OPERATIONAL

RESOURCE MANAGEMENT

PLANS

Mount Revelstoke and
Glacier National Parks

1978

*NOTE: a) Based on Existing Act, Regulations, Policies, etc. without the benefit of a completed Bio-Physical Resource Inventory.

These Operational Resource Management Plans were prepared from the Interim Plans of 1976. Some changes were implemented to update the plans to present conditions.

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OPERATIONAL RESOURCE MANAGEMENT PLAN

FOR

PUBLIC SAFETY

MOUNT REVELSTOKE AND
GLACIER NATIONAL PARKS

PUBLIC SAFETY MANAGEMENT PLAN

INTRODUCTION

The Warden Service has the responsibility of ensuring the safety of the public travelling in and through Mount Revelstoke and Glacier National Parks. This responsibility falls into many categories, some of which are handled as routine everyday duties, others of which have specific management plans. The majority of these public safety categories will be covered in this management plan.

OBJECTIVE

The objective of the public safety program is to ensure the safety of the public travelling in and through Mount Revelstoke and Glacier National Parks.

SUB-OBJECTIVE I: HIGHWAY TRAFFIC ACCIDENTS

To protect the public of highway traffic accidents within the Parks.

MANAGEMENT ACTIONS I

1.1 Each accident must be assessed individually and handled as such, but basic actions fit most accidents.

1.1.1 Control traffic to ensure that more accidents do not occur from traffic problems caused by the first.

1.1.2 Arrange for first aid treatment and evacuation of injured to proper medical aid.

1.1.3 Preserve or retain any item or information to the accident investigation until R.C.M.P. arrive to take charge.

1.1.4 Make note of any circumstances that can be related to the possible cause of the accident.

1.1.5 Complete accident form and notify senior officer if R.C.M.P. are not in attendance.

1.2 Anyone requiring further information should consult "Trans-Canada Highway Accidents in Glacier National Park" by R.O. Wood, which gives a detailed account of procedures to be followed. (Copy in Wardens' Library).

SUB-OBJECTIVE II: AVALANCHE HAZARD

Protection of public from avalanches affecting the Trans-Canada Highway within the Parks.

MANAGEMENT ACTIONS II

2.1 Warning signs reading "Avalanche Area Do Not Stop" are erected on the T.C.H. before all avalanche paths.

2.2 When avalanche conditions are unstable but not critical a Yellow form is issued.

- 2.2.1 When a Yellow form is in effect all traffic is warned at the Park Gates to travel with extra caution and to say alert.
- 2.2.2 All work activity being carried out in slide areas is haulted.
- 2.2.3 All Warden and SRAWS personnel not on days off go on standby.

2.3 When avalanche conditions become critical a Red form is issued.

- 2.3.1 T.C.H. is closed to all traffic except essential Park services.
- 2.3.2 Stabilizing gunfire action is initiated.
- 2.3.3 Warden Service blocks T.C.H. at required points and sweeps area to be sure all traffic is clear.

2.4 Warden Service initiates search and rescue action if a person or persons are suspected to be caught in an avalanche.

- 2.4.1 Details of procedure are in Search and Rescue Plan, Mount Revelstoke and Glacier National Parks. (Copy in Wardens' Library).

2.5 When it is necessary to close the T.C.H. for an extended period of time (for avalanche control or any other emergency), a White form is issued.

2.6 The Chief Park Warden is delegated the authority to effect closures by the Superintendent.

SUB-OBJECTIVE III: HIKING

Protection of hikers within the Parks.

MANAGEMENT ACTIONS III

3.1 Hiking trail guides for Mount Revelstoke and Glacier National Parks are issued free of charge, describing the hiking trails including their degree of difficulty.

3.2 A current and up-to-date trail report is issued each week describing trail conditions.

3.3 All overnight hikers must register "out and in" at designated points within the Parks.

3.3.1 Hikers failing to register back when expected are first checked by attempting to locate their vehicle. If the vehicle is gone it is safe to assume they have returned and left the Parks.

3.3.2 If the vehicle is not gone or no vehicle was registered the general rule is to allow an overnight grace period. This time may be extended or reduced depending on factors such as weather, hiking area, number in party, etc.

3.3.3 If hikers are deemed missing or late, a search is initiated. The extent of the search depends on manpower and equipment available and may be on foot, by air, with dog assistance, or by whatever means seems most suitable.

3.4 Persons reported missing or late by companions, etc. are generally searched for as soon as possible.

SUB-OBJECTIVE IV: CLIMBING

Protection of mountain climbers within Mount Revelstoke and Glacier National Parks.

MANAGEMENT ACTIONS IV

4.1 A climber's route and map book compiled from photos taken by the Park is available for climbing reference.

4.2 Copies of "Climbers' Guide to the Interior Ranges of B.C." are available for climber's reference.

4.3 Climbing information is given out only by knowledgeable personnel.

4.4 An updated and complete search and rescue plan is maintained for each Park.

4.5 A fully equipped rescue room, and personnel qualified to use such equipment, are located at Glacier National Park compound.

4.6 All climbers must register "in and out" at designated points within the Park.

4.6.1. Registrations are checked at least twice daily.

4.6.2 Overdue registrations are first checked by a vehicle check as with overdue hikers.

4.6.3 Overdue parties, depending on weather, severity of climb, number in party, are generally given a 24 hour period of grace. This time may be reduced, such a face climb on Sir Donald, but is seldom extended.

4.6.4 Search and Rescue operations are then initiated as outlined in the search and rescue plan for each Park.

SUB-OBJECTIVE V: DANGEROUS ANIMALS

Protection of the public from dangerous animals within Mount Revelstoke and Glacier National Parks.

MANAGEMENT ACTIONS V

5.1 All visitors in campgrounds and buying permits at the Gates are issued a "You Are in Bear Country" pamphlet.

5.2 All areas where grizzly have been sighted are posted with warning signs.

5.3 All areas where grizzly sows with cubs have been sighted will be closed.

5.4 Closed trails will be patrolled regularly by Warden Service personnel and re-opened when no sightings or fresh signs have been noted for a period of two weeks.

5.5 Every attempt will be made to remove, by trapping, tranquilizing, relocating, etc. any bears causing trail closures or problems in campgrounds.

5.5.1 Refer to Wildlife Resource Plan - Management Action 1.

SUB-OBJECTIVE VI: BACKCOUNTRY USE

Protection of winter back-country users within Mount Revelstoke and Glacier National Parks.

MANAGEMENT ACTIONS VI

6.1 All trails are posted with avalanche warning signs.

6.2 Certain high risk avalanche zones and gunfire control zones are closed to public travel.

6.3 All persons engaged in any winter outdoor activity must register "in and out" at specified park locations.

6.3.1 In Glacier National Park visitors must register in person at the Communicationns Centre.

6.4 All overdue registrations are checked promptly.

6.5 Qualified personnel for rescue work are available at all times.

6.5.1 Detailed information on avalanche rescue is outlined in the Parks Search and Rescue Plan.

6.6 Refer to Backcontry Management Plan.

SUB-OBJECTIVE VII: WATER ORIENTED ACTIVITIES

Protection of visitors engaged in water oriented activities.

MANAGEMENT ACTIONS VII

7.1 As very few water oriented activities are carried out in these Parks no management actions have as yet been established.

SUB-OBJECTIVE VIII: ACTIVITIES REQUIRING REGISTRATION

Designation of activities requiring registration.

MANAGEMENT ACTIONS VIII

8.1 General Regulations require posting of activities which require registration with the Warden Service. Activities to be included are: mountain climbing, ski touring, cross-country skiing, overnight camping, kayaking, canoeing and scuba diving.

8.1.1 Public notices are posted at Information Centers and Registration Stations.

REFERENCES

Parks Canada — Trans-Canada Highway Accidents in Mount Revelstoke and Glacier National Parks - unpublished

Parks Canada — Mount Revelstoke and Glacier National Parks - Winter Guide Manual unpublished

Parks Canada — Mount Revelstoke and Glacier National Parks - Search and Rescue Plan

Climbers Guide to the Interior Ranges of British Columbia.

OPERATIONAL RESOURCE MANAGEMENT PLAN

FOR

AVALANCHE RESEARCH AND CONTROL

GLACIER NATIONAL PARK

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PART A

AVALANCHE RESEARCH AND CONTROL

INTRODUCTION

Avalanches occur in all mountain areas which receive enough snowfall to overcome the roughness of the terrain. An untold number of avalanches precipitate each year, with far the majority being of little concern. Only when avalanches endanger man, his works or property does an avalanche hazard condition exist.

In the early 1950's, with the beginning of the Trans-Canada Highway construction through Mount Revelstoke and Glacier National Parks attention was focused on Rogers Pass - the only feasible passage through the Selkirk Mountain Range - despite the fact that the avalanche problem encountered presented the largest direct avalanche control problem in the world. (160 avalanches at 96 separate road sites). From 1885-1916 the C.P.R. operating through the entire Rogers Pass on the valley floor lost approximately 250 lives and untold dollars to avalanche activity, until the completion of the Connaugh Tunnel which avoided the eastern part of the Pass. This reduced the problems for the railroad, but in no way did it eliminate them.

In 1954 avalanche surveys throughout the area were started by D.P.M. and subsequently defence construction to protect the T.C.H. The defences we have today (snowsheds, rupture zones, mounds, benches, diversion dams) are a result of these initial surveys and developments, and additional improvements over the years for static defence planning. The surveys were later enlarged to include operational research and were taken over by the National Parks in 1959.

Recognizing the magnitude of the problem and the resulting requirement for specialized expertise, management created the "Snow Research and Avalanche Warning Section - SRAWS" which was entrusted with the following goals:

1. Develop and operate a workable Avalanche Forecast System.
2. Find or develop a suitable avalanche control weapon.
3. Develop and operate a reliable avalanche safety program (e.g. shooting, road closures, identification of avalanche hazard areas and proper signing, coordination of C.P.R. operation, avalanche rescue procedure).
4. Be responsible for public and employee safety in regard to avalanche hazard in conjunction with the Resource Conservation Service in the Parks.
5. Control and reduce if possible, avalanches affecting the C.P.R.
6. Start a program of operational research to improve methods and procedures used in the control program.
7. Maintain technical data on all factors related to avalanche control.
8. Education of employees and public in regard to the avalanche control program.
9. Develop proper avalanche rescue methods and procedures within the program and initiate rescue operations.

SUB-OBJECTIVE I

To Develop and Operate a Workable Avalanche Forecast System

Facing the largest direct avalanche control problem in the world, it was realized that to produce safe working conditions for the employees and an avalanche-safe highway for the public, it would require exceptional expertise in avalanche forecasting.

Only a reliable avalanche forecast program would permit, in the eyes of world-renowned consultants, an acceptable standard of avalanche control in the Rogers Pass.

MANAGEMENT ACTION I

To meet the above requirements, a large data collecting system concerning climate, snowpack, avalanche activity, and meterorological factors, was set up. The gathering of these data started by D.P.W. was taken over by SRAWS and a reliable avalanche forecast system was initiated. Through on-going operational research, this system is continually being refined as new factors become available and are added to the data.

To accomplish this task SRAWS operates the following stations in the control area:

a) Rogers Pass - Main Office and study area, elevation 1330 m., central location.
b) Mt. Fidelity - high elevation observation, elevation 2100 m., continuously occupied.
c) Mt. Abbott - high elevation observatory, elevation 2100 m., visited weekly or when required.
d) Glacier Study Area - centrally located at 1140 m. elevation, weekly observations or as required.
e) Round Hill - Telemetric Wind, Humidity and Temperature station - continuously operating. Elevation 2100 m. located Western Park boundary (Glacier).
f) MacDonald West Shoulder - centrally located, elevation 1950 m. Wind - Temperature and Humidity Station (telemetry), continuous record.

g) East and West Gate - located at the East and West perimeters of Mount Revelstoke and Glacier National Parks, elevation approximately 650 m. Temperature and snowfall available on demand from Gate personnel.

h) Hermit Meadows - centrally located, elevation 1900 m. wind temperature, humidity and precipitation are recorded (telemetry).

A number of other outlying stations are in use and only visited or used when snow conditions so require.

Based on the observations taken at the above stations, an avalanche hazard elevation is produced by the Avalanche Hazard Analyst. (See published paper NRC Technical Memorandum #98).

The resultant Forecast is expressed in the Yellow, Red or White avalanche hazard forecast forms which govern the whole avalanche safety program in Rogers Pass.

SUB-OBJECTIVE II

To Find and Develop a Suitable Avalanche Control Weapon

The control weapon must be capable of delivering a sufficiently large explosive charge to individual avalanche trigger zones over a horizontal distance of up to 5 miles and a vertical distance of up to one and a half miles. The weapon must have total blind firing capability and accuracy of delivery during storms and winds, of 25 feet radius; rugged construction to permit firing of up to 100 shells at a time; and movability to permit coverage of the over 20 miles of highway in the control area.

Other controlling factors are the continuous availability of the weapon, repair capability and an ample supply of ammunition.

MANAGEMENT ACTION II

Initially trials with Mortars 4'2" and 81 m/m were carried out. Both weapons did not meet accuracy and blind shooting requirements were badly affected by storm conditions, and had a very high "dud" rate.

The next tests were carried out with the 105 m/m and 75 m/m Howitzer. These weapons did not meet the requirements when used in the normal Army drills. They were meant as area and not point weapons. Only after several conversions and additions (placement development) did the 105 m/m Howitzer become the mainstay of the operation, meeting all present requirements.

In anticipation of further required improvements in the operational set-up (increased traffic, higher safety standards, etc.), the search for a more suitable weapon must be continued. In pursuing this goal the "Avalancher" and helicopter bombing were tried and found totally unsuitable for the area. Further pursuit of this goal remains as a continuous assignment of the SRAWS (Section).

SUB-OBJECTIVE III

To Develop and Operate a Reliable Avalanche Safety Program

With the finding of a suitable weapon and the development of a reliable forecast system the next step was development of operational procedures for an avalanche stabilization program and avalanche rescue.

The following Factors had to be considered:

Traffic density of highway and C.P.R.
Location of avalanche safety areas for stopping.
System of road closure and physical clearing of traffic from the operational area.
Avalanche rescue planning.
Speed of control procedure.

MANAGEMENT ACTION III

The Avalanche Hazard Analyst has been designated as the man in overall charge of the Avalanche Safety Program. This includes planning, supervising and co-ordinating such functions as road closure, train movement, gun deployment, road clearing within the control area and safe effective avalanche removal. He also determines the need for and initiates avalanche rescue operations and procedures in cooperation with the Warden Service.

The first step towards this goal was the identification of avalanche safe areas and the proper signing of the same. Road block sites, providing sufficient and safe space for stopping traffic were found and marked. Gun position sites had to be located and constructed to permit efficient and safe engaging of targets for avalanche control.

An information system in regard to avalanche hazard was set up, to give comprehensive coverage to all agencies concerned. The yellow-red-white forms become the vehicle for this purpose.

A workable road closure system has been established to permit the timely and safe holding of all traffic (highway and C.P.R.) as well as the almost instantaneous closing of transportation routes for emergencies (natural effective avalanches). This was achieved by the manned road block system, the incorporation of the 24 hour/day Park Gates and the erection of remote controlled road closure signs.

To familiarize all personnel involved in the program with all its parameters, a continuous program of familiarization has been initiated.

SUB-OBJECTIVE IV

To Be Responsible For Public and Employee Avalanche Safety

To provide avalanche safety for the travelling public and operational personnel on the Trans-Canada Highway and the C.P.R.

MANAGEMENT ACTION IV

Through the established avalanche control procedure effective avalanche releases will be controlled.

By using the avalanche hazard warning forms, no public or operational traffic will be exposed to unforeseen avalanche activity.

To make the use of the warning forms effective, lectures in regard to the operational involvement are held and continuously upgraded.

Literature to advise on behavior during winter use of the area is avalilable and issued to the public and operational personnel.

Existing avalanche hazard is dealt with by ordering road closures for the designated area and the controlling of maintenance work within the blocks to prevent unnecessary exposure.

SUB-OBJECTIVE V

To Control and Reduce Avalanches Affecting the C.P.R.

The avalanche safety program for the T.C.H., strongly affects and benefits the C.P.R. operations.

MANAGEMENT ACTION V

Avalanche hazard criteria for the C.P.R. were established. With these on hand avalanche categorizing was possible. With the information obtained, a workable cooperative agreement with the C.P.R. was proposed.

The C.P.R. National Parks Avalanche Control Agreement was drafted, approved by all parties and signed. The Agreement can be cancelled by either party at any time provided six months notice is given.

In the agreement, the control of avalanches for the benefit of the C.P.R. and Parks were identified with C.P.R. paying one-third of the ammunition costs. In addition, targets only affecting the railroad were identified and the National Parks agreed to control these for the cost of the ammunition only.

The Avalanche Hazard Analyst was designated as the coordinator in charge of avalanche control and traffic movement for this project.

SUB-OBJECTIVE VI

To Conduct Operational Research in Order to Improve Methods and Procedures Used in the Avalanche Safety Program.

When the program was started in 1959, it was a totally new venture in regard to avalanche magnitude and control requirements on this continent. Procedures and methods developed were almost totally the product of research and planning carried out in the SRAWS (Section). Avalanche control work essentially is still more an art than a science. The whole program is therefore still in a continuous process of upgrading.

MANAGEMENT ACTION VI

Aside from the responsibility for the operation of avalanche control, the Senior Avalanche Hazard Analyst is also charged with the responsibility of continuing operational research and the resulting upgrading of the operational program, through incorporation of all new facts in the procedures.

This effort is a continuous program which has improved the control operation (as records prove) and must continue.

To achieve this goal, contact with other professionals in the field (avalanche symposiums, visits to other control centres, etc.) are carried out.

Major changes in the operational set-up are presently in progress because of the recent availability of improved sensors (weather, snow, etc.) which will effect savings in manpower and time-lag. Contact with researchers in this field is maintained and information exchange is an on-going necessity in order to remain current with the improved technology.

SUB-OBJECTIVE VII

To Maintain Technical Data on all Factors Related to Avalanche Control.
An historical fact of avalanche problem solving is that not enough specific information exists to properly evaluate the problem and suggest control measures.

In many cases, most of the knowledge available rests with an individual in his memory and if he goes away, the operation has to start all over again.

To avoid this, comprehensive data collection concerning all facets of the program become a major requirement.

MANAGEMENT ACTION VII

SRAWS was charged with producing a comprehensive system of storing pertinent data in such a fashion that it would serve the needs of the day-to-day operational requirements, be available for research use, and ultimately become the basis for computerization of avalanche forecasting.

All observations taken (operational, weather, snow, etc.) are kept in field books, documented in monthly reports, and summarized in a comprehensive yearly report. During the year, but mostly in the summer, the data are transferred on plans in graph form (monthly, yearly time profiles, storm profiles).

A large amount of data is obtained from automatic sensors (telemetry instruments) and transferred onto punch tapes for storage and re-display purposes.

SUB-OBJECTIVE VIII

To Educate Employees and the Public in Regard to the Avalanche Control Operation.

The most sophisticated program will not work if the people involved are not aware of its function, what they can expect from it and what is required of them.

MANAGEMENT ACTION VIII

The Senior Avalanche Hazard Analyst has the responsibility to establish a comprehensive training and information program for employees, cooperators with the control program (C.P.R., B.C. Highways, etc.) and the travelling public.

For SRAWS personnel, training on the job amounting to several hundred hours per year was initiated. A training manual was developed and used as a course basis.

Operational personnel receive annual instructions concerning the avalanche safety program and operational procedures. An "Employees' Manual for Safe Winter Operation" was developed and distributed.

For cooperational personnel (C.P.R., B.C. Highway, etc.), a Cooperators' Meeting is held annually to exchange information on previous operational years and to inform all those attending on new operational developments.

For the travelling and general public the "Winter Guide to Rogers Pass' pamphlet was printed and distributed. Lectures on the operation and involvement are held in nearby towns (Revelstoke, Golden) at service clubs and schools.

PART B

AVALANCHE RESCUE AND SAFETY MEASURES

INTRODUCTION

Avalanche Research and Control through Mount Revelstoke and Glacier National Parks is a major operation during the winter months and necessities an advanced program of avalanche rescue procedures.

Safety measures for the protection of both the Park employees and the general public were developed and are an important responsibility of Resource Conservation.

OBJECTIVE

To ensure a safety program on the Trans-Canada Highway, Canadian Pacific Railway and in the backcountry of Mount Revelstoke and Glacier National Parks. This program refers to avalanche safety and an effective rescue operation when necessary.

SUB-OBJECTIVE II

ARTIFICIAL STABILIZATION

Avalanche conditions within Glacier National Park can build up to a critical stage within a short period of time due to the nature of the terrain. Many of these avalanches can affect both the Trans-Canada Highway and the Canadian Pacific Railway. Both of these transportation systems are of national importance and therefore the control program is the major Resource Conservation activity during the winter months.

The objective of artificial stabilization in Glacier National Park is the control of snow avalanches by preventing a buildup of snow accumulation to a condition where natural release of an avalanche would occur.

MANAGEMENT ACTION II

STABILIZATION

2.1 The Senior Avalanche Forecaster with the Snow Research Section of Resource Conservation have the responsibility of directing operations of artificial avalanche stabilization. He and his staff observe and predict the critical time periods during the winter months and carry out necessary research during the summer.

2.1.1 The Avalanche Forecaster is directly in charge of the control of avalanches in Glacier Park by directing the operations of the Canadian Armed Forces - Royal Canadian Horse Artillery in Rogers Pass. A unit is based in Rogers Pass during the winter months and is equipped with the 105 mm Howitzer used for the avalanche stabilization.

2.1.2 The Avalanche Forecaster records and analyses the information from telemetry stations which are located at suitable positions in Glacier Park. This information provides some of the basis for the stabilization action with wind, temperature and humidity readings.

2.1.3 The Snow Research section also maintains snow and weather readings at Mt. Fidelity, Mt. Abbott and Hermit stations.

2.2 The Park Warden Service is responsible for observation of natural stabilization conditions in the backcountry and through back-country patrols and must be up-to-date on the existing conditions.

Mt. Fidelity is one of the locations used by the Warden Service to determine the existing conditions. This is achieved mainly by skiing the slopes of Mt. Fidelity, Abbott gullies and various other areas.

SUB-OBJECTIVE III

TRANSPORTATION CONTROL

During the operation of Avalanche Stabilization and Control all public transportation systems must be directed and controlled so that the public are protected.

Therefore, Resource Conservation must ensure public safety by controlling traffic on the T.C.H. during stabilization operations in Glacier National Park.

The safety of the public on the Canadian Pacific Railway and the protection of their facilities during avalanche stabilization must also be ensured.

MANAGEMENT ACTION III

TRANSPORTATION CONTROL

3.1 In avalanche control, the Park Warden Service has the responsibility of public safety as in all other National Park operations. During stabilization, Wardens must set up traffic control blocks on the Trans-Canada Highway in Glacier Park at each side of the avalanche stabilization area.

3.1.1 A Stabilization Traffic Control Operation Plan has been prepared which includes: maps defining road block points and avalanche paths, and the actual blocking procedure. Park Wardens carry out the traffic control operation using vehicles equipped with all emergency and physical devices for setting up the block. This operation must be coordinated carefully and efficiently between the Warden in charge of traffic control and the Avalanche Forecaster.

3.2 The Avalanche Forecaster directly coordinates the control of trains of the Canadian Pacific Railway by maintaining contact with the Communications Centre (Parks Canada) at Rogers Pass, which in turn advises the C.P.R. dispather. During control operations, trains are held in safe locations until stabilization is complete.

MANAGEMENT ACTION IV

PERSONNEL TRAINING

4.1 To ensure the effective and safe operation of Avalanche Control in Glacier National park, training is an important phase for all personnel involved in this critical program. It is therefore the responsibility of the Warden Service to train all Parks personnel in Glacier Park in avalanche rescue procedures, use of the sounding devices, and recognizing critical avalanche areas and conditions. Instruction is given by the Area Resource Manager or Senior Park Warden.

4.1.1 Training sessions have been and will be given each fall to employees with regard to probe line operation. This requires one session of classroom instruction and several practical sessions in the actual operation of the probe line during the winter.

4.1.2 The avalanche "PIEPS" (sounding devices) are used by all personnel while working on the highway or in the backcountry in Glacier Park. New employees are hired on seasonal staff with the Maintenance, S.R.A.W.S. and Warden Service for the winter. All of these people are instructed in the use of the device in the event that they themselves are buried or to assist in the rescue of someone else.

4.1.3 All new employees are also given an orientation in the recognition of avalanche paths and critical avalanche weather by the avalanche forecaster.

SUB-OBJECTIVE IV

TRAINING OF PERSONNEL FOR EMERGENCY

Training is a major factor for Avalanche Control Resource Management so that all Park staff are completely familiar with the operation during critical periods thus ensuring the success of the following objectives:

4.1 All staff involved in the control program are and will continue to be trained in avalanche rescue procedures.

4.2 Personnel involved in any part of the control operations must be completely familiar with all phases of the operation, from terrain to weather and snow conditions. We cannot afford mistakes when lives are at stake.

SUB-OBJECTIVE V

PUBLIC EDUCATION

Resource Conservation is responsible, to some degree, for the safety of the visitor throughout the National Park system. The visitor, travelling by highway, railway or in the backcountry should be aware of the hazards of travelling in avalanche terrain.

5.1 To educate the public as much as possible to existing and potential avalanche hazards.

MANAGEMENT ACTION V

PUBLIC EDUCATION

5.1 The provision of information to the public is an important responsibility of all employees in Glacier National Park.

Visitors travelling either on the highways or in the backcountry must receive reliable information if they are to be protected.

5.1.1 During road closures, Wardens have an excellent opportunity to converse with the public and provide information that the visitor would not receive otherwise.

5.1.2 Avalanche area warning signs are posted during the winter in all avalanche areas along the Trans-Canada Highway.

5.1.3. The registration system for backcountry travellers in Glacier Park requires visitors to register for all day or overnight ski trips at the Glacier Warden Office. People are advised of the existing conditions, areas closed to travel and possible hazards in the area they wish to travel.

5.1.4 A warning system within the Park organization is utilized to inform the employee of existing hazards.

The yellow form: Avalanche Hazard, caution.

The red form: Stabilization operation.

The white form: Extended closure of highway travel.

These forms are issued to the Communication Centre in Rogers Pass which in turn advises all Park employees including those at the East and West Park Gateways.

OPERATIONAL RESOURCE MANAGEMENT PLAN

FOR

WILDLIFE RESOURCES

MOUNT REVELSTOKE AND
GLACIER NATIONAL PARKS

Prepared by: J. L. Turnbull

WILDLIFE RESOURCE MANAGEMENT PLAN

INTRODUCTION

Wildlife Resources in the National Parks are and should be an important part of Resource Management. National Parks Policy 11(3) states: "It is part of the National Parks purpose to maintain the quality and beauty of wildlife in National Parks, i.e. to maintain healthy populations of native animals in balance with their environment."

National Parks Policy 11(9) states: "Conflicts between wildlife and other Park interests including human safety should be resolved if possible without destruction of wildlife."

The Selkirk Ranges do not provide suitable year-around habitat for many of the larger species of wildlife. In Glacier and Mount Revelstoke Parks, Resource Management is primarily concerned with only those species which are adapted to the existing environmental conditions.

OBJECTIVE

To ensure the preservation of viable wildlife populations within Mount Revelstoke and Glacier National Parks and protect their natural habitat which must be essentially unaltered by man-induced changes.

SUB-OBJECTIVE I

WILDLIIFE

DISTRIBUTION AND HABITAT

1.1 All species of Park wildlife should be studied to determine to a reasonable degree the abundance, distribution, population dynamics and habitat requirements of individual species. It is only by understanding the ecology and habitat requirements of wildlife species that the most effective management strategy can be applied.

1.1.1 The fauna of Mount Revelstoke and Glacier Parks will be inventoried and distribution mapping will be developed and maintained to a degree of accurate assessment in order to determine the most beneficial program of management. The ungulates, bear and beaver populations are of prime importance, because of their management implications, followed by predators and avia fauna.

MANAGMENT ACTION I

WILDLIFE DISTRIBUTION AND HABITAT

1.1 A wildlife management plan cannot be successfully approached and initiated without as complete an inventory of all species as possible. In Mount Revelstoke and Glacier National Parks the Resource Inventory Program will not begin before 1980/81. To assist this program beforehand, a basic wildlife inventory will be an asset.

1.2 In Mount Revelstoke and Glacier National Parks all wildlife observations are recorded on the Keysort Wildlife observation cards and this will continue. These cards will initially be submitted to the Area Resource Manager monthly for compiling in Glacier Park. The Revelstoke warden will compile all the cards from both Parks for the wildlife card file system and prepare an annual report.

1.3 Wildlife management must include monitoring of wildlife condition and habitat for the major species in the Parks. The programs required to effect this plan should continue seim-annually, and should be the responsibility of one Warden deglegated to wildlife management.

1.4 Suggestion and proposals by wildlife biologists will be followed if acceptable to Park values. This should ensure efficient methods and data compilation.

1.5 Relative abundance mapping is in progress in these Parks and should be basically complete before the Resource Inventory Program begins in 1980. The mountain goat study (1977/78, 1978/79) is the first major study in the program.

1.6 This plan is in conjuction with and relative to the fire management plan and the vegetation management plan.

SUB-OBJECTIVE II

BEAR MANAGEMENT

2.1 Mount Revelstoke and Glacier National Parks are noted for bear populations, particularly the grizzly. Black bears also inhabit lower elevations and frequently cause problems in high use areas.

Due to the restricted size of these Parks, the grizzly has limited preferred habitat and therefore is forced to frequent the visitor use areas thus becoming accustomed to man. This leads to the inevitable bear/human encounters which must be reduced and, of course, ideally eliminated.

The bear management objective is to preserve the bear and his habitat in these Parks and effectively ensure the safety of the people to a reasonable degree.

MANAGEMENT ACTION II

BEAR MANAGEMENT

Bear Management in Mount Revelstoke and Glacier National Parks is somewhat complicated due to the rugged terrain and the transportation corridor.

2.1 Elimination of the garbage incinerator in Glacier National Park has already been accomplished and all garbage from both Mount Revelstoke and Glacier National Parks is disposed of outside Park boundaries at Revelstoke. Garbage removal must be a frequent operation to eliminate the attraction of bears.

2.2 The problem of "bear feeding" must be strictly enforced under regulation: (Section 4(f), National Parks Game Regulations). Bear Warning signs in conjunction with Interpretive programs and enforcement of regulations will be used for public education. (See Sub-objective V of Public Safety Plan).

2.3 Due to the relatively confined size of these Parks, bears frequently inhabit the high use areas. It is necessary in these cases to relocate bears by trapping or immobilization and transporting them into less used areas.

This operation, however, may not always be a good management practice since bears are sometimes relocated in foreign territories which at times may cause social disruption in the bear populations. The Incommapleux River and Mountain Creek valleys should continue to be used for relocation by helicopter until other management methods may be found.

2.4 The destructive removal of bears becomes necessary in some circumstances. At times, overly aggressive bears are identified due to familiarity with humans and these frequently are animals which return from relocations. To prevent bear/human encounters, and since we cannot remove the people under present policy, this management approach is necessary and should continue with discretion.

2.5 The reporting and recording system presently used should continue. Bear observations, encounters, personal injuries, and property damage are all recorded and filed to assist in the overall management. An annual report will continue to be submitted.

2.6 Bear Warning signs are an important management tool when trails are controlled due to the presence of a Grizzly bear or bears in the area. These signs will continue to be used in the Parks to either close a particular trail until the bears are no longer seen; or warning signs posted for areas in which encounters are a possibility.

2.7 The Bear Management O.P.D. (1977) guidelines will be followed.

SUB-OBJECTIVE III

DETRIMENTAL FORCES

Glacier National Park has several necessary detrimental effects on fauna that may or may not be counter-balanced through management.

The winter avalanche stabilization program is recognized as being necessary in the national interest for the year-round use of the two transportation systems; the Trans-Canada Highway and the Canadian Pacific Railway. Both of these systems cut directly through the park and although accepted, must be considered as a detriment to wildlife.

3.1 Moose, goat and some deer are present year-round in Mount Revelstoke and Glacier National Parks and more thorough studies are required to determine the direct effects of the stabilization operation on these species, particularly goat that range during the winter on the Grizzly/Mt. Tupper area and Ross Peak.

The direct impact of the two transportation systems on wildlife must also be realized and management plans designed to decrease this impact.

MANAGEMENT ACTION III

DETRIMENTAL FORCES

3.1 The avalanche stabilization program is necessary if the transportation corridor is to be utilized during the winter.

Resource Conservation should, however, coordinate a study program to determine what detrimental effects the artificial stabilization has on wildlife (particularly the goat), if any. The goat study presently in progress will help to determine what detrimental effects the artificial stabilization has on the goat population.

3.2 All mortalities will be recorded and mapped to identify crucial areas. "Wildlife Crossing" signs will be erected in the major areas of mortality on the Trans-Canada Highway. New methods of wildlife protection on the highway will be utilized if feasible and in agreement with Park values. The winter use of salts on the highway is undesirable (due to wildlife attraction) but necessary for ice removal until a superior method is formed.

3.3 Mortalities along the Canadian Pacific Railway line are not extensive in Glacier National Park since the Connaught Tunnel by-passes the Tupper goat range and is of higher elevation than the moose ranges of the lower Beaver Valley.

The C.P.R. must, however, take responsibility for spilled grain and other freight material (by cleanup) which attracts wildlife and reduce this spillage to a minimum).

BEAR MANAGEMENT PLAN

MOUNT REVELSTOKE & GLACIER NATIONAL PARKS

Prepared By: Mount Revelstoke & Glacier National Parks Warden Service
1981

Recommended By: _____ 81-05-01
Chief Park Warden — Date

Approved By: _____ 1981-05-06
Superintendent — Date

Acknowledged By: _____ 1981-05-14
Assistant Director Operations — Date

BEAR MANAGEMENT PLAN

MOUNT REVELSTOKE AND GLACIER NATIONAL PARKS

1981

INTRODUCTION

A number of serious incidents of bear/human encounters have occurred in Canadian National Parks as well as provincial lands within the past few years. A comprehensive and complete management guideline is required for the Western National Parks and since each Park varies with respect to topography and problem areas in relation to bears, the following plan will apply to Mount Revelstoke and Glacier National Parks.

OBJECTIVES

To ensure the preservation of viable bear populations, both Grizzly and Black Bear, within Mount Revelstoke and Glacier National Parks and protect their natural habitat which must be effectively unaltered by man induced changes.

The safety of the visiting public is also a primary concern and this plan contains guidelines to reduce the chance of bear/human encounters.

DEFINITIONS

Bear Management Warden: A permanent warden will be assigned, in each of Mount Revelstoke and Glacier National Parks, as the responsible warden for bear management. This position will include proper training in the use and care of equipment and immobilizing drugs. In this plan this position will be referred to as "B.M.W."

DEFINITIONS (Cont.)

Problem Bear: A bear that has lost its fear of humans and become aggressive, persistant, nuisance, spoiled, wounded, injured or diseased. One that has become habituated to unnatural food sources, ie. garbage or road and campground handouts.

Artificial Food Source: Includes garbage, campground or roadside handouts.

SUB-OBJECTIVE I

PUBLIC INFORMATION AND EDUCATION

1.1 A method of informing and educating the public must be maintained in order to ensure minimum interaction between bears and humans, and to preserve the bear ecology.

1.1.1 The information dispensing should be the responsibility of all sections employed within the Parks.

1.1.2 Education of the public will be primarily the responsibility of Park Wardens and Park Interpreters.

MANAGEMENT ACTION I

PUBLIC INFORMATION AND EDUCATION

1.1 Distribution of pamphlets throughout the Park advising visitors of the potential danger and habits of bears; ie. "You Are In Bear Country", "Do Not Feed The Wildlife"

1.1.1 Park Gateways: Pamphlets will continue to be distributed from this source and signs are erected at the Gates. The signs advise the visitor that feeding of wildlife is prohibited and also that natural hazards exist that may be a danger. The signs indicate where information may be obtained.

PUBLIC INFORMATION AND EDUCATION (Cont.)

1.1 1.1.2 Information Centres: These outlets will be located at Rogers Pass and at 1 kilometre on the Mt. Revelstoke road. Pamphlets and information will be available at these centres.

1.1.3 Park Offices: The main parks offices are located in Revelstoke and at Rogers Pass. Pamphlets are distributed from both of these centres. The Rogers Pass office is operated on a 24 hour basis and the Revelstoke office from 7:30 a.m. to 4:00 p.m. for information.

1.1.4 Interpretive Programs: These programs are conducted on a daily schedule during the summer months and information will be available on bear habits etc. from the Interpretive Attendant.

1.1.5 Park Wardens and Other Park Personnel: Every Park Warden will have pamphlets in his patrol vehicle for distribution if requested and will also be prepared to advise the visitor of bear danger or in the case of violation, present a warning or citation.

Other Park personnel will be kept up-to-date on bear problems and the proper procedure when in the vicinity of a bear. These personnel should be prepared to advise the public if necessary.

1.1.6 Signs - Bear Warning and Trail or Area Closure: These signs will be placed in the appropriate location at a trail head or conspicuous site for an area. These are constructed on a bright orange background with white or black letters.

PUBLIC INFORMATION AND EDUCATION (Cont.)

1.1.7 L.P.R.T. Stations: These low power radio transmitters are located at the East and West Park Gates and at Rogers Pass. The tape recordings transmitted during the summer months will advise the visitor of bears and behaviour.

1.1.8 News Media: During times when a serious bear problem exists within these Parks the local newspapers and radio stations will be advised in the form of a news release.

1.1.9 Films: The new Parks Canada film of "Bears and Man" will be presented and/or available to local groups, campgrounds or relevant agencies for education purposes.

SUB-OBJECTIVE II

CONTROL OF ARTIFICIAL SOURCES WHICH ATTRACT BEARS

2.1 The proper handling of food or garbage which attracts bears will be a primary objective of this plan.

2.1.1 Garbage containers bear proofed.

2.1.2 Enforcement re. feeding wildlife regulations.

2.1.3 Strict enforcement of garbage regulations, ie. concessions, C.P.R.

2.1.4 Elimination of all garbage dumps from the Parks.

MANAGEMENT ACTION II

CONTROL OF ARTIFICIAL SOURCES WHICH ATTRACT BEARS

2.1 Direct and positive action will be taken to effect the control of unnatural food that attracts bears.

2.1.1 The warden service will be responsible to inspect all garbage containers within these Parks to ensure they are bear proof. In campgrounds new types of containers will be investigated that will provide more adequate bear proofing.

MANAGEMENT ACTION II (Cont.)

2.1 2.1.2 Visitors are now informed that the feeding of wildlife is prohibited by pamphlets and signage. This regulation will be strictly enforced by warnings or charges for violators when necessary and required, particularly for the feeding of bears.

2.1.3 Violators of the National Park Garbage regulations within these Parks will be required to immediately improve the conditions and this includes the C.P. Rail and the tourist concession operated within Glacier National Park.

2.1.4 All garbage dumps previously operated within these Parks have been eliminated with garbage being transported to municipal dumps outside Park boundaries. This has been effective and will continue to be the procedure.

SUB-OBJECTIVE III

RECORDING AND MONITORING OF BEAR SIGHTINGS

3.1 Bears movements and areas of concentration are important to effectively manage bear problems.

3.1.1 The designation of a bear management warden.
3.1.2 Method of recording and monitoring.
3.1.3 Annual bear statistics summary.
3.1.4 Review of relevant studies, literature etc. from other areas.

MANAGEMENT ACTION III

BEAR SIGHTINGS - RECORDING AND MONITORING

3.1 All bear sightings will be immediately recorded and monitored on a continuous basis during the spring, summer and fall periods.

MANAGEMENT ACTION III (Cont.)

3.1 3.1.1 To carry out the responsibility of direct bear management a B.M.W. will be designated to lead the management program. That warden will be responsible to ensure that records are up-to-date and with the assistance of other wardens, effectively control the bear problem.

3.1.2 The present computer card system is the final result of the recording system for wildlife. To effectively maintain this system an accurate record of sightings and mapping of the movements is necessary. A field book will be used by each warden for the recording initially and the information compiled on the computer cards and maps upon return to the office.

3.1.3 An annual bear statistics summary will be compiled by the B.M.W. in November of each year and submitted to the Chief Park Warden.

3.1.4 Bear studies, reports and articles are circulated regularly in Canada and the U.S.A. This information will be continuously reviewed and the relevant material extrapolated to effect any improvement to bear management in these Parks.

SUB-OBJECTIVES IV

CAPTURE, HANDLING AND RELEASE OF PROBLEM BEARS

4.1 Problem bears will be managed with a minimum of irritation or manipulation. A great deal of discretion should be exercised to ensure the least interference to the bear ecology.

4.1.1 Capture: Trapping and/or immobilizing of problem bears will be effected away from the public and as quickly and safely as possible.

SUB-OBJECTIVES IV (Cont.)

4.1 4.1.2 Handling: Handling of wildlife causes the animal a great deal of stress if in a conscious state and for this reason all wardens will be properly trained for the job.

4.1.3 Release and Relocation: The releasing of problem bears will be completed quickly and in areas causing the least territorial stress to the animal.

MANAGEMENT ACTION IV

CAPTURE, HANDLING AND RELEASE OF PROBLEM BEARS

4.1 Using discretion to meet the conditions, the manipulation of problem bears will be done effectively. Grizzly bear behaviour generally dictates extra caution and concern and only those wardens experienced will be permitted to carry out the required management. Bears will be captured for any or all of the following reasons:

1. Threat to life or property.
2. Threat of injury to the bear.
3. For authorized research.

4.1.1 Capture: The seriousness of the problem and the behaviour of the bear will determine the method of capture. Generally, in a campground or high use area the trap method is attempted. If this fails, the immobilizing drug combination Ketaset /Rompon will be used to capture the animal.

If it becomes necessary to capture a bear by helicopter from the air, immobilizing will be done by drug dart. fired by the .22 cal. projecting rifle

For situations in doubt, the Chief Warden will be responsible for the decision.

MANAGEMENT ACTION IV (Cont.)

4.1 4.1.2 Handling: After proper training wardens will exercise care and caution in the handling of bears. Bears must not be aggravated more than is necessary and the handler will use humane practises at all times.

One warden will work with the bear while one other warden will maintain vigil with a firearm to prevent accidents. All necessary data will be recorded at the time of handling.

4.1.3 Release and Relocation: The B.M.W. will compile a list of potential release sites within the Parks. No bears will be translocated outside of Park boundaries. If possible, two wardens will be present while a bear is being released.

Black bears will not be translocated by helicopter unless for a specific reason. Grizzly bears will be transported either by helicopter slinging or by bear trap.

Before release, a bear should be identified by marking by some means. Alternate methods of marking will be determined by the B.M.W. in consultation with the Chief Warden.

4.1.4 Destruction of Bears: Bears will be destroyed only for the following reasons:

1. After injury or death to human life.
2. If a definite danger to the public and efforts of capture have failed.
3. Injury to the bear in cases where the animal becomes dangerous or chances of recovery are remote.

4.1.5 Drug Immobilization: Only qualified personnel will be permitted to use the drug immobilizing equipment; ie, Park Wardens or researchers trained in the use of the drug.

The B.M.W. will maintain complete and accurate records of the use of the immobilizing drug. The Chief Warden only will control the issuance of the drug for use.

MANAGEMENT ACTION IV (Cont.)

4.1 4.1.5 The reason for immobilizing a bear must be carefully considered before the operation to determine if it is necessary.

SUB-OBJECTIVE V

TRAIL OR AREA CLOSURES - SIGNING

4.1 The purpose for a trail or area closure will be to minimize the possibility of a bear/human encounter and/or to prevent disturbance to a sow bear with cubs at the early stages of the cubs' life.

TRAIL OR AREA CLOSURES - SIGNING

4.2 A time period will be specified in accordance with the presence of a bear or bears to represent guidelines on the opening of an area previously closed.

The removal of a trail closed sign replaced by a warning sign will be instituted.

MANAGEMENT ACTION V

TRAIL OR AREA CLOSURES - SIGNING

4.1 When there has been a bear incident in a particular area or the presence of a sow with cubs the only alternative is a temporary closure. The sign "AREA CLOSED" supplemented by "BEAR DANGER" will be used to close this area.

MANAGEMENT ACTION V (Cont.)

4.1 4.1.1 Closure for Bear/Human Encounter: If an encounter has occurred causing a threat to human safety it will constitute closing the area to travel except by Park Wardens.

4.1.2 Closure For Presence Of A Sow With Cubs: Since a sow with cubs can be a potential danger to human safety and may also cause undue stress to the bear family, an area will be also closed for this reason.

TRAIL OR AREA OPENING

4.2 It is often difficult to determine if an area is safe to open after it has been closed due to a bear's presence.

4.2.1 Over a period of 2 weeks and at least 2 (two) monitoring trips by wardens into the area without observing signs or the bear or bears, the area will be reopened for public use.

4.2.2 All details will be recorded in a report to the Chief Park Warden.

SUB-OBJECTIVE VI

BEAR/HUMAN ENCOUNTERS

6.1 Guidelines must be followed in dealing with bear/human encounters to prevent further incidents and to ensure accurate and efficient action to minimize public criticism.

6.1.1 Action after the incident

6.1.2 Prevention of further problems

6.1.3 Information for news media

BEAR/HUMAN ENCOUNTERS (Cont.)

6.1 6.1.4 Review Committee: Establish to review a bear/human encounter incident to minimize the chance of future problems.

MANAGEMENT ACTION VI

BEAR/HUMAN ENCOUNTERS

6.1 Guidelines are contained in PRM 40-1 to be followed in dealing with injury or death to humans from bear maulings. This directive will ensure consistency in the handling of these situations.

6.1.1 Action After The Incident: After injury or death to human life the bear or bears will be located if possible and eliminated. The area will be closed during this operation.

6.1.2 To prevent bear/human encounters in the rugged terrain of those parks where dense undergrowth is present, the undergrowth will be maintained cleared back on either side of a trail through slide path crossings to a distance of 6 meters on either side.

Primitive campsites in close proximity to known bear habitat will be relocated.

Bear warning signs will be erected at all trailheads during the summer and fall season.

6.1.3 Information to the new media with regard to bear incidents will be reported through the Chief Warden to the Park Superintendent.

BEAR/HUMAN ENCOUNTERS (Cont.)

6.1 6.1.4 Review Committee: All bear/human encounters resulting in injury or death will be reviewed within one month by a review committee established by the Superintendent and including not more than six members of which at least one is a recognized authority on bears who is not a Parks Canada employee.

Standing Authorization - Bear Management

This will constitute delegation of authority, pursuant to section 7 of the National Parks Game Regulations, to the Park Superintendent, for the destruction of bear under the following conditions:

- when it is judged by appropriate experienced park personnel that there is an emminent threat to human life and live capture attempts have failed or are not feasible.

- when a bear has been badly injured and the possibility of recovery is remote.

- a bear has been deemed a problem animal and has been relocated a maximum of three times.

W.C. Turnbull
Director
Western Region
Parks Canada

REFERENCES

Parks Canada . . . . . National Parks Policy
Section II (3)

Parks Canada . . . . . Policy and Procedures Manual
BRM 42-1
Volume 2, Part 5
Section 5.3 Immobilizing Equipment and Drugs
Section 5.9 Control of Animals Deemed Dangerous to Human Safety

Parks Canada . . . . . Draft Policy - Resource Conservation

Parks Canada . . . . . BEAR O.P.D. (1977)

Warden Report . . . . . Annual Bear Report M.R.G.N.P.

Annual Wildlife Report M.R.G.N.P.

OPERATIONAL RESOURCE MANAGEMENT PLAN

FOR

BACKCOUNTRY MANAGEMENT

Mount Revelstoke and
Glacier National Parks

Prepared by: W. Laurila
Park Warden

BACKCOUNTRY MANAGEMENT PLAN

INTRODUCTION

There are many factors of high priority in backcountry management and they should be dealt with accordingly. These factors fall into many categories, such as visitor use, wildlife, vegetation, etc., which must be weighed and properly organized so they can be incorporated into an effective workable management plan.

The ultimate objective of our management plan is to arrive at firm management policy which best resolves the conflict between preservation and use and thus ensures that "wilderness areas are maintained and made use of so as to leave them unimpaired for future generations".

First we must recognize the degree of deterioration and what effect it has on wildlife, vegetation, water and soil.

Then, careful surveys must be undertaken and properly compiled to give us a general idea what type of problems exist in the backcountry and the remedial steps to resolve them.

OBJECTIVES

The objective of this plan is to combine technical information from past reports and plans, and carry out further research in backcountry procedures so as to arrive at a workable plan that can effectively be used to manage backcountry areas in Mount Revelstoke and Glacier National Parks.

Many of the sub-objectives of this backcountry management plan are currently under review by the Backcountry Management Committee comprised of members from various Parks in the Western Region.

Sub-objectives dealing with "standards to be used" or "revised regulations" will be handled by Ottawa and/or the Western Regional Office. Other objectives are being dealt with by various Park committee members in draft form and will be submitted at future Backcountry Management meetings for discussions to ensure a uniform function in each Park and approved in final decision.

The purpose of the Backcountry Management Committee is to obtain uniformity and consistency between all mountain parks. Uniformity in backcountry management would be advantageous to managers in administration of the Park.

When the various sub-objectives are completed and approved, they will be included in the Backcountry Management Plan for Mount Revelstoke and Glacier National Parks.

SUB-OBJECTIVE I

TRAIL STANDARDS AND GUIDELINES

Trail standards within the present system of Parks Canada are the responsibility of the Visitor Services and General Works Sections. The standards will be kept to an acceptable level to ensure access to high visitor use areas and semi-wilderness areas. Resource Conservation staff are responsible to ensure minimum impairment during trail construction and maintenance.

MANAGEMENT ACTION I

1.1 A Trail Standards Manual (1977) is now in affect in the Western Region and will be used as a guideline for all trail maintenance and reconstruction.

1.2 Warden staff will continue to advise the General Works Section of trail maintenance and reconstruction requirements. Park Wardens will also continue to indirectly supervise trail work operations.

SUB-OBJECTIVE II

SIGN STANDARDS FOR BACKCOUNTRY USE IN MOUNT REVELSTOKE AND GLACIER NATIONAL PARKS

The Visitor Services and General Works Sections have the responsibility for the sign standards. Signs will be placed at required locations to assist visitors. Warning and closure signs are the responsibility of Resource Conservation.

MANAGEMENT ACTION II

2.1 The sign manual now in effect in the Western Region National Parks will be used as a guideline in the design and use of all signs.

2.1.1 Warning and closure signs will be placed with discretion by Warden staff to minimize overuse of these signs.

SUB-OBJECTIVE III

TRAIL SHELTERS

The policy governing the provision of trail shelters in National Parks will be outlined in the approved National Park Policy document.

MANAGEMENT ACTION III

3.1 Recommend that no trail shelters be established in Mount Revelstoke and Glacier National Parks.

3.1.1 Construction of trail shelters would destroy the aesthetic values and the wilderness experience for the visitor.

SUB-OBJECTIVE IV

INFORMATION AVAILABILITY

IN

MT. REVELSTOKE & GLACIER NATIONAL PARKS

MANAGEMENT ACTION IV

4.1 Visitor Services - will provide information in Mount Revelstoke & Glacier National Parks.

4.2 Warden Service - will provide information in Mount Revelstoke & Glacier National Parks.

4.3 Interpretive Service - will provide information in Mount Revelstoke & Glacier National Parks.

4.4 Refer to Public Safety Plan.

SUB-OBJECTIVE V

HORSE USE

The use of horses within the parks is minimal. This form of recreation will continue in Glacier National Park but only in designated areas.

MANAGEMENT ACTION V

5.1 Areas recommended for horse traffic within Glacier National Park are:

Beaver River Trail
Flat Creek Trail
Bostock Creek Trail

Areas closed to horse traffic are:

Illecillewaet, Asulkan, Balu, Cougar
Hermit trails in Glacier Park and all
trails in the Mount Revelstoke National Park.

5.2 Horse use standards for all National Parks - awaiting decision and approval from the Backcountry Management Committee.

SUB-OBJECTIVE VI

TRAIL CLOSURES

To prevent bear/human encounters and to ensure the safety of the visitor in other respects, i.e., avalanche hazard, and fire danger (forest protection). It is necessary to continue a system whereby trails are closed temporarily.

MANAGEMENT ACTION VI

6.1 To achieve the objective, trail closures will be carried out.

6.1.1 Backcountry Management Committee will provide guidelines for trail closures.

6.2 For guidelines on trail closures in Mt. Revelstoke and Glacier, refer to the Public Safety Plan, Fire Control Plan and the Wildlife Resources Plan.

6.2.1 Present policy in Mt. Revelstoke & Glacier National Parks is to prevent bear/human encounters. Bear warning signs are erected temporarily to either close trails or to warn visitors. Closures will remain in effect until such time that the aggressive bear or its sign are no longer observed in the area for a period of two weeks.

6.2.2 Trail closure signs will be erected when extreme fire hazard exists, to prevent forest fires and when forest fires are burning which may endanger the safety of the public.

6.2.3 Trails may occasionally be closed due to avalanche danger.

SUB-OBJECTIVE VII

CONTROL ACTIONS OF GUIDES
OPERATING IN BACKCOUNTRY IN
MT. REVELSTOKE & GLACIER PARKS

MANAGEMENT ACTION VII

7.1 Presently we have no guides operating in the backcountry except mountaineering guides. These guides must be examined for knowledge and ability before being issued a license to guide.

SUB-OBJECTIVE VIII

GROUP CAMPING

Group camping is to continue in the Mountain Creek Campground through a reservation system only, handled by Visitor Services, Mount Revelstoke and Glacier National Parks.

MANAGEMENT ACTION VIII

8.1 A Backcountry Management Committee decision and approval on Group Camping, when received, will be inserted into this plan.

8.2 Refer to Operational Policy Directive (3.3).

SUB-OBJECTIVE IX

SKIING

To provide an opportunity for the public to enjoy skiing in Mt. Revelstoke and Glacier National Parks. Ecologically, skiing presents a minimal problem. However, the main problems associated with skiers in the backcountry are safety and avalanche dangers.

MANAGEMENT ACTION IX

9.1 Ski touring - (see Ski Touring Guide - Glacier National Park).

9.1.1 Mandatory registration as stated in National Park Regulations.

9.1.2 In Mt. Revelstoke Park, cross-country racing, ski-jumping and training courses will occur with no registration necessary.

9.1.3 Rescue action be initiated upon receipt of reliable information.

9.2 Established registration sites are as follows:

(a) Warden Service, Parks Administration Building
Rogers Pass, Glacier National Park.

(b) Warden Service - Parks Administration Building,
301 Campbell Avenue, Revelstoke, B.C.

SUB-OBJECTIVE X

CLIMBING

(Winter & Summer)

To provide the public with an opportunity to enjoy climbing in Mount Revelstoke and Glacier National Parks. Ecologically, it presents minimal problems, however, some problems associated with climbing are safety and avalanche dangers.

MANAGEMENT ACTION X

10.1.1 All climbs to be rated according to the international system of difficulty.

10.1.2 Mandatory self-registation will be used for all day climbs and overnight hikes during the summer season.

10.1.3 Mandatory personal registrations for all climbs and overnight hikes during winter season.

10.1.4 Rescue action be initiated upon receipt of reliable information.

10.1.5 All climbing clubs be encouraged to continue their research into climbing insurance.

10.2 Registration sites are as follows:

10.2.1 Self-registration, Parks Administration Building, Rogers Pass, Glacier National Park.

10.2.2 Mt. Revelstoke Park, the Administration Building or Balsam Lake Patrol Cabin.

10.2.3 For winter climbing, mandatory personal registration, at the Warden Office in the Park Administration Buildings in both parks.

SUB-OBJECTIVE XI

OVERSNOW VEHICLES

Oversnow vehicle use will continue in designated areas in Mt. Revelstoke National Park as a winter type of recreation, subject to Management Action 11.2. However, this type of recreation presents some environmental problems which are not of a serious nature to warrant closure.

MANAGEMENT ACTION XI

11.1 Use of oversnow vehicles will not be permitted in Glacier National Park. In Mt. Revelstoke Park, Mile 1 - 15 on the Summit Road has been designated as the only oversnow vehicle route. No additional routes are to be established.

- 11.1.1 The season for oversnow vehicles will be when snow conditons permit and the road is closed to vehicular traffic.
- 11.1.2 Season closure will depend on snow conditions and the opening of the Summit Road.
- 11.1.3 Permits are required for operating oversnow vehicles.
- 11.1.4 Permits can be obtained from Park Administration Office, Revelstoke, B.C.
- 11.1.5 The Self-registration site at Mile 1 on the Summit Road will be used for control, safety and information.
- 11.1.6 Strict enforcement and control will be adhered to.
- 11.1.7 Reference, Operational Policy Directive (3.4).

11.2 When the oversnow vehicle recreation activity declines, serious consideration should be given to phasing out oversnow vehicle use in the Park.

SUB-OBJECTIVE XII

CAMPSITES

(Primitive and Backcountry)

PRIMITIVE - No facilities provided and sites must be randomly located above timber line, the use of primitive stoves and pack-in - pack-out policy enforced.

BACKCOUNTRY - Campsites consist of grill type stoves, toilet facilities and wood supply. Pack-in - pack-out policy is enforced. These campsites are not to be established near main trails, within one half kilometer from standing water, 30 metres from running water and one half kilometer away from patrol cabins.

MANAGEMENT ACTION XII

12.1 Primitive Campsites

12.1.1 Campsite areas will be established in both Mt. Revelstoke and Glacier Parks but no specific location will be assigned. This should eliminate the overuse problems since a permanent facility is not provided and each party will choose their camp location within the area.

12.1.2 Some areas will require a quota system (i.e. Eva lake area in Mt. Revelstoke Park) to reduce the impact of too many campers at any time. No camping will be permitted at Miller Lake, or in Balu and Cougar Valleys.

12.1.3 Suitable backcountry campsites should be carefully chosen, taking into consideration availability of water, wood supply, type of area and the ecological values involved.

12.1.4 Park-in pack-out policy will be enforced.

12.2 Backcountry Campsites

No Backcountry Campsites will be established in either Mt. Revelstoke or Glacier National Parks. The Primitive Campsite plan will be followed on a trial basis to determine effectiveness.

SUB-OBJECTIVE XIII

HELICOPTER SKIING

At present no helicopter skiing is permitted in Mt. Revelstoke or Glacier National Parks. However, there have been many requests by skiers and various ski organizations on helicopter skiing in both Parks. Ecologically, helicopter skiing would present a minimal problem, however, other considerations include the noise and pollution factor, and safety of skiers.

MANAGEMENT ACTION XIII

13.1 The present policy does not permit helicopter skiing in both Parks.

13.2 Park regulations are required to back up the policy on helicopter skiing.

SUB-OBJECTIVES XIV

BACKCOUNTRY CAMPSITES

The objective of this program is to provide an opportunity for the public to enjoy backcountry camping in designated sites, unserviced and semi-serviced in both Parks.

MANAGEMENT ACTION XIV

14.1 Backcountry Campsites - unserviced

No facilities are to be provided and sites must be randomly located above timber line. The use of Primus stoves and the pack-in pack-out garbage policy is to be mandatory.

14.2 Backcountry Campsites - semi-serviced

Campsites are to consist of grill type stoves, toilet facilities, wood supply. The pack-in pack-out garbage policy will be enforced. The number of tents per campsite will be limited and the number of days per party at each site will be limited to three days.

14.2.1 Campsites are not to be established near main trails, within one-quarter mile from standing water, within 100 feet from running water, and within one-quarter mile from patrol cabins.

14.2.2 Tent pads are to be specifically designed for all Backcountry Campsites. When campsites are filled, no more registered parties will be permitted in until a vacancy occurs. There is to be no more than 10 pads per site.

14.2.3 Suitable backcountry campsites should be carefully chosen, taking into consideration availability of water, wood supply, type of area and the ecological values involved.

14.2.4 Alternate sites when overuse and impairment is evident.

14.3 Mt. Revelstoke Park

Zoning is required to protect areas around the Eva, Miller and Jade Lakes and alpine meadows.

14.3.1 Backcountry camping will not be permitted in the Miller, Eva and Jade Lakes and alpine regions in order to prevent further impact and impairment.

These areas should be managed for day use only, and all trails within these areas should be upgraded.

14.3.2 Alternative areas for backcountry camping require futher study and research.

OPERATIONAL RESOURCE MANAGEMENT PLAN

FOR

CLIMATOLOGICAL MONITORING

Mount Revelstoke and
Glacier National Parks

Prepared by: G.R. Hamilton

INTRODUCTION

Mount Revelstoke and Glacier National Parks are renowned for their exceptionally high snowfall. This fact is illustrated by the 15 year average for Rogers Pass of approximately 428 inches of snow per year.

This high snowfall plays an important part in management activities and planning (i.e. highway maintenance, game populations and distributions, avalanche control).

If we are to properly manage the Parks, accurate records of climatological data are a must.

OBJECTIVE

To monitor climatological data in Mount Revelstoke and Glacier National Parks to assist in proper management of the Parks.

SUB-OBJECTIVE I: GENERAL CLIMATOLOGICAL DATA

To record general climatological information for the purpose of weather monitoring and data compilation.

MANAGEMENT ACTIONS I

1.1 Two permanent weather stations are monitored daily to supply climatic data to the Department of the Environment weather offices. Each of these stations monitors, records and submits the following information daily:

- Cloud cover in percent
- Type of precipitation falling (rain or snow)
- Present temperature in Fahrenheit
- Wind Speed and Direction
- 12 Hour Snowfall
- Water Equivalent of Snow
- Barometric Pressure and Stability
- 24 Hour Maximum Temperature
- Overnight Minimum Temperature
- 24 Hour Precipitation
- 24 Hour Snowfall
- Depth of Snow on the Ground

SUB-OBJECTIVE II: AVALANCHE CONTROL DATA

To monitor weather and snow pack for avalanche control purposes.

MANAGEMENT ACTIONS II

2.1 Nine permanent weather stations are monitored regularly throughout the year to obtain snowpack information for avalanche control.

Mt. Fidelity	at elevation 1905 m
Round Hill	at elevation 2103 m
Christiana Ridge	at elevation 2195 m
South Peak	at elevation 2265 m
Abbot Observatory	at elevation 2103 m
Glacier	at elevation 1158 m
Rogers Pass	at elevation 1310 m
MacDonald West Shoulder	at elevation 1935 m
Hermit	at elevation 1935 m

2.2 Data taken at these stations includes:

- Shear Test
- Snow Temperature
- Snow Profile
- Surface Profile
- Field Stability Tests

2.3 At the stations on Round Hill and MacDonald West Shoulder additional readings of temperature, relative humidity and wind speed and direction are monitored continually by radio telemetry.

SUB-OBJECTIVE III: FIRE WEATHER INDEX DATA

To monitor climate for fire weather index computation.

MANAGEMENT ACTIONS III

3.1 Three permanent weather stations are located in the Parks to record temperature, precipitation, wind speed and direction and relative humidity for the computation of the fire weather index.

3.2 These stations are located in the Parks at:

Rogers Pass	at elevation 1310 m
East Gate	at elevation 841 m
Mt. Revelstoke Summit	at elevation 1920 m

Date from the Revelstoke airport is also utilized.

3.3 These readings are taken daily and computed in accordance with the international system of Fire Weather Index and used to determine Warden action in some aspects of park management.

SUB-OBJECTIVE XI: HANG GLIDING

Hang gliding at present is not active in Mt. Revelstoke and Glacier National Parks. However, there are future possibilities. Ecologically, hang gliding would present a minimal problem, however, the main problems associated with this sport are safety and climatic conditions.

MANAGEMENT ACTION XI

12.1 Not to encourage or allow this recreation in Mt. Revelstoke and Glacier National Parks.

12.1.1 Introduce a Park regulation on hang gliding in National Parks.

OPERATIONAL RESOURCE MANAGEMENT PLAN

FOR

AQUATIC RESOURCES

Mount Revelstoke and
Glacier National Parks

Prepared by: G. R. Hamilton
Park Warden

AQUATIC RESOURCES MANAGEMENT PLAN

INTRODUCTION

Fishing has been an accepted recreational pastime in National Park areas since whiteman first entered these regions. A.O. Wheeler talks of sport fishing in areas now encompassed by Mount Revelstoke and Glacier National Parks during the time of the early surveys.

National Parks assured the continuance of sport angling in our 1909 Policy Statement and as such the aquatic resources of the Parks must be managed so as to cause as little impairment as possible to all waters, aquatic flora and fauna, landforms and ecosystems surrounding all waters.

To obtain this goal an effective and workable management plan for aquatic resources is a must.

OBJECTIVE

The prime objective of the Aquatic Management Plan is to provide the highest degree of protection to the aquatic resources and natural environments so as to perpetuate them in as near a natural state as possible while providing the sport angler with an outing which will allow the enjoyment of a full National Park experience rather than just a fishing experience.

SUB-OBJECTIVE I: AQUATIC INVENTORY

To establish an aquatic resource inventory and classification system for all waters according to use, productivity, natural replenishment, etc.

MANAGEMENT ACTIONS I

1.1 The Limnology/Fisheries inventory for Mount Revelstoke and Glacier National Parks is to be completed by 1981/82.

1.1.1 Management decisions based on preserving and improving populations of natural and unique species as determined by the above mentioned inventory will be given priority.

SUB-OBJECTIVE II: AQUATIC MANAGEMENT

To manage the aquatic program for Mt. Revelstoke and Glacier National Parks as an integral part of the ecosystems of the two Parks.

MANAGEMENT ACTIONS II

2.1 Aquatic environments will be maintained and restored by natural means or processes whenever and wherever possible.

2.2 All park waters containing non-active species will be restored to their natural state whenever possible.

2.3 Waters which originally contained no fish will be allowed to return to their original pristine state through concession of stocking and natural attrition.

2.4 Natural aquatic environments and native species will be protected, perpetuated and/or re-established by excluding fishing from specific waters when investigation determines that fishing and/or associated activities are impairing park values of equal or greater importance.

2.5 Artificial modifications that alter natural aquatic environments, quality, etc., will be controlled through enforcement of environmental regulations such as anti-pollution regulations, gravel removal regulations, forest spraying and logging regulations.

2.5.2 Removal of the city of Revelstoke hydro-dam, below Glacier National Park, has affected spawning runs of some species up the Illecillewaet River and its tributaries into Park areas, causing future considerations for management of these waters. The Illecillewaet dam was removed in 1977-78 and presently (1978) the Revelstoke Rod and Gun club are considering stocking fish eggs (cutthroat) in the river outside Park boundaries.

2.6 A monitoring program for each lake and stream will be established to determine if management actions are giving expected and desirable results.

SUB-OBJECTIVE III: SPORT FISHING

To provide continued sport fishing for the visitors to Mount Revelstoke and Glacier National Parks where such activity can be done without impairment to the ecological or asthetic values of the areas concerned.

MANAGEMENT ACTIONS III

3.1 The following guidelines will govern the fish stocking operations in Mount Revelstoke and Glacier National Parks.

3.1.1 There will be no stocking of any species, natural or exotic in any unpopulated waters.

3.1.2 Stocking of Eva and Millar Lakes in Mount Revelstoke, with native Cutthroat only, will continue to sustain the population in these lakes for the enjoyment of that group of people who sport angle while hiking.

3.1.3 Fish stocking in Glacier National Park will be done only with surplus native species and only in the Beaver and Illecillewaet Rivers.

3.2 Fishing in all other waters shall rely upon self sustaining populations.

3.3 Native species of aquatic forms will be protected, perpetuated, and/or re-established in waters in which they were endemic.

REFERENCES

A. O. Wheeler — Selkirk Ranges

Parks Canada — National Parks Policy 1909

Parks Canada — National Parks Policy 1972

Parks Canada — Annual Warden Reports M.R.G.N.P.

OPERATIONAL RESOURCE MANAGEMENT PLAN

FOR

LAW ENFORCEMENT

Mount Revelstoke and
Glacier National Parks

Prepared by: R. Hamilton
Park Warden

LAW ENFORCEMENT

INTRODUCTION

Section 5(2) of the National Parks Act empowers Park Wardens as Police Constables. This status has been provided to carry out their primary duties as outlined in the National Park Regulations. These responsibilities "preclude Park Wardens from acting as a secondary police force in matters normally covered by the Royal Canadian Mounted Police, except when absolutely necessary".

The dissimilarity of a Park Warden's duties encompasses a wide range of responsibilities, many of which are not law enforcement oriented. Within the field of law enforcement, the diversity and involvement of the Warden is determined largely by location, access plus number and types of Park visitors. This aspect involves a situation whereby some Park Wardens have relatively little direct involvement in duties normally handled by full-time law enforcement officers; other Park Wardens though, especially in situations where full-time law enforcement officers are not readily available, have been increasingly obligated to take actions in situations (emergency requests or otherwise), for which adequate protection and training is lacking.

OBJECTIVE

It is the objective of this plan to provide the areas of responsibility in law enforcement as it relates to Mount Revelstoke and Glacier National Parks.

MANAGEMENT ACTIONS I

OFFENCES AGAINST NATIONAL PARK REGULATIONS

1.1 The most frequent offences in the Parks include illegal camping, illegal fires, failure to register for overnight trail trips and mountain climbing plus defacing or destroying Park property or natural Park features. It is recognized that a majority of these infractions are the result of ignorance and should be handled as such. By the use of courtesy and tactfullness, Park visitors will readily appreciate the reasons for such regulations, and this will prevent visitors from viewing the Warden's actions as a bad National Park experience.

1.1.1 In some cases where more serious offences occur the Summary Offences procedure as laid down by the Criminal Code of Canada is to be followed. The parks in concert with Region are in the process of revising the present system. Once this has been done, a procedural manual will be prepared detailing and explaining all steps necessary to effect or issue the following:

1. Arrest
2. Appearance Notices
3. Summonses
4. Informations

In addition, this manual will cover essential topics such as Rules of Evidence and Courtroom Procedure.

1.1.2 This category of law enforcement demands a reasonable amount of manpower, based on regular patrol schedules, for both backcountry and high-use areas. Backcountry patrols are aimed primarily at offences against fish, wildlife, camping and fire regulations.

MANAGEMENT ACTIONS II

OFFENCES AGAINST PROVINCIAL STATUTES AND THE CRIMINAL CODE

2.1 As Peace Officers, Park Wardens have full authority to enforce the Federal and Provincial Statutes, as well as the Criminal Code. This should not compel a Warden to view this authority as part of his normal duties. Whenever possible, action should be left to those police agencies responsible.

2.1.1 There are those circumstances though which require immediate action, for which time is of the essence. Personal property damage, incidents involving individual rights and safety, highway accidents, etc., fall into this category. With a distance of 45 miles from Rogers Pass in Glacier Park to the nearest R.C.M.P. detachment (Golden and Revelstoke), the request for their assistance in such matters usually requires anywhere from 15 minutes to one hour before arrival; this also depends on highway conditions or their involvement in other police duties at the time. Scheduling provides for the continual availability of a Park Warden; when emergencies occur within the Park, those involved often request the assistance of the Warden Service. The reaction time of a Warden will usually be faster than that of the R.C.M.P., and in these circumstances, initial assistance or action should be given until the arrival of the proper authorities.

Highway accidents have been regarded as part of a Warden's duties for two reasons. First, the initial response is primarily due to the concern for public safety; this involves assistance to the injured and prevention of a second accident via traffic control. Once a Warden investigates an accident for these reasons though, he immediately implicates himself in the law enforcement aspect. Secondly, due to the delay in R.C.M.P. attendance, valuable evidence and/or witnesses may be lost. In all cases of serious accidents tough, the Warden's role is solely for the purpose of initial assistance; if the R.C.M.P. attends an accident first, the Park Warden should not become involved unless specificially requested to do so.

2.1.2 In cases where the loss of personal property or life is involved, from a law enforcement point of view, absolute discretion is required when the circumstances require immediate involvement. Park Wardens are not trained nor protected for these situations, and police agencies should be made aware of the primary duties and obligations of the Warden Service.

2.2 With increased use of Park facilities and highway travel, the Mount Revelstoke/Glacier Warden Service will experience an increased demand on their involvement in law enforcement problems normally carried out by the R.C.M.P. For this reason, in-service courses and seminars, training sessions and use of local members of the R.C.M.P. will be encouraged in order to provide some degree of effectiveness when dealing with such situations that arise in the Parks.

2.3 Park Officials will make efforts to stress for more R.C.M.P. coverage and involvement in those apsects of their regular duties which Park Wardens have found themselves being directly implicated in.

2.4 Park Warden and managers will be encouraged to make improvements and suggestions concerning regulations and operational effectiveness in the Law Enforcement Program.

REFERENCES

1. National Parks Act and Related Regulations: Queens Printer

2. Policy and Procedures Manual BRM 42-1: Volume 2, Part 5, Section 5.5, Law Enforcement, Park Warden Service. (Unpublished).

OPERATIONAL RESOURCE MANAGEMENT PLAN

FOR

VEGETATION RESOURCES

Mount Revelstoke and
Glacier National Parks

Prepared by: R. Hamilton
Park Warden

VEGETATION RESOURCE MANAGEMENT PLAN

INTRODUCTION

Our most fundamental and decisive obligation in the administration of the National Parks Act is to preserve from impairmennt all indigenous and endemic species that comprise the natural attributes of the Parks.

A dilemma exists though in determining what exactly constitutes "impairment" to vegetation, be it natural or man-caused. Man-caused impairment, such as the clearance of a forested area for a visitor facility, is clearly detrimental to the natural environment, but it is also an "acceptable" use based on the purpose of National Parks; for this reason, impairment should be "acceptable" only if a resource analysis of the site shows that no important resource value will be permanently lost. Man-caused disturbance of natural areas can be tightly contolled by reason of governing policies, zoning restrictions and construction methods. Alternatively, when high-rise sites require aethetic improvement or are reverted to a natural state, rehabilitation programs have proven feasible and successful.

Natural impairments to vegetation, particularly by fire, disease and insect infestation, presents a more ambiguous problem. What then constitutes "impairment" when these three vital components help maintain the natural state of a Park? The problem is to determine how much "impairment" an area should be allowed to undergo (if at all) before the successional stage is reverted to a point where one or two centuries may be required to regain the original stage.

OBJECTIVE

To provide the concepts and programs of use, protection and monitoring of the vegetation resources as they apply to Mount Revelstoke/Glacier National Parks.

SUB-OBJECTIVE I

VEGETATION RESOURCES AND FOREST FIRES

Present National Park Policy dictates that all forest fires will be suppressed. This policy has been maintained for several reasons; namely to prevent impairment of natural areas; to prevent threats to public lands outside the Park; to ensure public safety and to protect public and private facilities. In light of most of these factors, fire control is deemed essential, but there is conflict in regards to maintaining an "unimpaired" wilderness atmosphere within National Parks.

By restricting the course of natural fires in National Parks to "maintain healthy forests and other vegetation cover", we are interfering in the very successional trends we are obligated to protect. A natural state of an ecosystem involves many levels and conditions (be it regenerative or degenerative trends). The final outcome in any sere is the culmination in a population (floral and faunal) most completely fitted to the mesophytic conditions. Such a climax is permanent because of its entire harmony with a stable habitat. It will persist as long as climatic factors remain unchanged, always providing that migration does not bring in a new dominant from another region. Essentially then, the restriction of fire eliminates one of the major factors in preventing vast forested areas from achieving and maintaining a climax state. By preventing the continuance of natural successional cycles, it would ultimately result in a high degree of decadence, provoking not only large outbreaks of disease and pest infestation, but also limiting the types and numbers of floral and faunal communities that forest fires help ensure.

MANAGEMENT ACTIONS I

1.1 National Parks Proposed Policy Amendments, January 1977, state:

"3.1 Natural resources within a National Park will be protected and managed with minimum interference to natural processes to ensure the perpetuation of a natural environment that is essentially unaltered by man-induced changes." (Resource Protection Section)

"3.10 Fire management in National Parks will be planned to maintain fire in its natural role as determined by historical and ecological research and within the limitations set by Park objectives.

a. Man-caused fires should continue to be minimized through prevention and prompt suppression." (Resource Management Section)

"3.11 Fires which have been ignited by natural causes will be allowed to run their course when they:

A) Do not endanger adjacent outside-the-Park lands; and

B) Can be contained within predetermined fire management units; and

C) Contribute to the accomplishment of approved vegetation and/or wildlife management objectives; and

D) Do not threaten the safety of Park visitors and Park facilities." (Resource Management Section)

1.2 By means of established limitations, Mount Revelstoke and Glacier National Parks will provide for fire to play its natural role in the development of natural ecosystems within the confines of the Parks.

By the use of zoning restrictions (provided in a fire management plan which will provide the objectives, rationale and guidelines for fire management), it will be determined, for each Park, which areas should provide for natural burning and which areas are deemed necessary to remain in a controlled fire-free state.

1.2.1 Whenever possible, all natural forest fires will be monitored at the time of their outbreak to determine the potential size and rate of spread (based on available fuel, location and fire hazard at the time). For this reason, zoning can only be considered as a guideline. Some fires will be of little concern, based on natural fire breaks and burning conditions. Natural fires occurring in permissable zones may require suppression action if it becomes

apparent that the conditions are too dangerous or that the fire may become uncontrollable to the point of spreading into zones where forest fires are deemed undesirable.

1.3 Prescribed burning to achieve approved vegetation and/or wildlife management objectives will not be used as a management tool; not only is this considered to be a direct interference in the natural processes; but they could also be difficult to control due to the dense undergrowth, mature timber and steep terrain that prevails throughout the Parks.

1.4 All man-caused fires will require immediate suppression action, particularly within campgrounds, picnic areas and along the C.P.R. and Trans-Canada Highway right-of-ways.

1.5 Where fires may involve elimination of successional forest growth in those slide paths affecting the winter operations of the Trans-Canada Highway, fire suppression action will be required. By allowing natural rejeuvenation of these areas to continue unhindered, the danger and force of the avalanche activity affecting the highway may be reduced.

SUB-OBJECTIVE II

INSECTS AND DISEASE

Insects and diseases affecting forest vegetation are just as much a natural and vital component of the ecosystem as fire. Indeed, with the absence of fire and subsequent overmaturing of stands, the once vigorous species will become increasingly susceptible to infestation and attack; such insect and disease attacks will assist in the decomposition of dead or overmature species, thereby contributing to the natural cycle. Fire is also a natural element which eradicates diseased sections, and in some cases, is a limiting factor towards latent epidemics and large scale infestation.

MANAGEMENT ACTIONS II

2.1 Insect infestation and plant diseases will normally be allowed to play their natural role in the Park environment.

2.1.1 Natural determinants of insect and disease infestations such as climate, fire, amphibians, reptiles and avifauna will normally be relied upon to play their natural role in controlling insect and disease occurrences. Direct and indirect (biocides) control should only be initiated when:

A) In-Park diseases and infestations are a threat to outside-the-Park lands; or

B) The plant or plants which are affected by the disease or infestations are rare and/or endangered; or

C) The disease or insect is a species or a type which is not indigenous to North America and to which there are no known natural controls; or

D) The disease or insect occurs in an area of intensive capital development.

2.2 Where natural controls are inoperative and biological controls are not available, direct control methods will be initiated in curtailing disease or infestation; only when this approach is deemed insufficient will the use of non-persistant biocides be implemented.

2.3 Park Managers will assure that where chemical controls are required (if at all), indiscriminate and excessive use of such chemicals does not take place. Introduction of chemicals to the environment may vitiate water quality and disturb complex ecological relationships, resulting in widespread and irreversible damage to wildlife and aquatic populations.

SUB-OBJECTIVE III

REHABILITATION AND REGENERATION

National Park policy provides for the use of Park resources in order to carry out required projects or provide visitor facilities. Many of the scars remaining after the over-use or extraction of these resources have either failed to naturally regenerate or have required additional programs to remove all evidence of creeping environmental impairment resulting from intensive use on or near visitor facilities.

Mount Revelstoke and Glacier National Parks are continuing their policy of rehabilitating man-disturbed areas in order to improve or re-establish the aesthetic qualities of the affected areas.

MANAGEMENT ACTIONS III

3.1 Resource Conservation personnel will continue to recognize and implement rehabilitation programs for man-disturbed areas.

3.2 Where dangerous or diseased trees have been removed from picnic sites and campgrounds, tree species common to the areas affected have been transplanted at a rate of two for every one removed. A balance is hoped to be achieved in order that such visitor facilities retain a healthy and high aesthetic standard; for this reason, extraction will be kept to an acceptable level to prevent any appreciable change in the appearance of the campground or picnic site.

3.3 Borrow pits, abandoned camps and other designated man-disturbed areas will be rehabilitated towards a natural state using techniques dictated by individual sites. These techniques will normally include slope dressing, sod emplacement and the transplanting of natural tree species.

3.4 Readily available "nursery" stock for transplanting projects (generally two or three growth years) have been obtained from the Trans-Canada Highway right-of-way; random selection is carried out to prevent any noticeable change in the amount of vegetation present.

3.5 Those sites which have been found to be regenerating naturally (such as the Beaver Fire Road and abandoned trails) will require no direct interference.

3.6 Problems have arisen in recent years with the amount of trampling taking place in some campgrounds. To prevent further impairment and provide for opportune rejeuventation, some circles have been closed to visitor use; where the campground is sufficiently large, a policy of rotating the use of circles can successfully be carried out.

SUB-OBJECTIVE IV

VEGETATION INVENTORIES AND STUDIES

It is of primary importance that basic ground inventories are completed before serious consideration can be taken towards developing a Management Plan for a Park. Resource Conservation personnel are presently involved in two vegetation inventories and studies.

The Canadian Wildlife Service has been conducting a "Subalpine Revegetation and Disturbance Study" for the Summit of Mount Revelstoke. The primary purpose of this project is to determine which indigenous alpine species can survive under variable climatic and ecological conditions, via transplant trials.

Glacier Park has initiated a "Trail Inventory and Vegetation Study" which has been in progress since 1974. The purpose of this project is to provide concise vegetation data concerning the location of indigenous and endemic species adjacent to trails. In addition, the information gathered can be transformed into comprehensive vegetation-type and profile maps to be used in conjunction with associated resource inventories and studies for future management decisions.

MANAGEMENT ACTIONS IV

4.1 Through completed inventories, field work and future contracts, the required vegetation studies will be completed and used as a basis for the decision-making process in both Resource Conservation Planning and Master Planning.

4.2 Vegetation studies will assist in determining the zoning requirements for Mount Revelstoke and Glacier National Parks, and succeeding management actions will be incorporated into each area.

4.3 The majority of the basic forest inventory will require little outside expertise or contracts for special studies. In those areas where new projects and developments are proposed though, special studies on impact and environmental impairment will be the essential first step before construction or improvement can be considered. One specific area of importance involves the proposed development of the Nakimu Caves for visitor use; Resource Conservation personnel are responsible to ensure that proper feasibility studies, based on environmental impact to the flora and fauna, are carried out before any form of development is allowed to take place. Much too often the initiative has been towards construction and development before consideration is given to the short and long term effects on the ecosystems involved.

SUB-OBJECTIVE V

RESOURCE EXTRACTION

MANAGEMENT ACTIONS V

5.1 At present, Glacier National Park obtains the majority of its firewood for campground use; this wood is supplied by contract from Golden. Secondary sources are acquired from timber extracted for reasons of public safety, fire prevention or maintaining aesthetic values.

5.2 On a regular basis, potentially dangerous trees are marked for removal from campground, picnic sites and along the Trans-Canada right-of-way. The extraction of such diseases or hazardous trees will ensure that proper concern is being taken for public safety.

5.3 Periodically, blow-downs resulting from avalanche activity result in considerable timber being accumulated in slidepath areas adjacent to the Trans-Canada Highway. It has become necessary to remove such timber due to its inherent fire hazard and degradation of aesthetic values.

5.4 Where the partial removal of forested areas is required for the construction or improvement of visitor facilities, the removal of green timber is regarded as acceptable in order to meet Park objectives and purposes. During such projects though, all efforts will be made to secure against unnecessary damage to the vegetation and ground cover not required for removal.

5.5 The elimination of vegetation by chemical spraying along the C.P.R. right-of-way is an endorsed program, as this is one of the most potential sources of man-caused fires in the Park. For similar reasons, vegetation extraction or reduction is carried out along the Trans-Canada Highway. In this case, the degree of removal of vegetation is kept to an absolute minimum via non-chemical means.

5.6 It is not the intention of Resource Conservation personnel to provide for salvage operations in those areas affected by intense forest fires (as this results in a depletion of potential minerals available to subsequent regeneration). There is a concern though of deadfalls endangering the safety of hikers utilizing trails that enter or run adjacent to heavily burned areas. It may be necessary to maintain a policy of removing hazardous trees that are capable of causing injuries along the affected routes.

5.7 Trail construction or improvement should be carried out in such a manner as to leave the area in as natural a state as possible. In some areas though, especially where trails traverse or accompany alder slidepaths, there is an increased hazard of unexpectedly coming upon dangerous wildlife. It is essential then to remove alders to a distance of ten to twenty feet from each side of the trail; this has become necessary impairment to assist in reducing conflicts.

REFERENCES

1. National Parks Act and Related Regulations; Queen's Printer.

2. Policy and Procedures Manual BRM 42-1; Resource Conservation Section.

3. National Parks Proposed Policy Amendments; January, 1977 (Draft); Resource Protection Section - Resource Management Section.

4. Subalpine Revegetation and Disturbance Study, Mount Revelstoke National Park; Shannon E. Campbell and George W. Scotter; Canadian Wildlife Service, Edmonton; 1975.

5. Environmental Impact Assessment, Lauretta Aggregate Pit; Leo Bouchhout, Project Manager; Lombard North Group Impact Study; 1974.

OPERATIONAL RESOURCE MANAGEMENT PLAN

FOR

Mount Revelstoke and
Glacier National Parks

PART A

FOREST FIRE SUPPRESSION AND PROTECTION

Prepared by: G. D. Peyto
Park Warden

FIRE SUPPRESSION AND PREVENTION

INTRODUCTION

Mount Revelstoke and Glacier National Parks consist mainly of dense overmature timber and heavy undergrowth. Fire management and control has always been a major concern within the Parks. The major cause of fires in Mount Revelstoke and Glacier is lightning. Forest fires in the Parks pose a threat to human safety, capital investment and adjacent land. In Glacier Park, fires along the Trans-Canada Highway corridor can create new avalanche paths which threaten human safety. Therefore, fire control within this section of the Park is given high priority under predetermined conditions.

OBJECTIVE

It is the objective of fire management to maintain fire in its natural role, within limitations. National Parks Proposed Policy Amendments, January 1977 states:

3.10 Fire management in National Parks will be planned to maintain fire in its natural role as determined by historical and ecological research and within the limitations set by Park objectives.

a. Man-caused fires should continue to be minimized through prevention and prompt suppression.

3.11 Fires which have been ignited by natural causes will be allowed to run their course when they:

A) Do not endanger adjacent outside-the-Park lands; and

B) Can be obtained within predetermined fire management units; and

C) Contribute to the accomplishment of approved vegetation and/or wildlife management objectives; and

D) Do not threaten the safety of Park visitors and Park facilities.

MANAGEMENT ACTIONS

1.1 Parks Canada is presently examining its policies concerning forest fire suppression. Mount Revelstoke and Glacier National Parks have areas identified where a fire could possibly be left to burn, under favorable conditions and close supervision.

1.1.1 Fire Plans for Mount Revelstoke and Glacier National Parks have been prepared which divide the Parks into various fire management zones. Priorities have been established to provide guidelines in the event of several lightning strikes occurring within the same period (which may result in limited manpower and support).

1.1.2 Mount Revelstoke and Glacier National Parks Fire Plans outline fire suppression organization and methods for control of forest fires. Outside agencies are also included in the plans, and used according to need. These are Okanagan Helicopters, International Forest Fire Systems (I.F.F.S.), B.C. Forest Service, Alberta Forest Service, Celgar Air patrols, Evans Forest Products and private aircraft. Resource Conservation personnel are also members of the Kinbasket Co-op.

1.1.3 The Chief Park Warden for Mount Revelstoke and Glacier National Parks is responsible to the Superintendent for fire control and suppression. The Area Resource Manager is designated Fire Control Officer in Glacier National Park. The Beaver River Warden is responsible for the fire equipment maintenance and testing.

1.2 Prescribed burning in Mount Revelstoke and Glacier National Parks will not be provided for (See Vegetation Management Plan; Management Actions I; 1.3).

1.3 Fire schools are held for the training of trail crews; training is limited to initial attack methods. The I.F.F.S. crew, on standby during the fire season, is trained for sky-genie work which is essential for initial attack and the construction of heli-ports.

1.4 Fire weather readings are taken in two locations in Glacier Park. Different climatic conditions between the Rogers Pass and Beaver Valley make this necessary. A fire hazard sign for the public is maintained at the East Gate. Fire weather hazard is computed from two locations for Mount Revelstoke Park: the Airport and the summit of Mount Revelstoke. Firehazard signs are maintained at Mount Revelstoke West Gate and mile one on Mount Revelstoke Parkway.

1.4.1 During periods of high to extreme fire hazard, extra patrols are made throughout the Parks. Air patrols are made on a regular basis after electrical storms. The public is kept informed of the fire hazard by the Warden Service, Interpretive Service, Information Centre, Campground attendants, East and West Gate and the local radio station.

1.4.2 A fire lookout patrol is employed during the fire season and patrols are carried out constantly between five lookout sites on the summit of Mount Revelstoke.

1.5 Communications on all forest fires is extremely important and well organized in Mount Revelstoke and Glacier National Parks. A number of portable radios (with two frequencies) are on hand at all times during the fire season.

REFERENCES

1. Resource Conservation Proposed Policy Amendments: January, 1977; Sections 3.10, 3.11

2. Fire Plan: Resource Conservation, Glacier National Park.

3. Fire Plan: Resource Conservation, Mount Revelstoke National Park.

PART B

STRUCTURAL FIRE CONTROL PLAN

Prepared by: R. Hamilton
Park Warden

STRUCTURAL FIRE CONTROL

INTRODUCTION

Resource Conservation personnel are required to provide adequate fire protection within the Parks; this includes not only forest fires, but a degree of preparation for both structural and vehicle fires.

Structural fires occurring in Mount Revelstoke National Park can be handled with the assistance of the Revelstoke Fire Department; the isolation of Glacier National Park though precludes the immediate assistance of outside agencies. Subsequently, structural fire protection, equipment and training has been provided and improved, as a continuing program in Glacier National Park.

OBJECTIVE

The objective is to provide for a state of fire protection and operational efficiency in Mount Revelstoke and Glacier National Parks.

SUB-OBJECTIVE I

PROTECTION

The Rogers Pass and East Gate areas of Glacier National Park are provided with fire hydrants. The East Gate area consists of nine structures for which three fire hydrants are provided. The Rogers Pass area is divided into two zones, the Government compound and the Northlander Hotel. The compound consists of six major structures and seven minor structures, for which six hydrants are provided. Two hydrants are located at the Northlander Hotel and Service Station.

The Government compound in Mount Revelstoke National Park has four structures for which one fire hydrant is provided. The residence area comprises four houses and two hydrants. The hydrants in each area obtain water from pressure tanks.

Fire detection and alarm systems are limited to the bunkhouse and apartment complexes at Rogers Pass. The bunkhouse has both rate-of-rise heat detectors and pull-alarms; the apartments have the same facilities although heat detectors are limited to the basement area. The bunkhouse is the only structure that provides indoor wall hydrants.

All Government vehicles carry fire extinguishers (primarily the Ansul A-5), while structures contain either water extinguishers, CO_2 extinguishers (ten or fifteen pounds) or a combination of both.

MANAGEMENT ACTIONS I

1.1 All fire hydrants are checked for adequate pressure in the spring and fall. At the same time, each hydrant is checked for equipment and lengths of fire hose assigned to each.

1.2 It has recently been determined that the fire alarm and detection system for the Rogers Pass compound area is inadequate. Plans are in progress to install new smoke and rate-of-rise detectors, plus annunciation panels in the bunkhouse and apartments. Studies are also in progress to eventually provide for alarm and detection systems in all the major structures in the compound.

1.3 All fire extinguishers installed in departmental vehicles and structures are checked once a month. The principal extinguisher used is the CO_2 Ansul A-5, which facilitates immediate re-charging by fire protection personnel.

1.4 Although fire protection and inspection of facilities is a responsibility of Resource Conservation personnel, all Park employees are encouraged to report faulty or discharged equipment to ensure a high state of readiness.

SUB-OBJECTIVE II

ORGANIZATION

Resource Conservation personnel in Glacier National Park are responsible for providing a fire-fighting organization. Presently, one Warden is designated as Fire Chief, with other Wardens holding the positions of Fire Coordinator and Deputy Fire Chiefs. Maintenance personnel are divided into Fire Teams (based on work shifts and personnel residing at Rogers Pass) with each foreman acting as Fire Captain.

The Fire Chief is responsible for maintenance and inspection of all fire-fighting facilities. All Deputy Fire Chiefs and Captains are responsible for assisting in training programs and delegating members for specific duties.

The Fire Coordinator has the overall responsibility to ensure the efficient operation of the organization and to arrange for extra equipment, manpower, etc., through the Chief Park Warden.

There is no structural fire-fighting organization required for Mount Revelstoke National Park due to the proximity of the Revelstoke Fire Department. By agreement, the Revelstoke Fire Department will respond to any structural fires occurring in the Park. During such times, Resource Conservation personnel will provide fire-fighting assistance.

MANAGEMENT ACTIONS II

2.1 Once every year, all Glacier Park Fire Teams will undergo some level of training in structural fire-fighting. During these periods, new personnel will be given specific duties on the assigned team. Each team will be instructed on the use and care of equipment plus fire-fighting techniques.

2.2 Organizational charts will be updated or amended as required.

2.3 Resource Conservation personnel will take advantage of Departmental training and courses in structural fire-fighting. In addition, outside advisors (such as the Provincial Fire Marshall) should be asked to provide annual training sessions for concerned personnel.

2.4 It is not the intention of Resource Conservation personnel to maintain a highly trained professional fire brigade. Due to the limited number of structural fires over the years (and subsequent lack of employee interest) plus rapid man-power turnover, it would require a large amount of time to keep such an organization in a highly trained position. Instead, new personnel will be instructed on their responsibilities and some degree of training will be provided for all employees throughout the year.

SUB-OBJECTIVE III

EQUIPMENT

There are three main sources of fire-fighting equipment in Glacier Park. All fire hydrants are provided with adequate hose, a nozzel, a hose wrench and a hydrant key; these are all secured under barrel coverings. A second source of equipment is the Rogers Pass Fire Hall; this structure carries only that equipment necessary for structural fires (1 1/2" hose, fog nozzles, respirators, fire pumps, ladders, protection gear and a fully stocked fire wagon). The third source of equipment is the Beaver River Fire Shed; all forest fire-fighting equipment is stored here, but it is to be used only for those fires occurring where structural fire protection is minimal or non-existant.

Mount Revelstoke National Park has similar sources of equipment, namely fire hydrants and a forest fire equipment shed. Again, the proximity of the Revelstoke Fire Department eliminates the need for specialized structural fire-fighting equipment.

MANAGEMENT ACTIONS III

3.1 The Rogers Pass Fire Hall is maintained in a high stage of readiness. All equipment is periodically checked, with aged or damaged equipment being replaced. The Fire Hall is also used for storing Ansul A-5 fire extinguisher re-charging chemicals and pressure capsules.

3.2 A fire horn is installed on the side of the Glacier Park Administration building. This fire warning will be operated manually, but is capable of being tied into the annunciator panels located in the bunkhouse and apartments.

3.3 When possible, more efficient equipment will be acquired to improve fire-fighting capabilities. This should include a half-ton truck that can be converted to a fire truck.

OPERATIONAL RESOURCE MANAGEMENT PLAN

FOR

THE TRANSPORTATION CORRIDOR

Mount Revelstoke and
Glacier National Parks

Prepared by: G. R. Hamilton
Park Warden

INTRODUCTION

The National Transportation Corridor is the most important man-made and man-influenced aspect of these essentially wilderness parks. The National interest requires that the Trans-Canada Highway and the C.P.R. mainline be kept open at all times possible on a year-round basis, thereby providing the Nation with an essential transportation link. This corridor also provides virtually the only access to the parks themselves.

Upgrading and maintenance are continually required on both transportation systems. An increasing number of park visitors will cause various interests to push for additional park visitor facilities. Both of these factors have had a very profound effect on the corridor area over the years.

OBJECTIVE

Parks must keep inpairment to a minimum while at the same time recognizing the essential nature of some maintenance and development projects. This plan will outline Resource Conservation's approach to the problem involved in maintaining a viable compromise between these conflicting requirements.

SUB-OBJECTIVE I

1.1 CANADIAN PACIFIC RAILWAY

1.1.1 The C.P.R. mainline runs through Glacier National Park. Routine track maintenance necessitates a certain amount of environmental impact along the railroad right-of-way and on the numerous access roads between the T.C.H. and the track line. The C.P.R. is presently planning construction of a new tunnel through Rogers Pass and twinning some sections of their line on either end of this tunnel.

1.1.2 The objective of this plan is to ensure consistency in dealing with the C.P.R. in any of their activities which might have a detrimental effect or impact upon the Park's resources.

MANAGEMENT ACTION I

1.2 C.P.R. RIGHT-OF-WAY MANAGEMENT

1.2.1 Management of the C.P.R. right-of-way entails a co-operative approach between the C.P.R. management and Parks Canada. Problems arising over major impact developments will be negotiated by Parks Canada's senior management. (Park Superintendent, Regional Administrators, and Special Projects Officer).

1.2.2 All major impact developments will be closely monitored by Park Wardens and regular monthly reports will be submitted by them to update the C.P.W. and Superintendent on the project's progress. Any environmental damage or unnecessary destruction of park resources will be mentioned in these update reports. In the event of serious damage the Park Superintendent is to be notified immediately by the most direct means available to the officer on site. A written report is to follow to the C.P.W.

1.2.3 In the event of the C.P.R. burning waste material along their right-of-way, the Park Fire Control Plan is to be followed. (See p. 19; General Order No. 903). The C.P.R. dispatcher should be notified of any fires located by Park staff along the C.P.R. right-of-way and which appear to be potentially dangerous.

1.2.4 An inventory of all areas and locations where the C.P.R. operations caused environmental damage will be taken. This will allow us to monitor any future damage or recovery. Such documentation is necessary to achieve the co-operation required.

SUB-OBJECTIVE II

2.1 TRANS-CANADA HIGHWAY

2.1.1 The T.C.H. (Trans-Canada Highway) maintenance program is the responsibility of Mt. Revelstoke and Glacier National Parks' administration. As the major road link across the country, it must be maintained in good condition and kept open whenever possible.

2.1.2 Some aspects of the maintenance operation may have environmental impact. The purpose of this management program is to seek methods to reduce such damage to the minimum level while still allowing the maintenance function to operate at its required level of efficiency.

2.1.3 The Resource Conservation Section also has the responsibility of Law Enforcement and Public Safety along the T.C.H.

2.1.4 The Snow Research and Avalanche Training Section of the Resource Conservation sub-activity is also involved in the operation of the T.C.H. through applied systems of Research, Forecasting and Control of Avalanches throughout the section of the T.C.H. through Glacier National Park.

MANAGEMENT ACTION II

2.2 TRANS-CANADA HIGHWAY

2.2.1 The avalanche control program causes serious environmental damage at many locations along the highway. This program is essential to the safety of the highway users and modification of it to preserve natural resources is virtually impossible. Any detrimental environmental effects of this program must be considered acceptable due to public safety responsibilities.

2.2.2 The highway maintenance program has some side effects which can cause environmental damage. The sanding and salting of the road in winter damages vegetative cover along the road sides. It also draws wildlife seeking salt onto the road surface where many of them are killed or injured by vehicle collisions. The value of the salting program should be examined by Park management in terms of cost-benefit to determine whether the program should be continued. The sanding of the road surface must be considered an impairment trade off to the public safety, however, management should look at cutting back on this program in areas around the Glacier Compound due to the amount of damage chips are causing in this area.

2.2.3 Occasionally, unforeseen natural causes may place some sections of Park roads in jeopardy. Examples might be unexpected flood conditions due to spring run-off or beaver activity. Unless extreme urgency requires immediate action, no maintenance action will be taken without prior consultation with the Warden Service. This includes all active manipulation of water courses.

2.2.4 The T.C.H. provides access to many areas of the park where visitor use may cause resource conservation problems. Illegal camping, illegal fires, poaching and unleashed dogs are but a few. Any of these problems may be considered as Law Enforcement problems and the educational and enforcement procedures laid down in the Law Enforcement Section of these management plans will be followed. This also applies to Highway Traffic offences.

2.2.5 The T.C.H. is a dangerous thoroughfare and accidents occur regularly. Public Safety, as a function of Warden responsibility on park roads, will be dealt with accordingly in the management plan for Public Safety.

SUB-OBJECTIVE III

3. PRIVATE CONCESSIONS

3.1 Private concessions in the Parks are limited to two at present. Problems have been encountered dealing with these concessions in the past due to the conflict between their operational policy and Park Regulations.

MANAGEMENT ACTION III

3.2 Resource Conservation personnel will endeavor to maintain a good working relationship with concession management and personnel. Through sound counselling and cooperation we can hope to inspire an atmosphere wherein these concessionaires will appreciate and compliment Park values. If conflicts arise, they should be channelled to Visitor Services via the Chief Park Warden for resolution. Documentation of any offences or incidents will be carried out whenever possible.

SUB-OBJECTIVE IV

4.1 PARKS CANADA OPERATIONS

4.1.1 Exclusive of the T.C.H., there are a large number of Parks Canada facilities for park visitors throughout the corridor area. These include campgrounds, picnic areas, pull-offs, gun positions, viewpoints, trails and trail access points, residential sites, borrow pits and the compound areas. All of these have varying amounts of impact on park resources.

4.1.2 In order to have the necessary control over this impact, a variety of approaches will be used.

MANAGEMENT ACTION V

4.2.1 Resource Conservation personnel will endeavor to maintain a close and harmonious relationship with all staff members from the other sections. A co-operative atmosphere with open lines of communication is the most effective method of ensuring that the responsibilities of Resource Conservation are not at odds with the responsibilities of the other sections.

4.2.2 It must be pointed out to all Section Heads that the Chief Park Warden must be notified at the pre-planning stage of any development proposal for the parks which could effect the natural resources. A great many potential problems can be avoided if this procedure is followed.

4.2.3 The Warden Service will prepare Environmental Impact Assessments on all park projects which have the potential to impair any of the parks' natural resources. These assessments must preceed final apporval of each project. The detail required in any particular assessment will be determined by the nature of the proposal and will be specified by the Chief Park Warden.