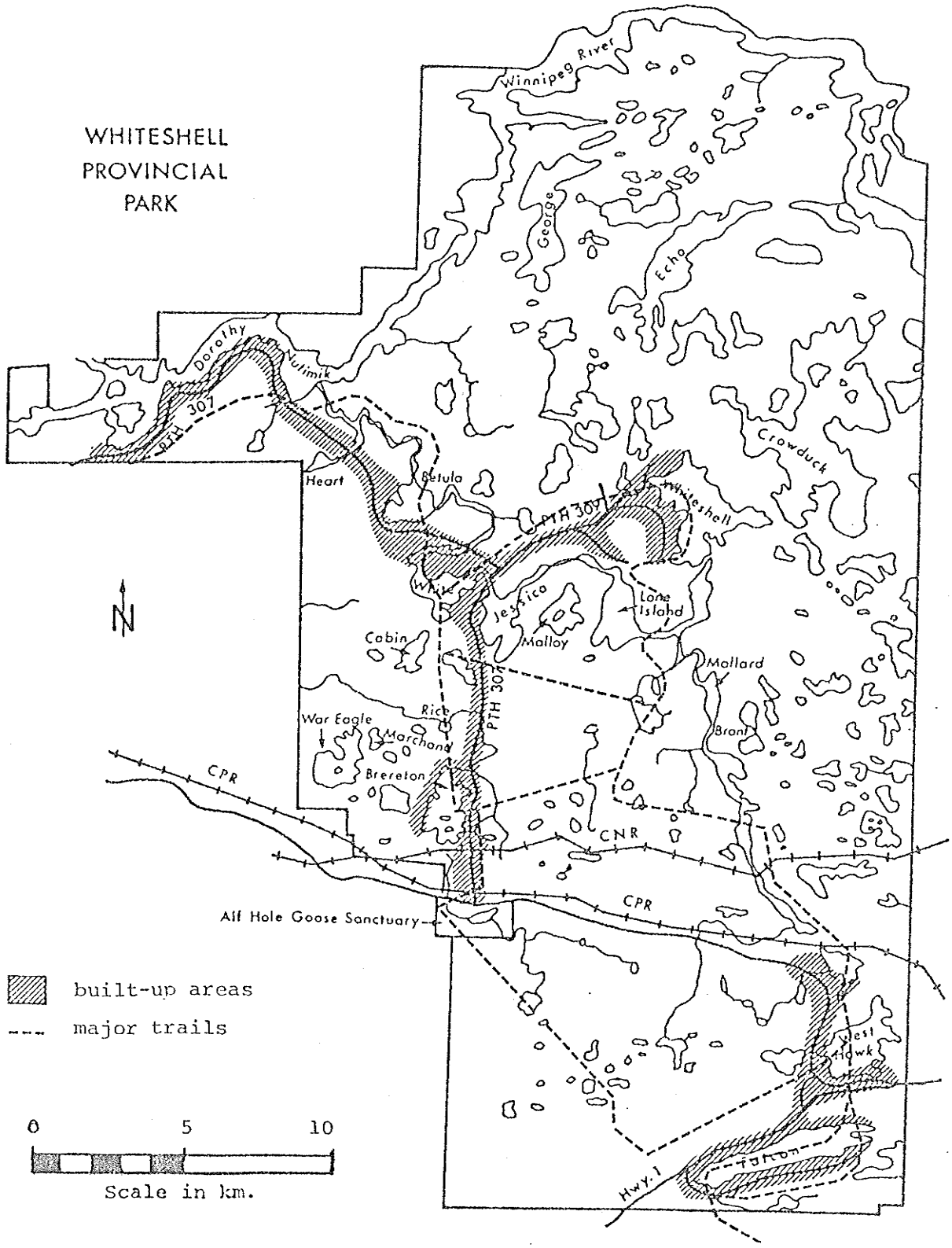

Figure 6. Designated Power Toboggan Trails in Whiteshell Provincial Park.

Source: Parks Branch Map, Manitoba Parks Branch.

sales in Manitoba. Hunters were allowed to hunt in any area of Manitoba open to moose hunting including Whiteshell Park. In 1974 moose licences were issued on a draw basis in an effort to regulate the number of hunters and to distribute hunting pressure more evenly (Imrie, 1974a). The number of Whiteshell Park moose hunters did not vary notably over these years. Imrie (1974a) reported that local hunters, including cottage owners, comprised at least one-half of the moose hunters in the Whiteshell.

Table 1 indicates reduced hunter success over the 1971 to 1976 period. Length of season, hunter numbers, weather conditions, moose population fluctuations, and the number of inexperienced hunters or hunters not familiar with the area influence harvest and success rates. Resource managers attribute reduced success rates to factors other than declining moose populations.

Moose hunters hunt in parties of varying size or singly. There is no apparent trend in the size of hunting parties from year to year. In 1974 and 1976 the majority of hunters hunted in parties of two and three or were single hunters, and in 1975 the majority of hunters hunted in groups of four or were single hunters (Imrie, 1974a; 1975; 1977). Hunter success varies with party size and lacks predictability from year to year. In 1975 parties of five and eight had 100% success. In 1976 success rates increased with increasing party size (Imrie, 1975; 1977).

3. Moose Harvest

According to Cumming (1972) indices of overharvesting are a decreasing annual harvest without an alternate explanation, a significant change in the sex ratio of the kill from more bulls to more cows, and a significant change in the age ratios of the kill.

TABLE 1

MOOSE HUNTING STATISTICS IN
WHITESHELL PROVINCIAL PARK, 1971-1976

	1971	1972	1973	1974	1975	1976
Season Length (days)	9	6	12	6	6	6
Licences Issued	Open	Open	Open	250	150	150
Number of Hunters	109	156	*	152	115	137
Moose Harvested	51	59	57	39	29	22
Average Age	5.2	4.8	4.1	5.7	4.2	4.8
% Success	45	37.8	*	25.7	25.2	16.2
Effort (man days)	596	474	688	668	496	626
Hunting Days/man[1]	5.5	3.0	*	4.4	4.3	4.4
Man Days/moose[2]	11.7	8.0	12.1	17.1	17.1	27.2

* No Data

[1] Total effort (man days)/number of hunters

[2] Total effort (man days)/number of moose harvested

Source: Imrie, M. and K. Shipley, 1977. Analysis of the 1976 Moose Hunting Season, Game Hunting Area 36. Unpublished report, Manitoba Parks Branch.

The moose harvest in Whiteshell Park declined from 1973 to 1976 (Table 1). This reduced harvest may be attributed to poor weather conditions during the moose hunting seasons. Annual hunting surveys indicate the moose population is not overharvested and some areas in the park are underharvested.

Figure 7 displays 1971-1976 categories of moose harvested. Thompson (1971a) notes that the high ratio of bulls in any kill is due to hunter selectivity. In late fall during the moose hunting season bulls are mobile and a hunter's chance of encountering a bull is increased since bulls cover a wider territory than cows. Figure 7 reveals that except in 1975 more bulls were harvested than cows. In these years the average age of the moose harvested was high. The sex and age ratios of the moose harvest from 1971 to 1976 provides further evidence that Whiteshell Park's moose population was not overharvested.

4. Moose Hunting Conflicts

There seems to be little conflict between moose hunters and other park users in Whiteshell Park primarily because moose hunting pressure generally occurs in locations removed from built-up areas and roads. Since the moose hunting season is in late November when park use is low as compared to summer usage, the chances of hunting related conflicts is further reduced.

Moose concentrations could disperse to built-up regions in the future if conditions, such as the creation of prime moose habitat through forest fires, exist. Moose hunting pressure could then occur in built-up areas. Alternatively, roads and development may be extended in the future to presently inaccessible prime moose habitat thus increasing the likelihood of conflicts between hunters and other park users.

Hunting related conflicts involve safety considerations as well as

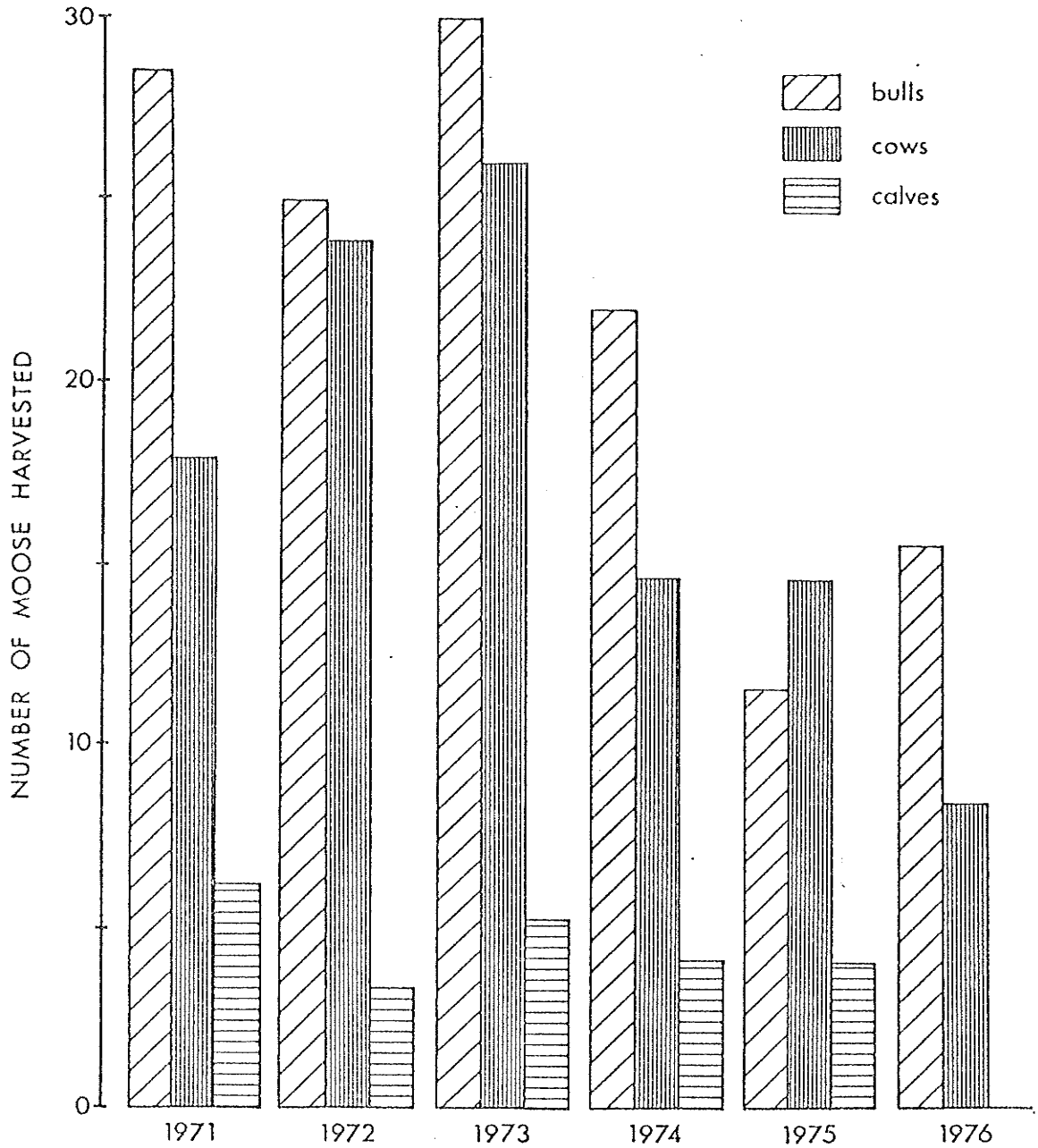

Figure 7. Categories of Moose Harvested in Whiteshell Provincial Park, 1971-1976.

Source: Imrie, M. and K. Shipley, 1977. Analysis of the 1976 Moose Hunting Season, Game Hunting Area 36. Unpublished report, Manitoba Parks Branch.

apprehension and disturbance caused by the sight and sound of hunter activity which may affect the recreational experience of the non-hunter. Although few moose hunting conflicts presently exist in Whiteshell Park, potential conflicts may arise in the future.

B. White-tailed Deer

1. Population Monitoring

As in moose surveys, white-tailed deer (*Odocoileus virginianus*) population estimates for Whiteshell Park are conservative and at best provide minimum estimates for the surveyed area. Techniques used to estimate deer population numbers are aerial surveys, pellet-group counting, and investigation of forest age, variety and use of browse, recent timber harvest and forest fire areas, and quality and quantity of protective cover. These survey techniques provide an analysis of annual deer distribution and seasonal use patterns of the habitat (Thompson, 1972c). Surveys are concentrated in prime deer habitat areas.

Figure 8 reveals the mean number of deer per square kilometer in Whiteshell Park for 1972-1977. These density estimates are very high and surveys were probably carried out in high density strata areas such as in winter deer yards. The population dropped drastically in 1974, as it did throughout the province, due to heavy winter kills causing a province-wide ban on deer hunting from 1974 to 1976. The deer population has since increased and is levelling off.

2. Deer Habitat

Prime deer habitat exists in several areas in Whiteshell Park, especially where man has disturbed the forest. Prime deer habitat may be found in built-up areas where clearing has occurred for sub-division roads, cot-

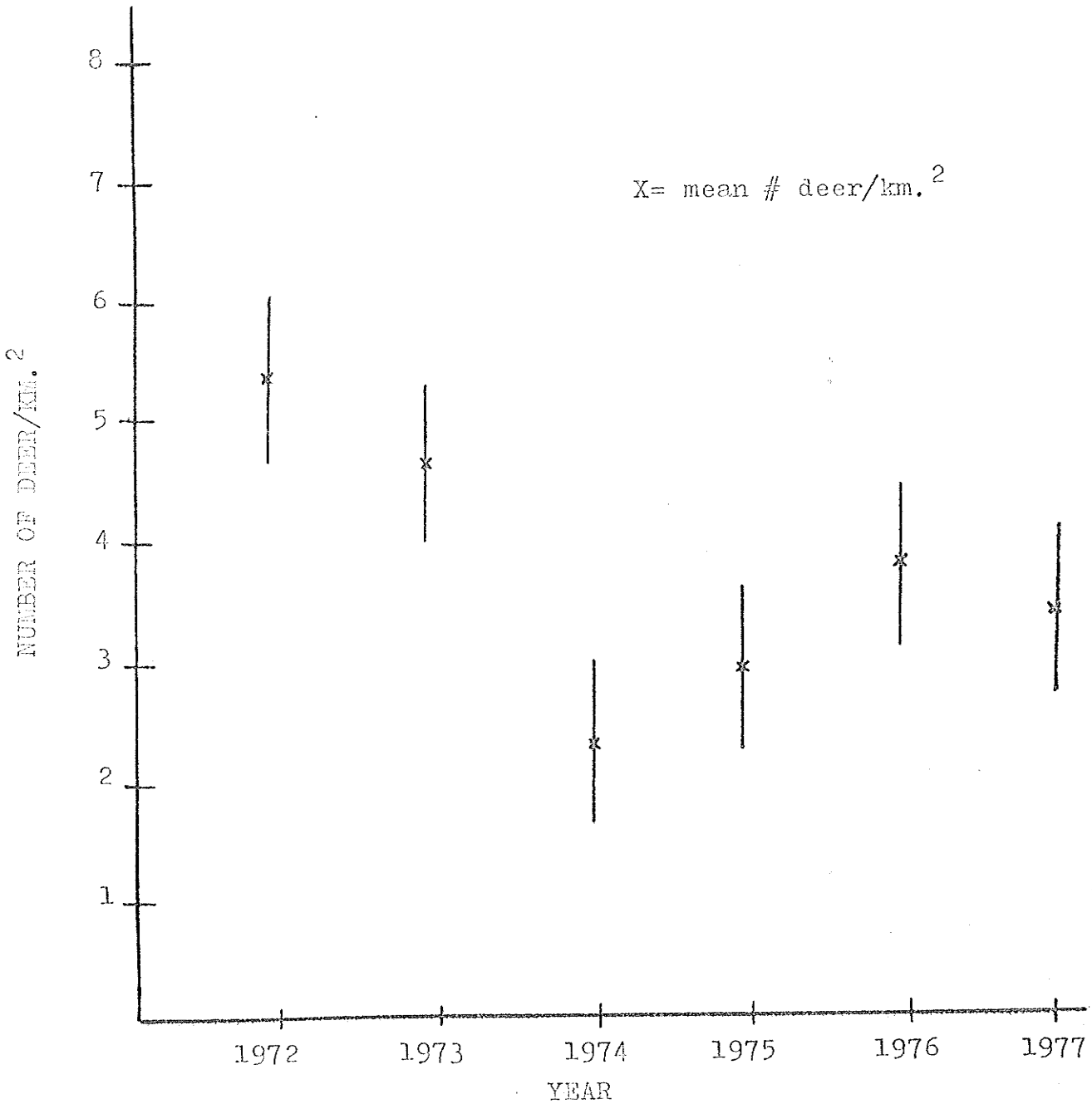

Figure 8. Estimated Deer/km.^{2} in Whiteshell Provincial Park, 1972-1977.

Source: Falcon Lake Files, Whiteshell Provincial Park, 1977. Manitoba Parks Branch.

tage and campground development, and timber harvest areas. New habitat is also created by forest fire rejuvenation and plantation sites. Dense, old forests and even-aged timber stands provide good cover but poor feeding conditions and therefore poor deer habitat (Thompson, 1972c). Timber cutting is beneficial for creating prime deer habitat as long as sufficient cover trees are left resulting in a good mix of cover and adequate food (Post, 1969). Figure 9 reveals past, reforested timber cut areas in Whiteshell Park.

Winter cover reduces heat loss from the deer body surface, moderates temperature fluctuations, provides protection from wind and minimizes snow build-up for easier travel (Thompson, 1972c). Ransom (1967) states that in Whiteshell Park, weather is more important than food supply in determining deer numbers. In winter, deer seek the best protection cover with food being of secondary importance.

3. Hunter Activity

There was no deer hunting allowed in Whiteshell Park from 1973 to 1976. Deer hunting seasons were scheduled in late October and November in years prior to 1973. Areas in Whiteshell Park prohibiting deer hunting is the Game Bird Reserve south of the C.N.R. railway tracks and other game refuges. Figures 10 to 13 reveal deer kill location sites and deer hunter locations for 1971, 1972 and 1977 respectively. These figures indicate that most deer hunting activity occurred near and within built-up areas, roads and accessible waterways. Over 90% of the total deer kills for 1971 were within 1.5 km of an accessible road or highway (Thompson, 1971b). Table 2 identifies deer kill locations for sections of highways and secondary roads in the park for 1971 further demonstrating the location of deer hunting activity near built-up areas.

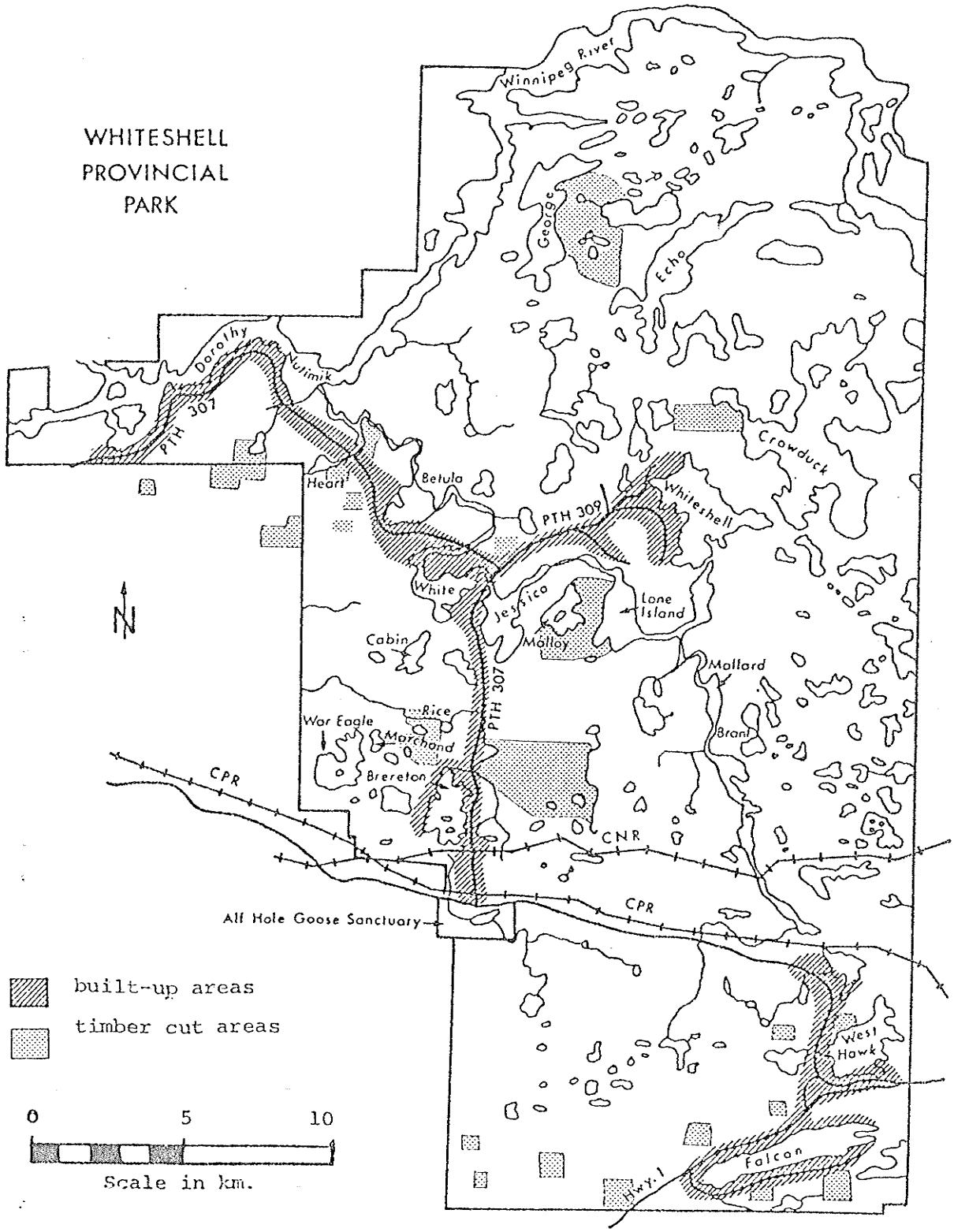

Figure 9. Timber Cut Areas Prior to 1977 in Whiteshell Provincial Park.

Source: Thompson, R.C., 1971b. Whiteshell Provincial Park Deer Hunt, 1971. Unpublished report, Manitoba Parks Branch.

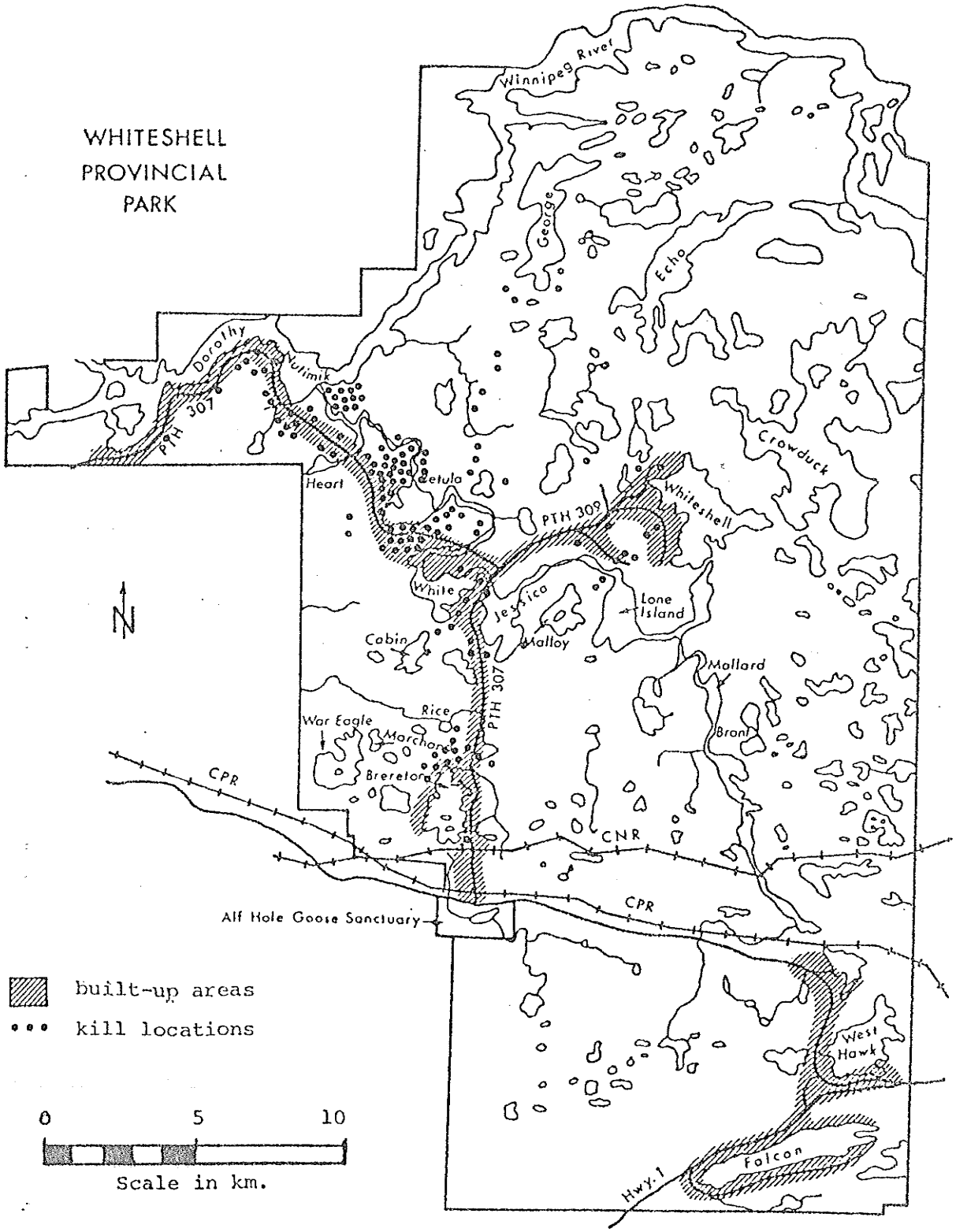

Figure 10. Deer Kill Locations in Whiteshell Provincial Park, 1971.

Source: Thompson, R.C., 1971b. Whiteshell Provincial Park Deer Hunt, 1971. Unpublished report, Manitoba Parks Branch.

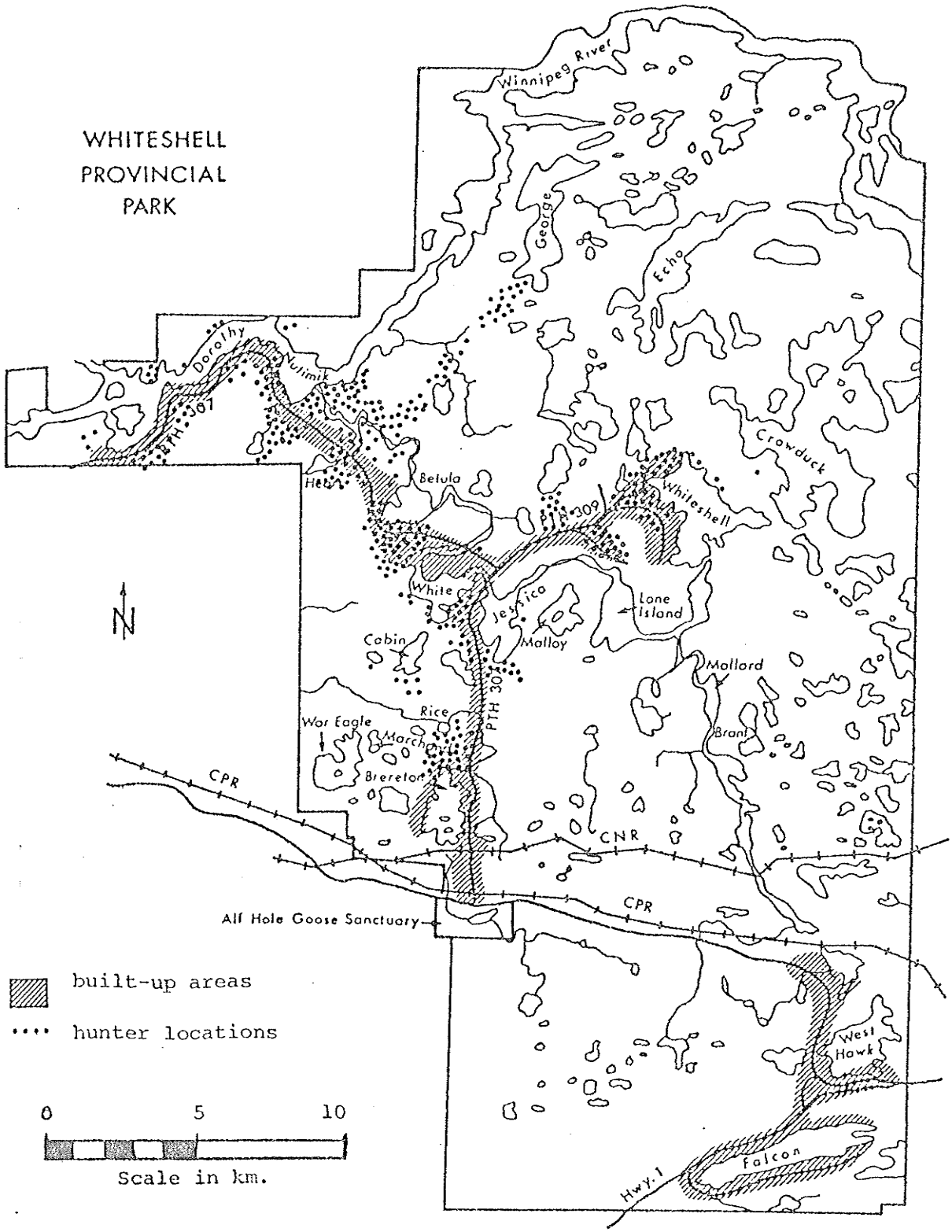

Figure 11. Deer Hunter Locations in Whiteshell Provincial Park, 1972.

Source: Raw data of Whiteshell Provincial Park Deer Hunt, 1972. Manitoba Parks Branch files.

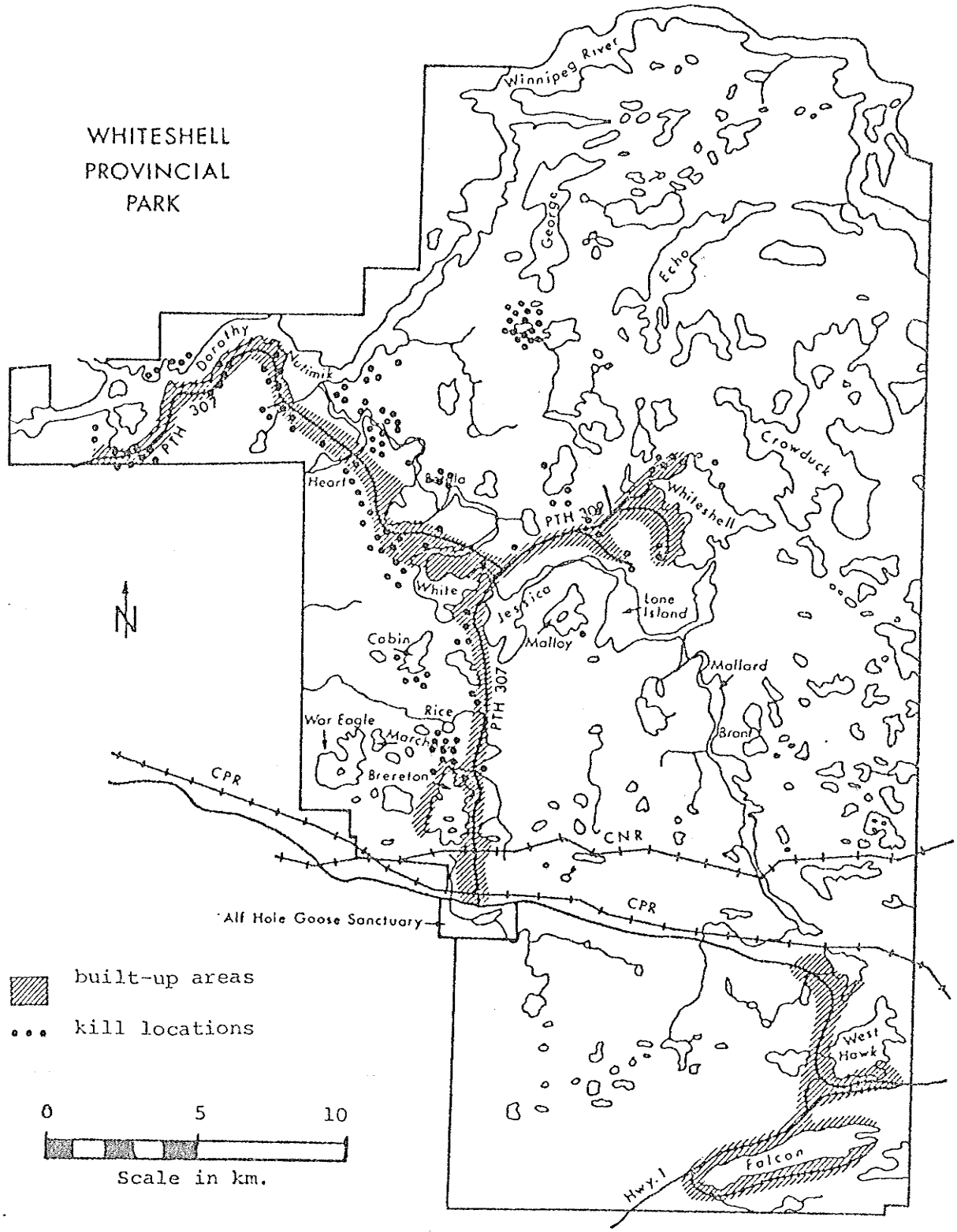

Figure 12. Deer Kill Locations in Whiteshell Provincial Park, 1972.

Source: Raw data of Whiteshell Provincial Park Deer Hunt, 1972. Manitoba Parks Branch files.

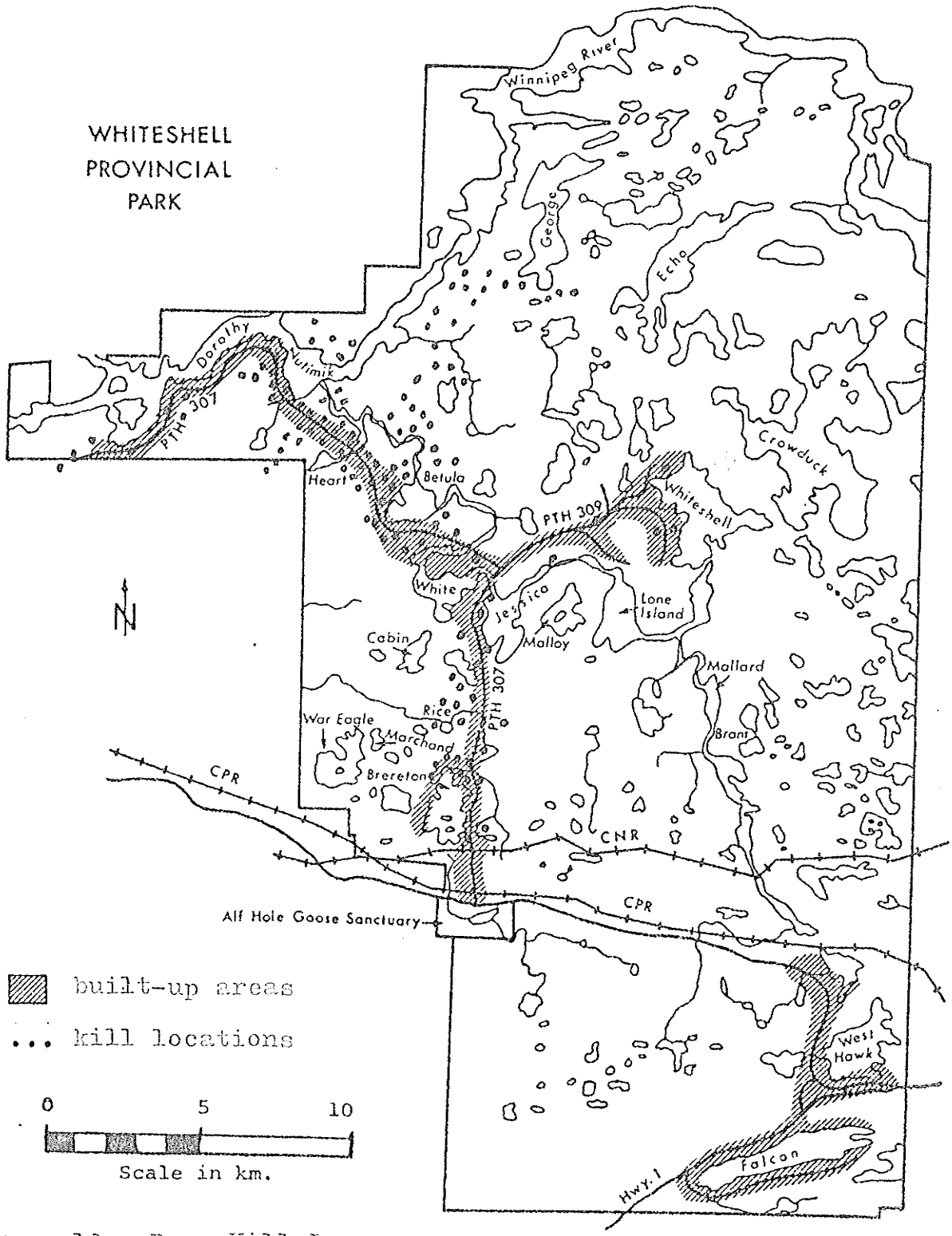

Figure 13. Deer Kill Locations in Whiteshell Provincial Park, 1977.

Source: Imrie, M., 1977b. Whiteshell Provincial Park Deer Hunt, 1977. Unpublished report, Manitoba Parks Branch.

TABLE 2

DEER KILL LOCATIONS IN
WHITESHELL PROVINCIAL PARK, 1971

Hunting Location	km. of Hwy. & Secondary Roads	No. of Deer Killed	% of Total	% Within 1.5 km. of a Road
Otter Falls to 307-309 Jct.	21 + 13	89	61.8	60.4
307-309 Jct. to Big Whiteshell	8 + 7	17	11.8	11.8
307-309 Jct. to C.N.R. Tracks	13 + 6	29	20.1	20.1
Remote areas	---	9	6.3	7.7
Totals	42 + 26	144*	100.0	100.0

* Of the 165 deer harvested in 1971, 144 had recorded kill locations.

Source: Thompson, R.C., 1971b. Whiteshell Provincial Park Deer Hunt, 1971. Unpublished report, Manitoba Parks Branch.

Hunter check stations were established to compile information on deer hunting activity in the park. Table 3 compares hunting statistics for the hunting seasons 1971, 1972 and 1977. A 'split-season' hunting system was utilized in 1977 throughout Manitoba in an attempt to disperse hunting pressure.[1] In 1977 there were almost 50 percent fewer hunters in Whiteshell Park as compared to past years although approximately the same number of deer were harvested. In 1977, 25% of the deer hunters owned cottages in Whiteshell Park. The season in 1977 was approximately one-third the length of past years. Factors limiting deer hunting success are similar to those affecting moose hunting particularly weather conditions.

Figure 14 depicts the temporal distribution of deer hunters and harvest for 1971. This figure indicates that heaviest hunting pressure occurs on opening day, Saturdays and holidays.

4. Deer Hunting Conflicts

Major conflicts due to deer hunting in Whiteshell Park are safety considerations, reduced quality of recreational experiences of non-hunters, concern of lost animal viewing opportunities, and a reduced quality hunt. The concentration of deer hunters near and within built-up areas presents a dangerous situation for cottage owners, other park users and hunters. There is a possibility of being struck by stray bullets or of being mistaken for game.

Cottage owners and other park users including hunters may be wary of visiting Whiteshell Park during the deer hunting season because of heavy hunting pressure. The sound and sight of hunter activity may annoy non-hunters and promote apprehension reducing the quality of their recreational experience.

Some park users opposed to hunting in parks have argued that because

[1] This hunting system is discussed in Chapter IV.

TABLE 3

WHITESHELL PROVINCIAL PARK DEER HUNTING
STATISTICS FOR 1971, 1972 and 1977

	1971	1972	1977
Season Length (days)	34	36	12
Number of Hunters	810	880	445
Deer Harvested	165	144	161
Average Age	2.5	*	2.6
% Success	21	517	36
Effort (man-days)	1,816	1,774	3,331**

* No data available

** Man-hours

Source: Thompson, R.C., 1971b. Whiteshell Provincial Park Deer Hunt, 1971. Unpublished report, Manitoba Parks Branch; Raw Data of Whiteshell Provincial Park Deer Hunt, 1972. Manitoba Parks Branch files; Imrie, M., 1977b. Whiteshell Provincial Park Deer Hunt, 1977. Unpublished report, Manitoba Parks Branch.

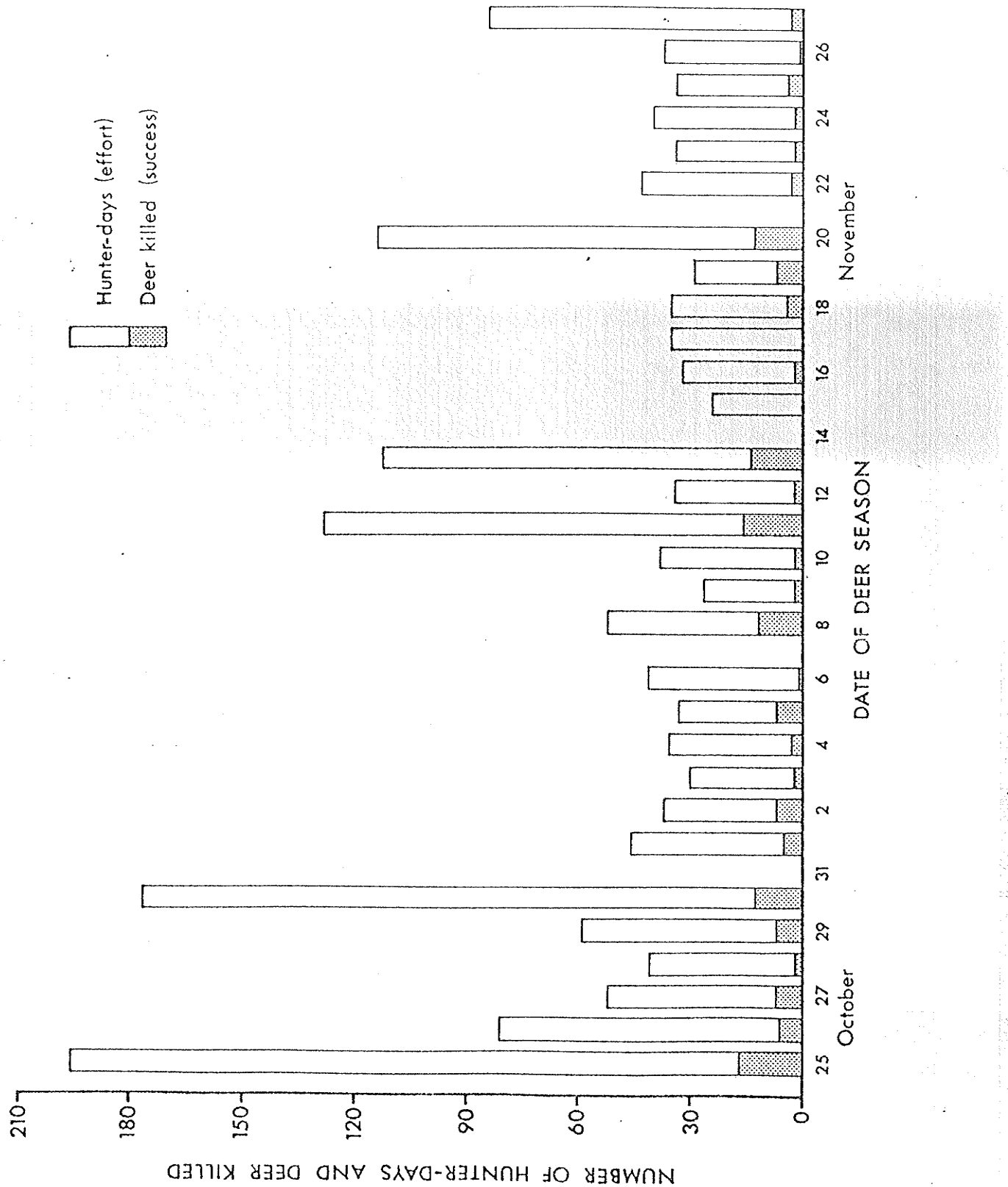

Figure 14, Temporal Distribution of Deer Hunters and Kills in Whiteshell Provincial Park, 1971.

Source: Thompson, R.C., 1971b. Whiteshell Provincial Park Deer Hunt, 1971. Unpublished report, Manitoba Parks Branch.

of hunting activity, their opportunity for viewing deer during the summer is greatly reduced. It does not seem likely that deer would abandon built-up areas, where prime habitat exists, during the summer because of a two or three week hunting season in late autumn. Deer are more wary during, and for some time after, the hunting season but during the summer they also exhibit a natural degree of wariness.

The quality of the deer hunt in Whiteshell Park may be poor because of concentrated hunter numbers in a limited area. The possibility of contacting another hunter in the field is high and the likelihood of a temporary egress of deer from the area is great. Thompson (1971b) reported that many hunters complained of a high incidence of rivalry and contact with other hunters in the field which detracted from the quality of the hunt. The 'split-season' hunting season introduced in 1977 has seemed to reduce deer hunting pressure in the park and may have possibly increased hunting quality.

C. Black Bear

1. Population Monitoring

A minimum population estimate for black bear (*Ursus americanus*) in Whiteshell Park is approximately 300 with approximately one-half of this number occurring in the corridor of intensive use bordering the road system (Elliot, 1976).

2. Hunter Activity

Table 4 summarizes Whiteshell Park's bear statistics from 1970 to 1976. There is a spring and an autumn bear hunting season each year. The spring season usually opens in the beginning of April and concludes at the end of May. The autumn season usually opens in the middle of September and ends two months later.

Bear hunters concentrate in built-up areas usually in the vicinity

TABLE 4

BEAR INFORMATION FOR WHITESHELL PROVINCIAL PARK 1970-1976

	1970	1971	1972	1973	1974	1975	1976
Number trapped, tagged and moved			17	7	19	9	49
Number moved but not tagged	30	21			10		3
Number retrapped and moved successfully				1	2		1
Number retrapped and shot or shot with tag			5	2		1	6
Number shot in traps or free roaming		50	50	50	29	8	12
Number hunter killed	26	12		7	16	10	10
Number road kills					10	9	9
% success moving once			53	73	74	56	78
% success (multiple move			53	48	85	56	86

Figures in this table should be adjusted upward about 10% to account forunreported or unrecorded information. Data not available for all years.

Source: Condensed from: Elliot, D.C., 1976. Black Bear Information and Management Sheet, Parks Branch, unpublished report.

of refuse pits. The number of bears harvested by hunters is small compared to the number of bears shot and removed by park staff. Annual bear hunter numbers are unknown.

3. Bear Hunting Conflicts

The presence of bear hunters near and within built-up areas may be dangerous for cottage owners and other park users who visit the park during the bear hunting seasons. Another hunter or non-hunter may also encounter a wounded bear and be placed in serious danger. The sight and sound of bear hunting activity may also reduce the quality of a non-hunter's recreational experience.

D. Migratory Game Birds

1. Population Monitoring

Although Whiteshell Park is not one of the more important waterfowl or staging areas in North America, it does support significant populations. Park staff conduct brood counts, air surveys, and hunter checks to assess waterfowl production, migratory patterns, and hunting pressure within the park. Precise waterfowl population numbers cannot be attained because of the size of the area and the relative unimportance of this information to the North American population.

2. Hunter Activity

The waterfowl hunting season opens in late September and lasts for two months. Imrie (1974b) reports Whiteshell Park sustains considerable waterfowl hunting pressure with local residents, including cottage owners, comprising a substantial part of the hunting population. Lakes with the heaviest hunting pressure are located near built-up areas. Annual park, waterfowl hunter numbers and waterfowl harvests are unknown.

Whiteshell Park is a traditional hunting area for 'bluebills' (Greater

and Lesser Scaup; Aythya marila, A. affinis). These birds are hunted very late in the season.

3. Alf Hole Wild Goose Sanctuary

Alf Hole Sanctuary was established in the early forties by Alfred A. Hole and has since become a unique rearing and staging area for Giant Canada Geese (Branta canadensis maxima). Approximately 40 to 60 goslings are reared in the sanctuary. Few geese breed within the sanctuary because of the lack of suitable nesting sites. The geese breed 5 to 6 km. from the sanctuary and relocate to it to rear their goslings primarily because of regular feeding opportunities.[1]

The behavior of the Alf Hole geese is not wholly understood. Research and management activities such as banding programs and habitat work are conducted in the sanctuary and perhaps may provide insights into the behavior, reproductive requirements and habitat potential of the Alf Hole good flock and sanctuary.

The Alf Hole geese comprise part of the Rock Prairie goose flock located in Rock Country, Wisconsin. The Alf Hole geese join other geese in fall migration and eventually reach their wintering area in the Rock Prairie Refuge. Large flocks of geese use the Rock Prairie Refuge area both as a fall concentration region and a wintering area (Gjeston, 1975).

The number of geese frequenting Alf Hole Sanctuary dropped in the early 1970's. It has been postulated (anonymous, November, 1976, The Winnipeg Tribune) that the declining goose population at Alf Hole is attributable to hunting pressure within the park. This statement may not be valid since until recently no documentation or consistent counts have been

[1] Imrie, M., 1977, personal communication. Resource Technician, Whiteshell Provincial Park, Manitoba Parks Branch.

conducted following the establishment of the sanctuary. Band returns indicate that geese harvested in the park do not frequent Alf Hole (Imrie and Chranowski, 1976). Geese are also hunted adjacent to the park, but band returns again indicate that few Alf Hole geese are harvested in Manitoba. Several reasons for the alleged reduced goose population are possible. Poor seasonal weather conditions (e.g., dry summers) and hunting pressure distant from the park may have temporarily reduced goose numbers. The Rock Prairie Refuge in Wisconsin has experienced heavy hunting pressure and goose population numbers in this area has also dropped recently. Hunting has been banned in this area for three years (until 1979) or until the number of geese increases again. It cannot be assumed that the goose population at Alf Hole will increase because of restricted hunting in Rock County. No factual evidence supports the argument that hunting pressure within Whiteshell Park reduced the Alf Hole goose population.

4. Waterfowl Hunting Conflicts

Waterfowl hunting occurs near and within built-up areas in the park causing possible conflicts between hunters and other park users. Safety hazards are reduced because shotguns are used for waterfowl hunting. Non-hunters may feel apprehensive and annoyed because of the sight and sound of hunter activity reducing the quality of their recreational experience. Hunters may also leave trash, such as "spent" shells on private property. This applies to all types of hunting.

E. Upland Game Birds

1. Population Monitoring

Ruffed Grouse (*Bonasa umbellus*) populations are surveyed by audio-survey techniques revealing the number of drumming males in a restricted area. This information allows resource managers to determine the ap-

proximate stage in the grouse population cycle serving as an index to predict the given year's hunting potential. Sharp-tailed grouse (*Pediocretes phasianellus*) are not surveyed.

2. Hunter Activity

The upland game season opens in mid-September and lasts two months. Many hunters, including local residents and cottage owners, hunt upland game in Whiteshell Park. Most upland game hunting occurs within built-up areas. Annual park grouse harvests and hunter numbers are unknown.

3. Upland Game Hunting Conflicts

As with waterfowl, bear and deer hunting, conflicts between hunters and other park users may exist because of the nearness of grouse hunting to built-up areas.

CHAPTER IV

ALTERNATIVE HUNTING SYSTEMS

A. Introduction

The hunting systems discussed in this chapter are possible schemes to reduce hunting related conflicts. Other provincial parks in Manitoba are not as developed or utilized as Whiteshell Provincial Park, therefore the need to introduce new hunting restrictions to these parks may not be justified. Resource managers should analyze provincial parks individually to determine whether additional hunting regulations are needed. Data on game populations, hunting pressure, and general recreational use within the parks should be studied.

The reason for developing new hunting systems for Whiteshell Park is to reduce the possibility of conflicts between hunters and other park users. The quality of hunter and non-hunter recreational experience may be adversely affected due to safety considerations, aesthetic impacts caused by hunting, or simply knowing that hunting is allowed in the park. The possibility of hunting related conflicts is increased because intensive hunting pressure for deer, bear and upland and migratory game occurs near and within built-up areas. Present hunting activities in Whiteshell Park may also affect the quality of hunter recreational experiences.

Recreational experiences vary in quality with the concept of quality implying a value judgement between 'high quality' and 'low quality' (Talhelm, 1973). Personal preferences vary and do not provide any concensus as to the attributes of high quality recreation (Talhelm, 1973).

Hunter satisfaction, and therefore quality, is complex and consists of many elements that are more important to most hunters than bagging game.

The expectation of success is necessary, but by itself it is insufficient to produce quality hunting experiences (Potter, et al., 1973). Potter et al. (1973) found in Washington State that important dimensions of hunter satisfaction were elements of the hunting experience related to the appreciation of nature which included getting away from civilization and elements related to escaping from the pressing demands of civilization which included seeing very few other hunters while hunting. Wright, Buholz, Wywialowski and Dahlgren,(1977) found most hunters disliked competition with other hunters for available game and a place to hunt. This may be interpreted that heavy hunting pressure caused by a concentration of hunters in a limited area reduces hunting quality.

B. Split Season Hunting

Prior to 1977 deer hunters were permitted to hunt any allowable area in Manitoba. In the early 1970's there was reduced deer hunting quality and increased farmer-hunter conflicts in some regions because of heavy hunting pressure. Factors contributing to the poor hunting quality were heavy hunter concentration in some areas, numerous trespass complaints, road hunting, illegal kills and vandalism.[1]

In 1977 a split season hunting system was introduced in an attempt to disperse deer hunting pressure in Manitoba. This system restricts when and where hunters may hunt deer. The province was divided into four hunting units and hunters were allowed to choose only one unit to hunt. The season was separated into three hunting periods: November 14 to 16, November 17 to 19, and November 21 to 26. Hunters chould choose only one of these periods in which to hunt.

[1] Goulden, H., 1977, personal communication. Provincial Deer Manager and Regional Biologist, Department of Renewable Resources and Transportation Services, Manitoba.

This hunting system reduced hunting pressure in Whiteshell Park. The average number of deer hunters in the park prior to 1977 was approximately 800 but in 1977 only 445 hunters passed through check stations (Imrie, 1977b). This drastic decrease in hunter numbers may be attributable to either poor weather conditions during part of the deer hunting season or the effectiveness of the split season to reduce hunting pressure. It is also possible that the introduction of this type of hunting system discouraged hunters from deer hunting because of the additional, inflexible regulations. Perhaps some hunters' work schedules did not coincide with the alloted hunting times.

Although hunting pressure was reduced in Whiteshell Park, hunters continued to hunt near and within built-up areas which is an important factor contributing to conflicts between hunters and other park users. The split season does not seem to be the entire answer for reducing hunting related conflicts in Whiteshell Park. Hunting quality probably increased however, because of reduced hunter numbers in the park.

C. Zoning

Areas in Whiteshell Park sustaining intensive recreational use border lakes located adjacent to major highways, and comprise a concentration of services and facilities such as townsites, cottage developments and campgrounds. Intense hunting of deer, bear, and migratory and upland game birds occurs in these corridors of recreational use because of the existence of prime habitat in these areas and because of the lack of hunting trails in other portions of the park.

Presently, hunting is prohibited in Alf Hole Wild Goose Sanctuary, Pointe du Bois Game Refuge and the game bird reserve south of the C.N.R. railway tracks. Only moose hunting is allowed in the latter area. The

Wildlife Act, R.S.M. 1970, c.W140, also prohibits the discharge of a shotgun from, along or across roads in Whiteshell Park, and The Provincial Park Lands Act, R.S.M. 1972, c.27, prohibits hunting within built-up areas. These two regulations will be discussed later in this chapter.

A possible method of reducing hunter related conflicts is to develop a zoning plan restricting all game hunting to portions of the part distant to built-up areas. To do this, resource managers would identify areas of intensive recreational use including cottage developments, campgrounds, townsites, and major road systems. Several factors must be considered in choosing the correct size of the zone. Safety considerations involving the hazard of park users being struck by stray bullets or being mistaken for game must be considered as well as limiting the sound and sight of hunter activity. A hypothetical distance prohibiting hunting from built-up areas may be 1.5 km. This size of zone may reduce several hunter related conflicts.

D. Designated Hunting Trails

Hunting may be restricted from built-up areas by limiting hunting to designated trail systems. There is presently a lack of trails in Whiteshell Park, forcing hunters to hunt in built-up areas which are the only accessible portions of the park, other than travel by power toboggans. Additional trails could be developed in selected areas in the park, away from built-up areas, by the provincial Parks Branch. The use of designated hunting trails would reduce conflicts between hunters and non-hunters if all hikers, cross-country skiiers, and other park users were warned not to use these trails during the hunting seasons.

Resource managers would have to develop an adequate trail system in terms of numbers and locations. A proper number of trails should be provided to supplement existing logging and game trails. An adequate number of trails

would alleviate hunter concentration. Perhaps two km. access roads could be constructed, radiating from built-up areas ending in a small parking lot. From these access roads hunters could then disperse into the bush. Costs for this system would include construction and posting of signs.

E. Primitive Weapons

Safety hazards associated with high-powered rifles used for deer hunting may be reduced by limiting deer hunting to the use of primitive weapons. This includes bow and arrow hunting and black powder and ball (musket) hunting. This scheme may not be feasible however, because it would limit the opportunity to hunt in Whiteshell Park to only those types of hunter.

F. Shotgun Slug Hunting

Restricting deer hunting to shotguns with slugs may reduce safety hazards caused by the use of high-powered rifles, intensive deer hunter concentration in built-up areas of Whiteshell Park, and the presence of non-hunting park users during the hunting season. It is debatable however, whether shotguns with slugs are safer than rifles. Shot guns are relatively short-range firearms which indicates a reduced possibility of accidental deaths of other hunters or bystanders as compared with rifles. In some entire states in the United States and in designated parts of other states, deer hunters are limited to shotguns only for deer hunting (Cartier, 1976). In Saskatchewan, small game management areas adjacent to Moose Jaw, Regina and Saskatoon limit deer hunting to shotguns only.[1]

Statistics involving range and muzzle velocity indicate that shotguns with slugs are very effective killing weapons and could inflict a fatal wound at 250 meters (Cartier, 1976). In the United States most victims in hunting accidents are within 45 meters of the person firing. In 1976 in Manitoba there were 23 hunting accidents and of these 21 of 87% of the

1 Scheelhaase, C., 1977, personal communication. Game Administrator, Fisheries and Wildlife Branch, Saskatchewan.

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victims were less than 45 meters from the person firing (Firearm Accidents Report, 1976, Department of Renewable Resources and Transportation Services). Most accidents reflected a lack of muzzle control and care required when handling firearms. A 12-guage shotgun slug weighing 437 grains inflicts a more serious wound than a 220-grain, .30/06 bullet at short range. Therefore, in a short-range situation a high-powered rifle is not any more dangerous, if not less, than a slug-loaded shotgun.

Several factors involved in using a shotgun may cause it to be less safe than rifles. A shotgun lacks fine sights and as a result a hunter may not take time to aim properly. A shotgun is usually used for game bird hunting and a hunter may tend to use the same type of quick, reflex action using the gun for deer, This quick shooting may cause accidents.

In areas of high hunter densities or high human population, the use of slug-loaded shotguns may be feasible. Using this type of firearm may reduce long-range hunting accidents but may not reduce the total number of accidents. The effectiveness of reducing long-range hunting accidents depends upon the area. For example shotgun slug hunting may be more appropriate for open country, as opposed to thick bushland. The type of gun the hunter uses is not as important as how he uses it.

G. Regulations

Some regulations dealing specifically with hunting in Whiteshell Park could control hunting activity more effectively if elaborated upon. The Provincial Park Lands Act, R.S.M. 1972,c.27 states:

> "No person shall discharge any weapon within a built-up area within Provincial Park Lands."

This regulation may be more effective in restricting hunting from built-up areas if a specified distance from these areas was included. Information needed to determine this distance, for example 1.5 km, was discussed in the

zoning section of this chapter.

The Wildlife Act, R.S.M. 1970, c.W140, States:

"No person while engaged in any purpose connected with hunting shall discharge a shotgun from, or cause a projectile from a shotgun to pass along, or across any Provincial Trunk Highway or Provincial Road as designated by number on the current official Manitoba Highways map within the following areas:

1) The Whiteshell Provincial Park, or....."

This regulation refers to shotguns and not other firearms such as rifles. All firearms should be restricted in this manner. The inclusion of the work 'firearm' instead of 'shotgun' would make the regulation more explicit.

The rewording of these regulations would restrict hunting from built-up areas and would therefore, reduce hunting related conflicts and possibly increase hunting quality.

H. Draw Systems

Whiteshell Park is presently included in the Manitoba Special Moose Licence System which uses a public draw to limit the number of moose hunters in the park. The allowable harvest of the moose and number of licences issued is determined by estimating the moose population, reproductive rates and habitat capability. Resource managers are also concerned with evaluating the number of hunters the park could biologically and socially handle, in terms of hunter impact on game populations and park users.

A public draw may also be held for deer hunters in Whiteshell Park to limit the number of hunters. The cost of introducing a public draw specifically for Whiteshell Park deer hunting is high. A draw would limit the number of hunters but would not influence the location of hunter activity. A deer draw system would not be effective alone in reducing hunting related conflicts.

I. Temporal Restrictions

Presently game hunting seasons commence after the summer tourist season has officially closed with the exception of the spring black bear season which begins in April and lasts until the end of May. With the exception of black bear, the timing of all game seasons seem at present to cause minimal conflicts. The black bear hunting season should be rescheduled to terminate before the opening of the summer tourist season.

Both hunting and non-hunting park use is more intense on weekends than weekdays, increasing the likelihood of conflicts between hunters and other park users. Hunting may be restricted to weekdays or mornings only. This may aid in reducing conflicts but would curtail an individual's opportunity to hunt in the park.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

This practicum analyzed hunter impact in Whiteshell Provincial Park by investigating government policies relating to hunting, game populations, hunting related conflicts caused by hunting practices, and alternative hunting systems which may be used to reduce hunting related conflicts.

Based upon information contained in this practicum, the following conclusions may be made:

1) The Manitoba Department of Tourism, Recreation and Cultural Affairs (Parks Branch) lacks a minister-approved policy regarding recreational hunting opportunities and wildlife utilization within provincial parks. The control of hunting in Manitoba's provincial parks may be aided with the development of such a policy.

2) Some regulations in The Wildlife Act, R.S.M. 1970, c.W140 and The Provincial Park Lands Act, R.S.M. 1972, c.27, need refined wording. The clarification of these regulations may aid in reducing hunting related conflicts in Manitoba's provincial parks through better control of hunting activity.

3) Hunting in the autumn does not seem to decrease the public's opportunity to view wildlife during the summer in Whiteshell Provincial Park.

4) Hunting pressure in Whiteshell Provincial Park has not increased to any significant extent in recent years. In fact, deer hunter numbers in 1977 were approximately one-half of the numbers ex-

perienced in the park prior to 1977.

5) Potential hazards to hunter and non-hunter safety exist in Whiteshell Provincial Park due to hunting activities. The nearness of game hunting, with the exception of moose hunting, to built-up areas in the park is the major factor contributing to these hazards.

6) Population fluctuations which do occur in Whiteshell Provincial Park do not seem to be the result of hunting overharvest. Climatic and habitat conditions seem to be more important elements controlling game population numbers.

7) Conflicts exist between hunters and other park users in Whiteshell Provincial Park, primarily because hunting occurs near and within built-up areas. The quality of a non-hunter's recreational experience may be reduced because of hunting. A hunter's recreational experience may also be reduced in Whiteshell Provincial Park because of concentrated hunting pressure in built-up areas.

8) A fair proportion of local residents and cottage owners in Whiteshell Provincial Park participate in recreational hunting within the park. Approximately one-third to one-half of moose hunters in the park are local residents and cottage owners and approximately one-quarter of the park deer hunters are cottage owners.

9) The alternative hunting schemes suggested in Chapter IV may reduce hunting conflicts in Whiteshell Provincial Park. Some of these hunting systems may be more feasible than others in terms of financial and practical considerations. Some hunting systems may also be more effective in reducing hunting conflicts than others.

10) Any of the alternative hunting systems suggested in Chapter IV may be applied to other provincial parks in Manitoba. Hunter impact in each individual provincial park should be investigated before introducing a new hunting system to those parks.

B. Recommendations

1) The Department of Tourism, Recreation and Cultural Affairs (Parks Branch) should develop a policy regarding recreational hunting and wildlife in provincial parks. This policy should focus on regulating the multiple use of wildlife in a flexible manner. Park user's demand and value for wildlife should be investigated to determine what benefits people derive from wildlife.

2) Regulations in game acts regarding hunting in Manitoba and its provincial parks should be reviewed. Some regulations as discussed in Chapter IV may be reworded in such a manner as to provide more control over hunting in provincial parks.

3) The 'split-season' hunting system for deer introduced to Manitoba in 1977 should continue in order to reduce hunting pressure in Whiteshell Provincial Park. Some form of zoning plan would restrict hunting in Whiteshell Park to locations distant to built-up areas. A designated hunting trail system would also remove hunting pressure from built-up areas. Both the zoning and hunting trail systems would therefore, reduce hunting related conflicts.

4) Hunters should be informed that provincial parks differ from other lands in Manitoba. Hunting regulations specific to provincial parks exist and these should be clearly defined in the annual hunting brochures. These regulations and any new restrictions could be distributed to hunters at park entrance points or hunters could be

required to check in at the park's administrative office. This measure would ensure that all hunters are aware of the park's hunting regulations.

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APPENDIX I

WHITESHELL PROVINCIAL PARK -- STUDY AREA

A. Park Classification

Whiteshell Provincial Park is designated as a Natural Park. According to Manitoba Parks Branch (1974) criteria for Provincial Natural Parks are:

1) Provincial Natural Parks should be relatively spacious land and water areas so outstandingly superior in quality and beauty as to make imperative their preservation by the provincial government for the enjoyment, education, and inspiration of all Manitobans and visitors to the province.
2) They should include a sufficiently comprehensive unit so as to permit public use and enjoyment and the effective management of a continuing representation of its flora, fauna or geology.
3) They should be adaptable to a type of multiple use management that can provide a wide range of opportunities for human enjoyment such as camping, picnicking, swimming, hiking, horseback riding, and sightseeing in a natural setting all consistent with the use of the renewable resources and the preservation of the characteristics or features that merited their establishment.
4) They should most often contain a diversity of resources and values including scenic and scientific.
5) They should not be less than 50 hectares in extent.

B. Climate

Whiteshell Provincial Park has a moist, subhumid, temperate climate characterized by warm summers and cold winters. There are seasonal and

annual temperature and precipitation variations. The transition between seasons is short with the change from winter to summer normally occuring in April and the change from summer to winter occurring in October. Some climate characteristics for this area according to Zoltai (1965) are:

1) Mean annual precipitation varies from 50 to 65 cm. with approximately 70% of the annual precipitation being rain (May to October) and 30% as snow (November to March).

2) Mean annual snowfall is approximately 140 cm.

3) Median snow depths in February range from 40 to 50 cm.

4) Mean temperature in July is 21°C and -20°C in January.

5) The average frost-free period varies from 75-125 days depending upon local topographic influences.

C. Vegetation

According to Zoltai (1965) major tree species in Whiteshell Provincial Park are: jack pine (*Pinus banksiana*), white spruce (*Picea mariana*), Trembling aspen (*Populus tremuloides*), and balsam fir (*Abies balsamea*). White pine (*Pinus strobus*), and red pine (*Pinus rubrum*) may be found in eastern portions of the park. Uncommon tree species occurring in Whiteshell Park include red ash (*Fraxinus pennsylvanica*), red maple (*Acer rubrum*), largetooth aspen (*Populus grandidenta*), eastern white cedar (*Thuja occidentilus*), black ash (*Fraxinus nigra*), white elm (*Ulmus americana*), bur oak (*Quercus macrocarpa*), Manitoba maple (*Acer negundo*), white birch (*Betula papyrifera*), and balsam popular (*Populus balsamifera*).

Numerous fens, bogs, shallow marshes, beaver ponds, bog lakes and freshwater lakes in Whiteshell Park support a variety of aquatic plant species. The forest understory and ground cover is also rich in plant diversity. The nature and quantity of vegetational cover is dependent upon site characteristics.

D. Infrastructures

Whiteshell Provincial Park is located approximately 140 km. east of Winnipeg, Manitoba. The total area of the park is 2,745 $km.^2$ Park access from the west is by Trans-Canada Highway 1, Provincial Highway 44 or Provincial Road 307. The road system within the park consists of the above mentioned roads as well as Provincial Roads 301, 309, and 312 with several short secondary roads radiating from these.

Several lakes in the park are intensively developed for recreational use. Lakes with cottage developments are listed in Table 5, and several of these lakes have campsites and picnic sites of varying sizes. There are two townsites in the park located at Rennie and Falcon Lake, with Falcon Lake being the most intensively developed lake in the park. It has a public beach, tennis courts, golf course, lawn bowling, campsites, cottages, ski-slope and several small service facilities.

Whiteshell Park has several trail systems. Nanka (1976) classifies these trails as follows:

1) Interpretive Trails:

   a) Assinika Interpretive Trail between West Hawk Lake and Caddy Lake 92.4 km.)

   b) Beaver Creek Interpretive Trail at Falcon Lake (3.1 km.)

   c) McGillivray Falls Interpretive Trail at McGillivray Lake (4.8 km.)

2) Hiking Trails:

   a) Amisk Hiking Trail at Brereton Lake (5.6 km)

   b) Bear Lake Hiking Trail at Bear Lake (8.1 km.)

   c) Pine Point Hiking Trail near Bannock Point at Provincial Road 307 (2.4 km.)

TABLE 5

COTTAGE DEVELOPMENTS IN WHITESHELL PARK
PRIOR TO 1977

LAKE	Number of Cottages
Caddy	156
West Hawk	378
Star	129
Hunt	8
Florence	30
Nora	19
Falcon	758
Pointe du Bois	159
Brereton	372
Red Rock	105
White	82
Jessica	110
Big Whiteshell	185
Barren	124
Barrier Bay	55
Dorothy	76
Otter Falls	96
Betula	175
Nutimik	218
Eleanor	57

Source: Manitoba Parks Branch, Sub-Division Records, 1976.

3) Cross-Country Ski Trails:

   a) Falcon Lake has two trails (13.6 and 9 km.)

   b) Falcon Lake/West Hawk Lake (11.6 km.)

   c) High Lake (5.7 km.)

4) Snow Shoe Trails:

   These trails are the same as the Interpretive and Hiking trails.

5) Power Toboggan Trails:

   There are power toboggan trails throughout the park (Figure 6 in Chapter III).

APPENDIX II

RECREATIONAL HUNTING POLICIES OF THE DEPARTMENT OF RENEWABLE RESOURCES AND TRANSPORTATION SERVICES

The Department of Renewable Resources and Transportation Services has developed minister-approved policies regarding recreational hunting in Manitoba. These objectives are not legislative statutes but provide guidelines for the department's programs. These objectives are subject to change depending upon the minister and government party in power.

Goulden (1976) presents these guidelines as assumptions:

Assumption #1:

That recreational hunting, properly carried out, is a valuable outdoor experience; one that creates in the participant and in society an appreciation for and an understanding of natural environments. As such, the Department should strive as far as possible under recognized constraints to allow recreational hunting whenever possible.

Assumption #2:

That the phrase 'properly carried out' implies the following conditions:

a) emphasis in recreational hunting should be on the quality of the outdoor experience rather than on the kill of the game

b) recreational hunting should be provided in a diversity of natural environments

c) novice hunters should receive special considerations in the design of recreational hunting purposes

d) recreational hunting programs should promote the role of skill and shrink the role of gadgets

e) all reasonable efforts should be employed to reduce crippling loss and minimize pain to the animal

f) a code of ethics based on respect and dignity should be accepted as an integral part of recreational hunting

g) recreational hunting, as far as possible, should be programmed annually.

Assumption #3:

That the following constraints enter the design of recreational hunting programs:

a) the hunting rights of all groups within society must be upheld

b) the rights of landowners and lessees must be upheld

c) the interests, feelings and opinions of non-hunters must be considered

d) danger and annoyance associated with hunting must be minimized

e) animal populations must not be endangered by hunting

f) hunting will be allowed only on the basis of a sustained wildlife yield

g) hunters dependent on wildlife for their essential food supply will be given priority over recreational hunters.

Assumption #4:

That recreational hunting, as far as possible, should be kept within the reach of all Manitobans who want to participate.