

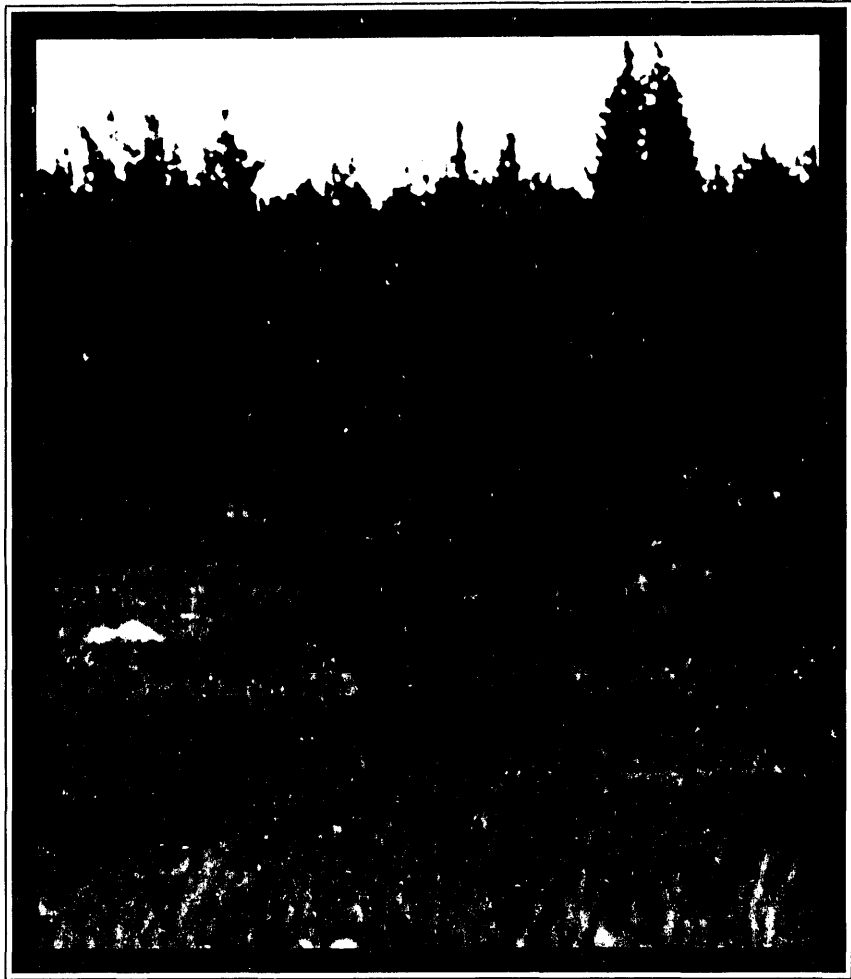
LEGISLATIVE ASSEMBLY OF THE
NORTHWEST TERRITORIES
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TABLED DOCUMENT NO. 80-87(1)

TABLED ON JUNE 10, 1987

Department of Renewable Resources

MACKENZIE WOOD BISON MANAGEMENT PLAN



Government of the Northwest Territories

TABLED DOCUMENT NO. 80-87(1)
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JUN 10 1987

**Bison Management Plan
for the
Mackenzie Wood Bison Herd
Northwest Territories**

June 1987

Dear Reader:

It is with pleasure that I provide you with a copy of the Mackenzie Wood Bison Management Plan. In 1983 we issued a Draft Plan and many people have responded to our request for a review of the plan. The comments received were carefully considered and many were used to develop the final plan.

Once again we welcome comments from any readers, no matter where you live, or from what perspective you would like to comment. Your written comments should be sent to:

*Director
Wildlife Management Division
Department of Renewable Resources
Government of the Northwest Territories
P.O. Box 1320
Yellowknife, NWT
X1A 2L9*

This plan will undergo a major review in ten years or sooner if circumstances warrant. Comments received between now and 1997 and during the ten year review will all be taken into consideration.

I hope you find our Plan interesting and informative. I am sure we all look forward to the day when wood bison are no longer considered an endangered species.

Yours sincerely,



*J.W. Bourque,
Deputy Minister.*

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INTRODUCTION

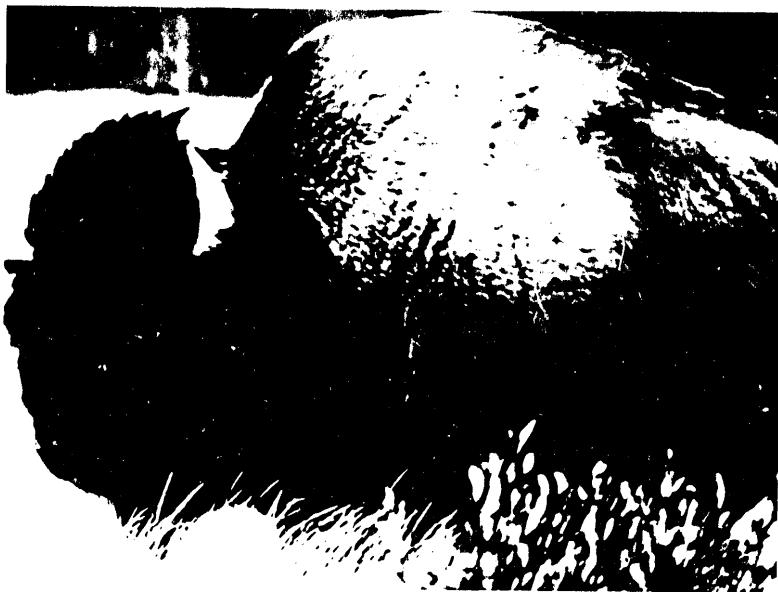
Background

In October 1983, the Department of Renewable Resources released the draft "Mackenzie Wood Bison Management Plan". The document outlines a number of options for managing the wood bison population in and around the Mackenzie Bison Sanctuary. It invited comment from residents of the Northwest Territories and other Canadians, conservation organizations, and government agencies with an interest in wood bison conservation. A series of public meetings was held to review the draft plan and the media provided coverage of the document.

Fish and game associations, resident hunters in the Northwest Territories and conservation groups generally recommended that hunting be deferred temporarily. This would permit more time for studies on the biology of wood bison to determine an optimum size and structure for the population. Another concern expressed by resident hunters was the equitable allocation of the harvest to all interested groups of the hunting public in the Northwest Territories.

There was support for using bison for transplants into unoccupied habitat, but concern was expressed about the effects of disturbance caused by capture operations. Several comments were received suggesting that population management should encourage range expansion into all adjacent habitat. Concerns were also expressed about conflicting land use activities and it was recommended that activities detrimental to the bison be excluded from the bison range.

Based on evaluations of comments received, and new information from continuing population and habitat inventory programs, the Department of Renewable Resources has formulated a plan for managing the wood bison resources.



Current Status

Since the release of the draft Wood Bison Management Plan in 1983 research has continued on the size, composition, distribution, habitat availability and habitat use by the Mackenzie wood bison herd. The results of this research are summarized below.

During a census conducted in July 1984, 1206 wood bison were counted (Fig. 1). This count is considered to be the minimum population size as bison are easily overlooked when they are in heavily forested areas. Calf production has been good since 1983 with around 50 calves per 100 cows, two years old and older, being recorded during the summers of 1984 and 1985. Again these counts are considered to be minimum figures.

The area occupied by wood bison has continued to expand (Fig. 2). In March 1983, 76 bison were observed west of the Horn River near Mink Lake. In July 1984, 217 bison, including 32 calves were found there. Relocation data from five bison radio collared in February 1986 indicates that there are regular movements between the Mink Lake area and the area within the Sanctuary.

A habitat evaluation program was conducted to determine the range, composition and biomass of forage available to wood bison within the boundaries of the Mackenzie Bison Sanctuary. This evaluation involved the application of remote sensing techniques, interpretation of aerial photographs, and detailed habitat work on the ground. The results of this evaluation indicate that, based on even grazing pressure throughout the various habitat types found within the Sanctuary, the available forage could support at least 7100 wood bison.

Studies started in July 1986 indicate that grazing pressure may not be spread evenly between habitats. Further research is required to determine the distribution of bison grazing and the effects this will have on the number of wood bison which could be supported in the area.



K. Poole

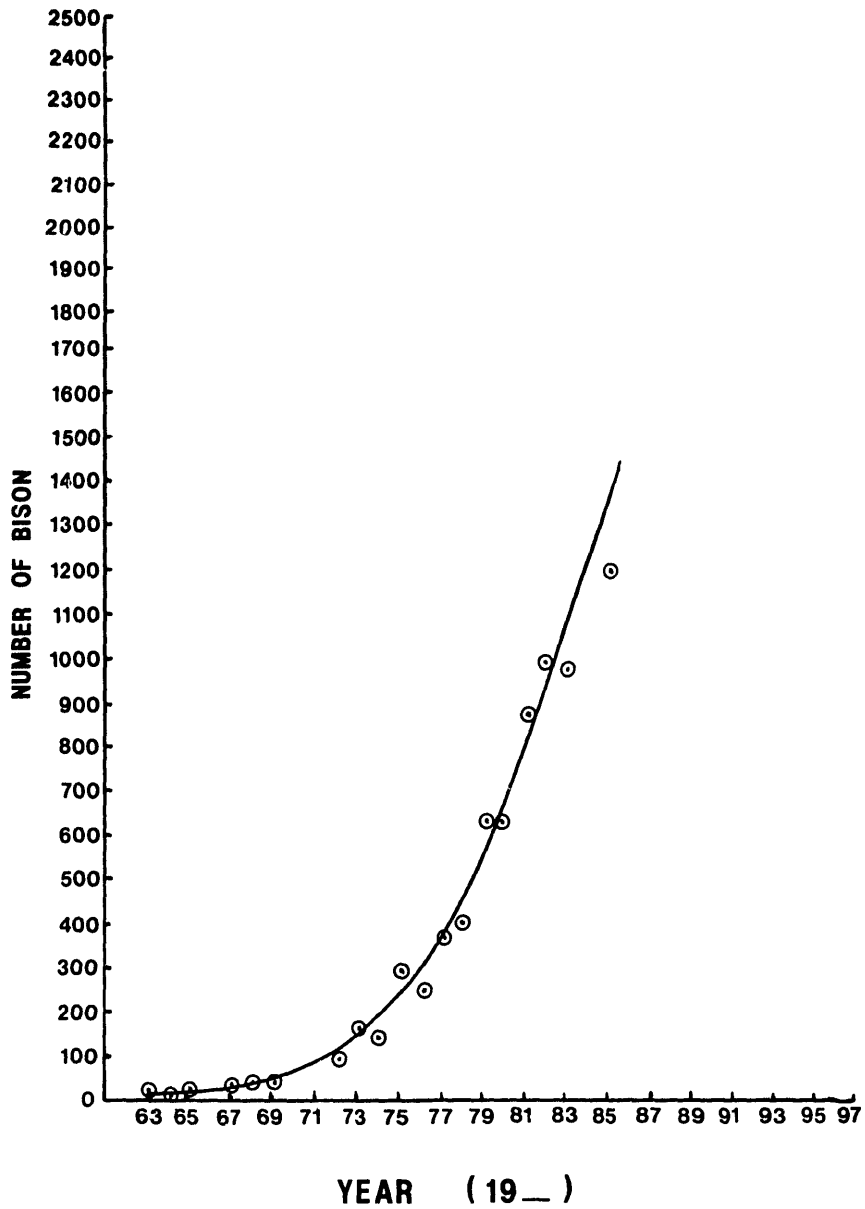


Figure 1. Growth of the Mackenzie wood bison population, 1963 - 1985.

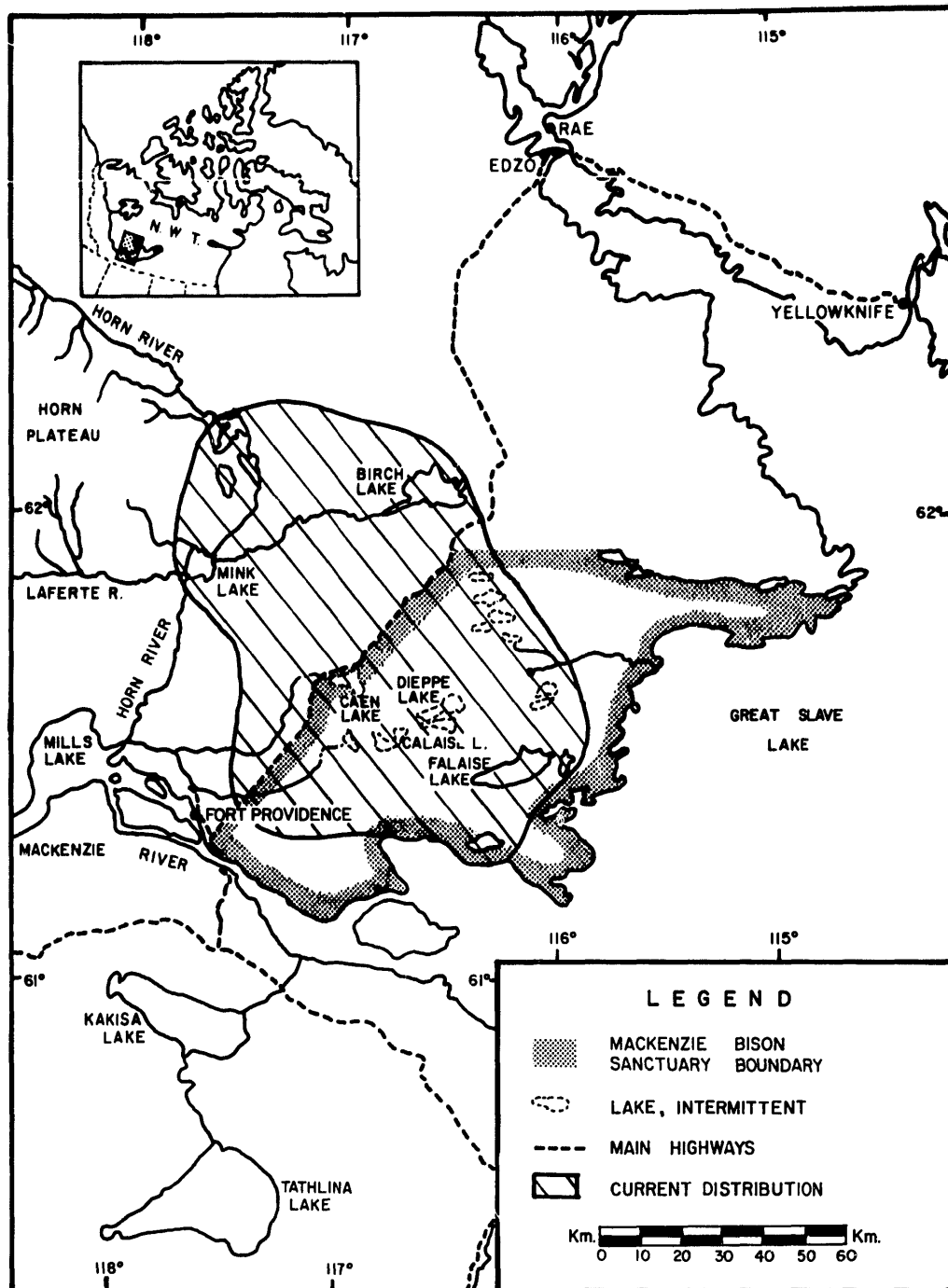


Figure 2. Current distribution of the Mackenzie wood bison population.

IMPLEMENTATION STRATEGY

Management Goals

Wood bison are currently identified as "endangered" by the Northwest Territories Act, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), and the Red Data Book of the International Union for the Conservation of Nature and Natural Resources (IUCN). The Convention on International Trade in Endangered Species (CITES) lists wood bison on Appendix I. The Mackenzie wood bison herd is the largest herd of wood bison in the world and is the only truly successful reintroduction to former habitat. This herd will contribute to the eventual removal of wood bison from these lists. In fact, the increase in population size of the Mackenzie herd and others has prompted the Western Wildlife Directors to recommend that COSEWIC consider downlisting the wood bison from endangered to threatened in the spring of 1987.

In recognition of the international importance of this world class resource, management of the herd will continue to be very conservative. However, recognition must also be given to the importance of wildlife to residents of the Northwest Territories. Therefore, opportunities will be provided for modest economic development of the region through non-consumptive and consumptive uses of the herd.

Accordingly, the goals governing management of the Mackenzie wood bison herd are as follows:

- 1) To maintain a viable, free-ranging herd of wood bison. Since this is the major wild herd of wood bison in the world, this population must first and foremost be maintained in a healthy and productive state. This goal will supersede all others.
- 2) To utilize the herd to increase the distribution and numbers of wood bison by encouraging continued natural expansion of the range of the herd and by providing animals for transplant to other suitable habitat locations in the Northwest Territories and other areas in Canada.

Natural expansion and reintroduction of wood bison to suitable habitats will reduce the impact of local events such as fire, unusually severe winters, or outbreaks of disease. The intent of this goal is to increase the number and distribution of wood bison in order to ensure the survival and genetic integrity of the subspecies.

- 3) To plan for the best utilization, by residents of the Northwest Territories, of animals surplus to the first two goals.

A healthy population of wood bison will provide economic opportunities for Northwest Territories' residents. The amount of non-consumptive and consumptive use permitted will be dependent on the health of the herd, the success of range expansion and transplant programs, and the requirements for animals for transplantation to other jurisdictions.

Management Objectives

The following objectives will direct the management of the Mackenzie wood bison herd. These objectives are consistent with the direction established by the World Conservation Strategy.

- 1) To permit the number of bison in the Sanctuary and surrounding area to increase through natural reproduction and recruitment to target levels.

Habitat evaluation studies indicate that the available forage in the Mackenzie Bison Sanctuary could support 7100 bison. However, questions regarding the pattern of habitat use by the bison suggest that it would be wise to approach this population size slowly. If the bison population reached a level higher than could currently be sustained by the available forage, severe and possibly permanent damage to their habitat could result, followed by a significant increase in mortality.

- 2) To establish other populations of wood bison in the Northwest Territories.

This objective includes: enhancing the recently introduced Nahanni-Liard herd through introduction of more animals; identifying areas which will support new bison populations and introducing bison to these areas; and enhancing the expansion of the Mackenzie wood bison population into unused habitat adjacent to the herd's current range.

- 3) To maximize opportunities for non-consumptive and consumptive use of the wood bison resource for the benefit of all people in the Northwest Territories and Canada.

Non-consumptive use includes tourism for naturalists and the general public, while consumptive use refers to hunting for meat and/or trophies.

The allocation of the prescribed harvest will be based on the following priorities:
(a) General Hunting Licence holders (GHLs) who live and/or traditionally hunt in the area.

(b) Other Northwest Territories resident hunters will receive a portion of the allowable harvest.

(c) Non-resident and non-resident alien hunters, who will require an outfitter.

- 4) To develop a comprehensive land management strategy to ensure continued high productivity of the bison herd and to protect bison range from competing land uses.

This objective will also involve determining the rate of natural habitat change, improving habitat quality for bison if necessary and feasible, and developing an appropriate fire management strategy for the bison range.

Resource Development

Population Management

Based on the observed rate of increase, in which the population doubles every three years, and the 1984 estimate of 1206 bison, the target population of 7100 bison will be reached by 1992. However, by 1993, the population will likely have exceeded the target level and be at a level where damage to the bison range would occur.

It is necessary, therefore, that the growth rate of the population be slowed through removal for transplants and by the implementation of regulated harvesting. This will permit continued research on the production and distribution of bison forage, the patterns of forage utilization, and the impact of different grazing pressures on vegetation. With data from this research the optimum number of bison for this range can be clearly defined before the population reaches a critical density.

During this period of reduced growth the productivity and size of the population will be intensively monitored. Research will also be conducted on the role and importance of different age and sex classes in reproduction and the colonization of new habitat, the rate of interchange between the Sanctuary and Mink Lake areas, and the physical condition of bison in the herd.



C. Gaters

Habitat Management

Since a majority of the world's bison population is concentrated in a core area within the boundaries of the Sanctuary, fire suppression will be encouraged for the present, more for protection of the bison than for the habitat. Fire is recognized as being beneficial to maintenance or improvement of bison habitat under some circumstances. Studies on the Farewell, Alaska bison herd have shown an extension in winter distribution and an increase in sedge dominated habitat after a moderate-to-severe burn in 1977. At Mink Lake, west of the Mackenzie Bison Sanctuary, two fires during a seven year period resulted in the regeneration of favourable bison habitat. Evaluation of post-fire revegetation of the area has not been completed; however, preliminary observations indicate that sedges and grasses are abundant in much of the area. Bison were observed in the burn shortly after the fire in 1980. In July 1984 over 200 bison were seen in this burn.

Currently the "Sustained Attack Zone" of fire suppression, as designated by Indian and Northern Affairs Canada, extends 35 km on either side of the Yellowknife highway. The remainder of the bison range including Dieppe, Falaise and Mink lakes, falls within the "Observation Zone", in which fire suppression can occur but is not necessarily guaranteed. Generally, however, fire suppression is practised in the Sanctuary and is encouraged by the Government of the Northwest Territories.

With the transfer of responsibility for forest management and fire suppression to the Government of the Northwest Territories, fire suppression requirements and designation of the bison range will be reviewed.

Natural succession influences the quality of bison habitat in the Sanctuary. Sedges colonize newly emerged lake basins providing new habitat. Lake shores supporting grasses and sedges are invaded by shrubs, and eventually forests may replace the shrubland. The rate of change of bison habitat needs to be evaluated for the Sanctuary area.

The present status of the Mackenzie Bison Sanctuary, as described under the Northwest Territories' Wildlife Act, does not preclude occupation of the land for the purposes of agriculture, quarrying, petrochemical development or other land uses not compatible with bison production. In recognition of the importance of this area to the health of the wood bison population, the Government of the Northwest Territories will strive to withhold important bison range from competing land use activities through the creation of a "Wildlife Conservation Area".

The proposed "Wildlife Conservation Area" will encompass the core of the current bison range around Caen, Calais, Dieppe, and Falaise lakes. The boundaries of this area have been tentatively identified in the draft "Wildlife Areas of Special Interest to the Department of Renewable Resources" paper.

Tourism

Considerable potential exists for developing a tourist industry based on promotion of the wood bison. The greatest opportunity is available to the community of Fort Providence, which is the nearest human population centre. Individuals or organizations in Fort Providence may wish to develop tourist attractions in or near the settlement and/or to offer guided nature tours to photograph wood bison in the nearby wilderness of the Mackenzie Bison Sanctuary.

A community-based interpretive centre could provide displays, films and slide shows to passing tourists. Bison product handicrafts could be made available for sale if collections or hunts supply the new materials. The community may benefit by an increased flow of travellers into town from the Yellowknife highway route.

In order to increase public awareness and appreciation for the species, information centres employing descriptive signs will be constructed along the highway. The Caen Lake area near the highway will be reserved for non-consumptive use. Given the high international profile of wood bison, non-consumptive use of the herd will be encouraged with appropriate constraints on excessive human disturbance.

Transplants

If areas of suitable habitat which can support viable populations are identified, then consideration will be given to stocking them with wood bison from the Mackenzie wood bison herd. This will provide an opportunity to reduce the herd's rate of increase and establish new wood bison populations.

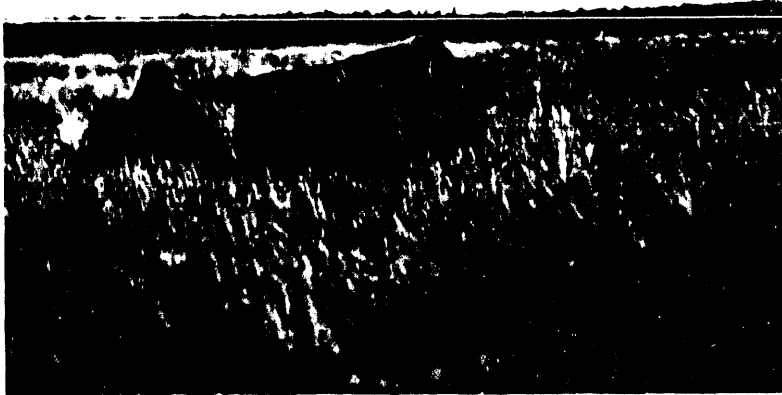
New sites must be sufficiently isolated from hybrid populations which are diseased (tuberculosis and brucellosis) and from plains or hybrid bison populations introduced to ranches or into the wild. As bison are capable of moving long distances, we must increase our monitoring for the presence of disease. If dispersing bison threaten to contaminate adjacent herds either genetically or through disease then they will be destroyed.

Wood bison from the Mackenzie herd may also be used to increase the number of bison in the Nahanni-Liard area. This will depend upon the results of studies of the factors affecting reproduction and survival in the existing Nahanni-Liard population.

Hunting

In accordance with the objective to approach the target population of 7100 at a reduced rate, hunting will be used as a tool to regulate the rate of increase of the Mackenzie wood bison population.

An initial harvest of 20 bulls will take place in the fall of 1987. This harvest is not expected to have an impact on the productivity of the herd. It will, however, allow us to evaluate the impact of the disturbance caused by hunting and gain experience with harvesting bison.



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In the fall of 1988 the harvest will be increased to 40 animals. Again, this harvest is expected to have little impact on the productivity of the herd but it will provide additional data on the effects of harvesting.

In 1989, the harvest will be set at the level required to reduce the rate of increase of the population. The level will depend upon hunting impact, the results of censuses and productivity counts, evaluations of habitat and habitat use, and requirements for animals to transplant to other locations.

At the outset all hunting will be supervised by Renewable Resource Officers. Accompanied hunts will permit the collection of biological samples, the evaluation of the health of the bison (e.g., condition, parasite loads, and diseases), eliminate crippling losses, reduce disturbance to the population and ensure that mandatory harvest information is collected. Hunting will be restricted to a specified season in designated areas away from areas being used for non-consumptive purposes.

The available tags will be divided between General Hunting Licence holders (GHLs) and resident hunters with GHLs receiving 16 of the initial 20 tags and residents receiving the remaining four tags. In 1988 the proportion of tags will remain the same with GHLs receiving 32 tags and residents receiving eight tags.

The allocation of the GHL tags will be based on the recommendation of the Fort Providence Hunters' and Trappers' Association and the Fort Rae Dene Band Council. The allocation of the resident tags will be through a draw system. This system will include an annual application and an ineligibility period for hunters who are issued tags.

The allocation of future quotas will be influenced by the Renewable Resource Management Advisory Board which has been created to advise the Minister on wildlife matters in the Mackenzie Valley.

Biological Studies and Inventory

In order to ensure that adequate research and monitoring of bison in the NWT occurs the Department will make significant increases to the manpower and funding devoted to bison in January of 1987. A full time bison ecologist and technician will complement the efforts of other researchers and Renewable Resource Officers.

Population Growth and Productivity

Calf production and survival will be determined annually from detailed composition counts. Counts will be made during the post-calving period (June-July) and again in late fall. This will permit differentiating calf mortality into summer and winter components. Since calf production and recruitment data will be collected each year, it will not be necessary to determine total population size annually. Total counts will be made opportunistically each year during the course of other work, or every second year if a reliable estimate has not been obtained during the interim.

Frequency of wolf predation and other sources of mortality will be monitored. Tuberculosis and brucellosis are serious diseases of bison in the Slave River Lowlands and in Wood Buffalo National Park. Examinations of 10 wood bison collected in March 1982 and 10 wood bison collected in March 1986 failed to reveal evidence of either disease. Blood samples collected from an additional 11 wood bison captured and released in March 1986 tested negative for brucellosis. Although these results are encouraging, continued monitoring of health and disease status is required. Annual collections of 10 bison will be made in addition to the harvest and complete necropsies will be performed, including gross examination, serology, histology and culturing of tissues. Reproductive status in relation to age and condition will be determined. Samples will be collected for a study on genetic differentiation of subspecies of bison. All meat and by-products not required for the studies will be provided to the Fort Providence Hunters' and Trappers' Association. Community participation will be encouraged, affording an opportunity for hunters to become familiar with hunting and handling bison.

Habitat Evaluation

Several areas appear to offer suitable habitat for expansion of the existing population. These include the area west and north of Mink Lake, the area north of the Sanctuary, and the area now occupied near Mink Lake. These areas will be evaluated for their suitability as bison habitat.

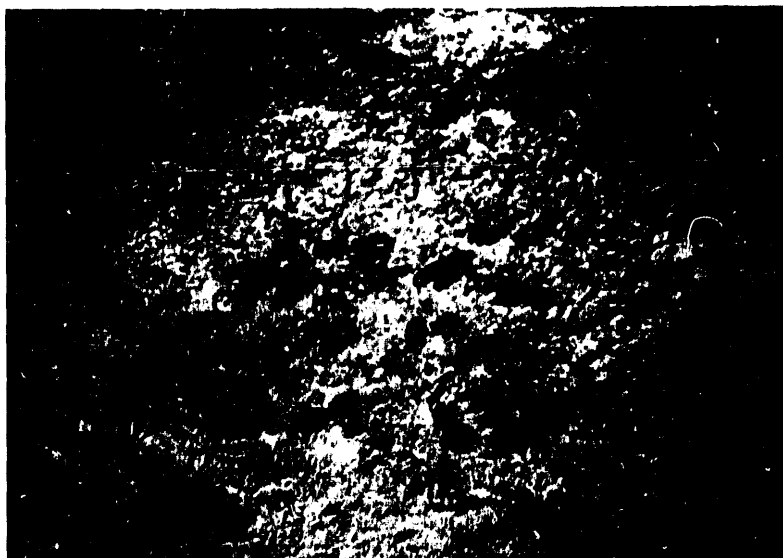
Evaluation of the Mink Lake area will provide information on the role of fire in improving bison habitat. Species composition and distribution of forage biomass will be evaluated.

Range condition will be monitored on the bison range. The rate of invasion of lake beds by sedges and shrubs will be studied as will plant utilization in areas of high bison concentration. Further work will be carried out to map the habitat of the area.

Habitat Use and Range Expansion

Although the structure and dispersion of vegetation in the area will be described under the Habitat Evaluation Program, it will be important to determine levels and patterns of resource use by bison. Determining the suitability of new habitat, or the habitat limits to population growth in an occupied area requires a knowledge of which habitats bison prefer. This information includes the components of diet and shelter selection, in all seasons, and under varying snow conditions.

Radio telemetry will be used as a tool for studying seasonal movements and habitat use patterns. This will permit identification of seasonally important ranges, such as calving and rutting areas, and thus vegetation communities prone to overgrazing. Radio monitoring of movements will assist in determining the importance of peripheral males as breeders or colonizers of new habitat as well as the relationship between bison in the Mink Lake area and in the Sanctuary.



C. Gates

Summary

This plan has been developed to provide the Department of Renewable Resources and the public with guidelines for the management of the Mackenzie wood bison herd. It is also designed to inform the public of the steps the Department plans to take to ensure the ongoing viability of the herd, to improve the world wide status of the wood bison, and to enhance the consumptive and non-consumptive uses of this renewable resource.

It should be recognized that the management of a natural resource must be dynamic as are the factors influencing the resource. Therefore, it may be necessary to make adjustments to our objectives as a result of changes in the ecology of the wood bison. None of the changes will ever compromise the goal of maintaining the Mackenzie wood bison herd as a viable, free-ranging herd.



K. Poole

