MANAGING FOR FISH AND WILDLIFE VALUES WITHIN THE FOREST MANAGEMENT PLANNING PROCESS

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Abstract: The two processes presently used for forest management planning on Crown land in Ontario are discussed with respect to planning for the management of fish and wildlife values. The "traditional" approach is via the management plan, operating plan and annual plan which accommodate fish and wildlife input at each level. The Forest Management Agreement approach is via the agreement, ground rules, management plan, operating plan and annual plan which accommodate fish and wildlife input at only the agreement, ground rule and operating plan levels.

Historically, fish and wildlife management staff in Ontario, and probably other jurisdications, have been reluctant to provide input into the forest management planning process because of a lack of complete resource data, established and proven management techniques and guidelines, and an understanding of the planning process. However, increasing demands for forest products make it imperative that, while continuing to expand data bases and improve on techniques, the first priority is to provide input into forest management plans based on the best knowledge at hand with no apologies to anyone, especially ourselves. A few mistakes may be made but that is part of the learning process. Who has heard of a forester who has never made a mistake?

With these thoughts in mind I would like to discuss two aspects of the forest management planning process on Crown land in Ontario and where planning for the management of fish and wildlife values fits in. The traditional approach to managing on Crown Management Units and, until recently, on all company licence areas has been through the "Manual of Forest Management Plan Requirements (for the Province of Ontario)" (Anon. 1977), first published as the "Manual of Timber Management" (Anon. 1948), and revised numerous times to the present edition. The most recent approach, the Forest Management Agreement, is the result of a need, identified by government, for industry to assume forest management responsibilities and pertains solely to company licence areas. Agreement guidelines are contained in the "Forest Management Manual (for the Province of Ontario)" (Armson et al. 1980). The legal basis for both processes is the Crown Timber Act.

Because of the scope of these two Manuals I will only briefly mention those sections which relate solely to timber management and confine most of my discussion to the sections where fish and wildlife values and concerns should be addressed (see Appendices I and II for more complete information). The examples I use are typical of input into forest management planning on a company licence area in the Thunder Bay Administrative District. While the prescriptions are primarily oriented towards management of fisheries, big game and sensitive raptor and heron habitat, they also indirectly benefit small game and furbearers.

The "Manual of Forest Management Plan Requirements", the basis of "traditional" forest management, provides guidelines for development of three important documents: a management plan covering 20 years, an operating plan covering 5 or 10 years and an annual plan for a particular forest area (Appendix I). Input data on fish and wildlife values and concerns varies from general goal or objective statements, types of habitat to be managed and types of management prescriptions to be implemented in the management plan, to specific areas of concern and prescriptions in the operating plan, and finetuning of specific prescriptions in the annual plan. It should be noted that although the Operating Plan appears as a section of the management plan, they are two separate entities both temporally, and in practice.

The first area of input into the management plan is the section entitled "Other Natural Resource Features" in which the existence and extent of important fish and wildlife resources and habitat is noted (ie: moose densities, winter concentration areas, marshes, spawning areas).

The "Management Objectives and System" section identifies long and short term objectives (including those for the fish and wildlife resources), economic and social benefits, conflicts between objectives and means of reconciliation (Appendix III).

The section on "Silviculture" provides for and describes modification of silvicultural systems to meet objectives for forest uses other than timber production providing that the site, stand and general environment are protected (Appendix IVa).

Requirements for other forest uses based on capability and feasibility, a statement of how other use objectives are to be attained, and a summary of plans for other forest uses on the area are included in the section "Other Forest Uses". It is in this section that dovetailing occurs between the management objectives established in the section "Management Objectives and System", and modified prescriptions established in the "Silviculture" section "to produce requirements that have to be met if the plan is to be properly implemented" (Cary 1981).

The section entitled "The Forest Inventory" permits inclusion of fish and wildlife inventory data and delineation of areas of biological sensitivity (ie: eagle nesting areas, winter concentration areas, waterfowl production or staging areas). While similar to input provided in "Other Natural Resource Features", actual survey data rather than a general statement of occurrence and extent are provided in this section.

The last area of input into the management plan is, as previously indicated, not in the actual management plan itself but in the associated operating plan. In practice, although not specifically stated in the manual, it is this plan which spells out the specific prescriptions designed to protect and manage fish and wildlife values (Appendix IVb). The location, type and timing of modified harvesting, timber reserves and access control are indicated (Appendix V).

The annual plan, an indication of intent to cut or improve specific areas during the next 12 month period, provides the last opportunity for input before timber harvesting operations begin. Specific prescriptions

described in the operating plan are reiterated and formalized as conditions on an "Approval to Commence Cutting Operations". These conditions are legally binding on the timber harvesting company through the Crown Timber Act. It should be recognized that, while minor changes in input at this stage may be acceptable (eg: a recently discovered heron rookery, moose winter concentration area or lake trout lake), additional prescriptions affecting the allowable cut should be kept to a minimum.

The Forest Management Agreement (FMA) concept is relatively new to the Province of Ontario. Only five FMA's have been signed to date, with the earliest having been in effect for approximately 12 months. As a result, the implications of the agreements to forest management, the status of fish and wildlife management objectives, and the mechanisms for ensuring that fish and wildlife values and concerns are adequately addressed are not, as yet, completely understood. However, understanding of these factors is of crucial importance considering that it is a stated government commitment to have all major company licence areas converted to FMA's by 1985, and that "the objective of a forest management agreement is to provide for a continuous supply of forest products from the lands designated in the agreement for the wood processing plant or plants of a company and to ensure that the forests on such lands are harvested and regenerated to produce successive crops of timber on a sustained yield basis" (Armson et al. 1980).

While some of the documents relating to the Forest Management Agreement are similar to those forming the basis for "traditional"

forest management, there is a change in emphasis in several of these, and the addition of several new documents and concepts. I will only briefly note the similarities in the two processes and concentrate on highlighting the differences.

Guidelines for the development and maintenance of an FMA and associated documents are contained in Appendix II.

The FMA itself is a contractual agreement between a forest industry company and the Minister of Natural Resources relating to the implementation of forest management on Crown forest land. It addresses such things as delineation of area and allowable cut, required standards and payments for road construction and silvicultural treatment, and responsibility for and timing of the management, operating and annual Plans. It is during negotiations on the area to be considered for an FMA that initial input of fish and wildlife values is considered in the form of exclusions. Exclusions are areas designated for other uses that preclude timber harvesting and production, and are permanently removed from the production forest base and the company's allowable cut. Examples of exclusions would be timber reserves around sensitive nesting sites, lake trout and brook trout lakes and brook trout streams. The extent of these exclusions is subject to agreement between the company and the Ministry of Natural Resources.

The next document of importance is the management plan which, unlike its counterpart in the "traditional" forest management planning process, includes neither a reference to treatments (silvicultural or otherwise) nor to other forest uses. Its primary purpose is to provide for

continuity of timber management over the 20 year life of the agreement. The main management objective is "to sustain a supply of wood for a mill or mills to meet market requirement" (Armson et al. 1980).

Once an agreement has been signed, the only area remaining for input concerning fish and wildlife values is the operating plan. As with the "traditional" process, the operating plan provides the focus for details of specific prescriptions. However, the mechanism for specifying the prescriptions is somewhat different, since it is done through constraints. Constraints are of two types, withdrawals and deferments, both of which "accommodate modifications or limitations in silvicultural activities, in those actions which can degrade the site, in impacts on other uses" (Armson et al. 1980). Withdrawals, termed exclusions prior to signing the agreement, are limited to 5% of the allowable cut by working group [ie: Jack Pine (*Pinus banksiana*), Spruce (*Picea glauca*), Poplar (*Populus tremuloides*)] based on productive forest land, for all other uses (ie: not only those relating to fish and wildlife values). If this limit is exceeded, comparable productive forest land must be found to replace the difference.

Deferments are constraints which limit the time at which all or part of the area may be cut, and have a specified time limit. If the deferment is for a period of time greater than 10 years, the deferment would generally be treated as a withdrawal. Deferments are the means by which a majority of fish and wildlife values are managed (ie: moose winter concentration areas, aquatic furbearer habitat, warmwater fisheries habitat).

The manual also stipulates that those prescribing modification in silvicultural activity to manage values other than timber production must determine the value so it can be related to the management effort required to bring it about, and determine the effect on allowable cut, management practices and costs. It is in the area of costs that some difficulties may be encountered.

The Ground Rules are re-established every five years concurrent with the operating plan. They contain silvicultural specifications, standards and alternative methods and should be the place to negotiate the status of deferments or other concerns (eg: increase the specified time limit for deferments to greater than 10 years). The Forest Management Agreement contains an "Evergreen" clause which automatically extends the term of the agreement at the end of each five year period if the company has performed its obligations under the agreement and an operating plan and ground rules for the next five years have been agreed to.

The annual plan is "essentially a confirmation of where treatments and activities, already described and agreed to, will take place" (Armson 1981). In this respect it is similar to its counterpart in the "traditional" process. However, at this time it is uncertain if any changes to the specific prescriptions described in the operating plan will be permitted.

These, then, are the two processes through which Crown land forests are managed in Ontario. The "traditional" process is one which we have become familiar with and developed confidence in over the years. The Forest Management Agreement process, we are as yet uncertain about. However, increasing familiarity with this process and maturation of the agreements will soon determine if fish and wildlife values and concerns will be adequately addressed.

Regardless of what system is used to manage forested land and ensure protection and management of fish and wildlife and other values, the effectiveness of such a system is based not so much on legal requirements to protect the environment as it is on confidence and communication. Confidence in the data base on fish and wildlife values and the techniques for managing them and effective communication of these values and techniques to government and company planners and forest managers.

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APPENDIX I

THE FOREST MANAGEMENT PLANNING PROCESS

THE MANAGEMENT PLAN - 20 Years

PART 1: The Report

A. GENERAL DESCRIPTION

1. Location, Area and Status
   Boundaries, Access, Legal Status
2. Physical Features
   Soils, Drainage, Climate, Topography, Geology
3. Forest Types and Species
   (i) Forest species and stands
   (ii) Other natural resource features - location and importance of important fish and wildlife resources and habitats
4. History
   Previous Plans, Past Management, Forest Origin
5. Economy
   Labour, Communities, Transportation
6. Production Area and Growing Stock
   Summary, Production Forests

B. OUTLINE FOR MANAGEMENT

7. Management Objectives and System - Objectives for all forest uses, Economic and Social Benefits, Conflicts and Means of Reconciliation
8. Division of Area
   Operating Units, Roads
9. Silviculture
   Cutting and Regeneration by Working Group
10. Allowable Cut
    Sustained Yield, Acreage and Volumes of allocated stands
11. Summary of Proposed Operations
    Harvest and Improvement Tables
12. Other Forest Uses
    Fish, Wildlife, Recreation

13. Environmental Protection
    Fragile Sites, Erosion, Road Building, Disease
14. Consolidation of Area
15. Maintenance of Plan
    Records, Depletion, Revision
16. Forest Inventory
17. Supplementary Plans
    Roads, Buildings, Bridges

PART II: The Forest Inventory

Detail, Maps, Ledgers, Tables

(i) Area Table
(ii) Species, Volume, Height, Types
(iii) Other resource inventory data, Fish, Wildlife, Recreation

PART III: The Operating Plan - 5 or 10 Years

- How the objectives stated in the Management Plan Report will be met during the operating plan period (usually 10 years)

1. Operation Survey
   (i) Correction of Provisional Allocation to actual allocation
   (ii) Prescriptions
   (iii) Volume Estimate

2. Operating Plan
   Outlines the cutting operations by working group and stand, and improvement operations to be done

PART IV: Supplementary Plans and Survey
Collection of Technical Plans for Physical Improvement

THE ANNUAL PLAN

Follows from Operating Plan. An indication of the intention to cut and improve.

(i) Allocation and designation of types
(ii) Maps, volumes
(iii) How it is to be cut and sequence, utilization standards
(iv) Improvement operations, Regeneration program
(v) Physical improvements

IMPLEMENTATION OF THE MANAGEMENT PLAN

INSPECTIONS OF THE PLAN AND AUDIT

REVISION OF THE MANAGEMENT PLAN

APPENDIX II

FOREST MANAGEMENT AGREEMENT

FOREST MANAGEMENT AGREEMENT - 20 years - Contractual Agreement

Between the Minister of Natural Resources and A Company

FOREST MANAGEMENT MANUAL

1. Preface
2. Introduction
3. The Forest and Land Base - inventory, non-production and production lands, annual allowable cut, land inventory.
4. The Management Plan - 20 yrs. - description of area, annual allowable cut, management objectives, surplus, forest procedures, implementation.
5. The Operating Plan - 5 yrs. - location of operating area, land base revision, objectives, access, revision and allocation of annual allowable cut (incl. constraints), schedule of silvicultural activities, summary of activities for past five years, administrative procedures.
6. The Ground Rules - 5 yrs. - terms, operational surveys cruises, silvicultural specifications and standards, means of amending.
7. The Annual Plan - access, proposed cutting area, proposed silvicultural activities, extended forecast of silvicultural activities, administrative procedures.
8. Reports, Management Information System, Certification For Payments

   Annual Report - Road construction and maintenance, depletions, forest operations, regeneration and free-to-grow assessment.

   - five year report - certification for payments.
9. The New Crop - Assessment of stocking, free-to-grow, treatment of failures, treatment of not satisfactorily regenerated class 6 lands, phase-in.
10. Withdrawals - calculation and reporting
11. Increase in Yield - Documentation, methodology, reduction in stumpage charges.

APPENDIX III

Example of Fish and Wildlife Input into Management Objectives and System Section of the Management Plan

The Ministry of Natural Resources objectives for the fish and wildlife resource in the areas covered by (name of company) management plan (1975-1995) are as follows:

(i) to maintain or increase fish and wildlife populations by the maintenance or enhancement of habitat through modification of timber harvesting and/or silvicultural practices,

(ii) to protect sensitive areas (i.e. nesting sites of the bald eagle, osprey and great blue heron) and infrequent high use, seasonal habitats such as moose aquatic feeding areas and mineral licks,

(iii) to manage, through manipulation of forest harvest and/or access, special fish and wildlife habitats such as deer yards, moose winter concentration areas, fish spawning areas, lake trout lakes, and important rivers and streams, and

(iv) to provide for a level of recreational use consistent with fish and wildlife populations, and management plans and policies.

Timber harvesting operations can affect fish and wildlife populations and values by:

(a) destroying or degrading habitat through forest cover removal, and

(b) increasing exploitation through improved and/or increased access.

However, with proper planning and management, the detrimental effects of logging can be minimized. In some cases, habitat may be improved, resulting in increased populations which may partially offset the effects of increased access.

Timber harvesting operations will be least affected by fish and wildlife input when:

(a) the Ministry is responsible for identifying areas of particular importance to fish and wildlife as far in advance of proposed harvest operations as possible, and

(b) the Company is responsible for accurately forecasting proposed harvest areas by year, and notifying the Ministry of the discovery of important fish and wildlife areas which are unknown to the Ministry.

Various management prescriptions will be employed, on an area-by-area basis as dictated by site and stand characteristics and fish and wildlife needs and values, to achieve the stated objectives.

APPENDIX IVa

Example of Input into Silviculture Section of the Management plan

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GENERAL PRESCRIPTIONS

(A) Modified or Selective Timber Harvesting - in the form of strip, block, patch cuts or selective cutting may be required in such areas as deer yards, moose winter concentration areas and some lake, river or stream reserves. The attached draft "North Central Regional Guidelines . . ." are indicative of the type of modified cutting which may be required. Prescription will be on an area-by-area basis after consultation between MNR biologists and foresters and company foresters. No timber harvesting activities should occur between December 1st and March 15 in deer yards and moose wintering areas.

(B) Timber Reserves

(i) in the form of "solid" reserves of varying depth will be required to protect the aesthetic quality of canoe routes and recreation trails, the viability of sensitive wildlife areas, the shorelines and inlets and outlets of warm-water lakes (spawning areas), and the habitat quality of coldwater lakes and streams supporting salmonid (trout) fisheries. Salmonids are extremely important sport fishes and are susceptible to over-exploitation and habitat degradation such as siltation and increased nutrient loads (see attached draft "North Central Regional Guidelines . . .").

Additional no-cut reserves may be prescribed to protect specific wildlife habitat (eg. aquatic feeding areas and mineral licks) and provide travel corridors for wildlife (eg. moose and furbearers).

(ii) in the form of modified or "block-cut" reserves of varying depth (usually 200 ft.) to improve habitat and provide travel corridors for furbearers and small and big game animals, and protect water quality along some lakes, rivers and streams.

(C) Access Control

(i) in the form of guidelines for road-crossings of streams and other water bodies will be prescribed to protect the aesthetics of canoe routes, local and spawning fish populations and to prevent habitat degradation by siltation and stream blockage (see attached district guidlines).

(ii) in the form of "no-access" or "remove access" restrictions may be required for protection of lake trout lakes, and may be required to protect sensitive areas and specific important wildlife habitat. New road access construction will not be permitted to any lake unless previously authorized by the District Manager, Ministry of Natural Resources. Some secondary roads may be closed when logging and regeneration activities have been completed.

APPENDIX IV b

NORTH CENTRAL REGIONAL GUIDELINES FOR FORESTRY PRACTICES IN THE VICINITY OR IMPORTANT FISH AND WILDLIFE HABITAT

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North Central Regional Guidelines for Forestry Practices in the Vicinity of Important Fish and Wildlife Habitat

Introduction

Districts in the North Central Region have for many years been working under a variety of guidelines to protect or maintain fish and wildlife habitat in the face of logging activity. On 80.07.22 a meeting was held in Thunder Bay to discuss district variations in an attempt to develop a regional set of guidelines which could be used by all districts. The guidelines presented here are a result of that meeting and subsequent district and regional reviews.

These guidelines should not be interpreted as hard and fast rules without exception, but as guides to be used by local managers and adapted to the local situation. Not all areas can be managed to maximize both Fish and Wildlife and Timber production. Thus, compromises and discussions among local managers are a vital part of the management process. It is important that Fish and Wildlife staff document the importance of specific areas for wildlife and/or fisheries values wherever possible. This does not mean that a professional's assessment of a suspected important habitat should be ignored in the absence of quantitative or qualitative data which for any number of reasons, could not be obtained.

Cutting Guidelines For Terrestral Wildlife

Moose

Since moose require a variety of boreal successional stages to thrive, habitat management to benefit this species indirectly

creates favourable habitat for a wide variety of other boreal species. This point is important to remember given the absence of specific guidelines for most other boreal wildlife in this document.

General Cutting Guidelines for Moose

While in some situations individual large clearcuts may be of concern, moose habitat management should concentrate more on maintaining or creating a favourable pattern of cut and uncut stands over large areas. Often, the interspersion of inoperable, unmerchantable and/or immature stands throughout a proposed cut area will satisfy moose habitat requirements. This situation must be examined first before application of the general cutting guidelines for moose should be considered.

(a) To minimize the detrimental effects on moose, clearcuts greater than 100 ha (250 acres) should have scattered shelter patches within the cut area except where larger clearcuts maximize edge (ie. are irregular in shape) and are deemed acceptable by Fish and Wildlife personnel. This would keep the overall diversity of the area high and still provide a reasonable timber harvest. These shelter patches could be of mixedwood and range from 3 - 5 ha (7-12 acres) in size, be at least 6 m high, have about 11 m^2/ha basal area (50 ft^2/acre) with at least 1/3 in conifer, and be spaced 200-300m (650 - 1,000 feet) apart.

(b) Should situations arise where the implementation of the above guidelines are impractical because of silvicultural or economic reasons, the corridor system should be employed. The

corridors (5 to 20 chains in width, depending on the situation) would be laid out in such a manner that the following objectives could be achieved:

(i) Individual clearcut sizes would be held to 100 ha (250 acres) except where larger clearcuts maximize edge and are deemed acceptable by Fish and Wildlife personnel.

(ii) The disturbed area could be traversed by moose and other wildlife without them having to travel across large expanses devoid of mature or semi-mature standing timber. The mature coniferous component of the corridors would also provide important late winter habitat requirements for moose, four season habitat for many terrestrial furbearers and seasonal habitat for other wildlife.

(iii) The corridor(s) in the affected area(s) would be laid out in such a manner that a continuum of cover is available throughout the disturbed area and is continuous with surrounding undisturbed areas. Corridors should not be bisected by more than one main, secondary or tertiary haul road. Skidder trails are not permissable through a corridor.

(iv) An important objective is to ensure that the amount of merchantable timber tied up in corridors is held to a reasonable level while still achieving habitat management objectives. In some cases, because of economics, accessibility etc., companies may be reluctant or unlikely to harvest these residual corridors at some future date should the corridors no longer be necessary. Where a number of corridors are necessary in an area, significant cordages may be lost if companies will not make a return harvest. In these cases serious consideration should be given to leaving large blocks of timber so that a return cut is more attractive.

Cutting Guidelines in the Vicinity of Specific Moose Habitats

(a) Aquatic feeding areas, Mineral Licks and Associated Corridors.

The shape and extent of the reserves around these areas will be determined by the wildlife staff and unit forester working together. In general, a 120 m reserve should be left around these areas and a continuum of cover should be available from the reserve to nearby undisturbed forest stands. This means that corridors will have to be left if all stands in the vicinity of the aquatic feeding area or mineral lick are to be clearcut.

(b) Early Winter Concentration Areas.

The shape, abundance and nature of these areas are so variable that they must be treated on an individual basis. Local ministry staff will evaluate the importance of these areas and provide suggested measures to provide adaquate protection. In most cases, the general cutting guidelines or modifications should suffice in order to achieve habitat management objectives. Maintenance of late winter habitat (mature coniferous cover) in close proximity to early winter concentration areas would be beneficial.

(c) High Density Areas

Application of the general guidelines with the following additional restrictions:

(i) Width of individual clearcuts should not exceed 400 m

(ii) The average cut size over the area in question should be about 100 ha (250 acres).

(iii) Maximum clearcut size should be held to 130 ha (320 acres)

White-tailed Deer

The distribution of white-tailed deer in this region is very localized, limited to small populations along the Lake Superior shoreline in Terrace Bay, Nipigon and Thunder Bay Districts. Atikokan District has the best deer populations in this region, but it too is

relatively localized, being limited to the west-central and southwest portion of the district.

Habitat requirements for white-tailed deer differ significantly from those for moose on three main points; the need for permanent openings, a more critical need for suitable winter cover and the reduced size of clearcuts which are acceptable as a component of good deer habitat.

Where local managers have decided to gear timber harvesting activity to the creation and/or maintenance of good deer habitat, the following guidelines should prove useful:

1. Individual clearcuts should be kept to 10 - 20 ha (24 - 50 acres) in size. Clearcuts up to 50 ha (125 acres) may be acceptable if they maximize edge. Areas that are known to provide winter shelter for deer should only be cut in a modified clearcut manner, preferably strips (see below).

2. Strip cutting (40 m cut, 40 m leave) can produce good deer habitat depending on the stand type. If the strip cutting is done in stands known to provide winter shelter requirements, (ie. jack pine, balsam fir, spruce or cedar) the residual strips should be left until such time that the regeneration on cut strips provide winter shelter. Where the use of narrow strips is not feasible because of economics or operational constraints, or narrow strips present problems for subsequent silvicultural treatments, 10 ha (25 acre) "patch" or block cutting on a 50% cut, 50% leave basis would be a suitable alternative prescription.

Woodland Caribou

The distribution of woodland caribou in this region, except for the Slate Islands herd in Terrace Bay District, is generally above the 50th parallel. Nipigon, Geraldton and Terrace Bay Districts

have the only viable remaining inland populations of this species documented in the region.

Woodland caribou prefer mature forest communities, especially those supporting abundant ground and/or arboreal lichen growth. Since timber harvesting changes old stands to young successional stands and eliminates lichens, these areas will no longer support woodland caribou. While timber harvesting may not be the only reason woodland caribou disappear, it certainly is a major contributing factor. Unfortunately, little work has been done on timber harvesting techniques which might be compatible with the maintenance of woodland caribou habitat. If the decision is made to maintain a documented woodland caribou population in a specific area, the only way to guarantee the continued existence of the population is to exclude all timber harvesting activity. Closely controlled experimental cutting might be carried out on the fringes of key areas to further our knowledge on what might be compatible with caribou habitat requirements.

Cutting Guidelines

For

Sensitive Raptors

Bald Eagles and Osprey

(a) Cutting Restrictions

(i) No cutting of any kind shall occur at any time within 200 m of any nest tree. Management will be limited to measures designed to maintain the nest site.

(ii) A buffer zone shall be established around each 200 m reserve for a further 200 m to be in effect during the critical breeding period, March 1st to July 31st. This total area (0.5 km^2)

corresponds to the average size of a normal defended territory.

(iii) Management or recreational activities in the buffer zone should occur only during the period from August 1st to February 28th. These activities may include selective tree harvesting tree planting, wildlife habitat development, camping, hiking and the use of off-road recreation vehicles.

(iv) Heavy development ie. road construction, logging, forest site preparation for planting, pipeline construction, and similar activities having a high disturbance factor shall be restricted for a total of 800 m from the nest site during the most sensitive breeding period, March 1st to May 31st.

(v) Within the buffer zone, at least five clumps of large tall trees suitable as nest sites, perching trees, or roost sites shall be protected from cutting or logging. The trees selected for this purpose will reflect the preference of the bird population in the area. All trees so selected should be identified on the ground and marked on 1:50,000 maps.

(vi) Management and development regulations shall be enforced around a nest site until it has been determined that the site has been abandoned for a minimum of five years.

A territory will be considered occupied if the nest site contains evidence of recent use ie. fresh boughs, sticks, droppings, feathers. young, eggs, or adults observed incubating on a nest, or the regular observation of a pair of birds throughout the breeding season.

(c) General Restrictions

A minimum "no cut" or "modified cut" reserve of 70 m may be required around lakes frequented by eagles or ospreys.

Great Blue Heron

(a) Cutting Restrictions

The following zones are to be established around each active heronry, and seasonally maintained until it has been determined that a heronry has been abandoned:

(i) No Cutting Zone

No cutting of any kind shall occur at any time within 400 m of the perimeter of the heronry in any direction. Management will be limited to measures designed to maintain the site.

(ii) Buffer Zone

A buffer zone shall be established around each no cutting zone for a further 300 m to be in effect during the sensitive season (April 15th to September 1st).

Management or certain recreational activites shall occur in the buffer zone only in the period beginning in fall after the birds have dispersed from the heronry and surrounding areas, and ending before the arrival of the adults in the spring. Unless otherwise prohibited, activities may include selective tree harvesting, tree planting, wildlife habitat development, camping. hiking and the use of off-road vehicles.

(iii) Zone Restricting Heavy Development

Heavy development such as road construction, logging, forest site preparation for planting, pipeline construction, and similar activities having a high disturbance factor will be restricted for a total of 1 km during the sensitive seasons (April 15th to September 1st) because sudden and/or excessive noise will cause nest abandonment.

Cutting Guidelines in the Vicinity of Waterbodies

Introduction and Rationale

Timber extraction can have a detrimental impact on the fisheries resource if measures are not taken to leave adequate buffer strips to protect fish habitat. Logging practices in the absence of buffer strips can affect lakes and rivers in the following ways:

1. Logging and road building may result in increased suspended sediments (silt and clay) and high turbidity.
2. Harvesting and silvicultural activities may result in increased runoff (possibility with elevated temperatures) and erosion which could increase the quantity of sediments and nutrients that are washed into the water.
3. Crossing streams with logging equipment and the improper construction of culverts, bridges, and logging roads contribute to siltation.
4. Clearcutting stream banks removes the overstory resulting in greater interactions with wind, sun and rain. This can cause increases and/or greater fluctuations in water temperatures.
5. The decomposition of deposited organic debris such as slash exerts a high demand on the oxygen dissolved in the water.
6. Removal of trees along the water's edge remove insect and invertebrate habitat reducing the amount of food available to fish.

Properly designed buffer strips can prevent, or at least ameliorate, many of the problems associated with logging and silviculture. To obtain the best results, with the least loss of merchantable timber, the width and the extent of the buffer strip have to be considered. An economic logging operation requires the use of heavy equipment, the building of roads and the construction and maintenance of camp sites. This type of operation takes planning and if fisheries intend to have meaningful input into this planning process, the concerns must be realistic, consistent and clearly enunciated. The objective is to make not only timber personnel but also the fisheries managers aware of these concerns.

A set of environmental guidelines have been developed for the North Central Region. These guidelines are designed to protect the fisheries resource and those user groups that depend on it, without unduly affecting the harvest of timber and regeneration of the forest. This approach is consistent with optimizing a mix of benefits from Crown Land use for all the people of Ontario.

These guidelines apply to Crown Land and may restrict the location of timber extraction. They are believed to be the minimum acceptable restrictions necessary to perpetuate the fishery resource. However, as noted in the attached schedule, there is considerable discretion left to the District Manager in appreciation of the subtle differences from district to district. For the purpose of these guidelines the aquatic habitat is divided into warm water or cold water. Cold water is generally associated with the presence of trout, and warm water the absence. This division recognizes the fact that cold water is much more sensitive to

environmental change than warm water. In addition, there is a distinction made between lentic aquatic habitat (lakes and ponds) and lotic aquatic habitat (rivers and streams). These divisions and distinctions are made at the district level.

In Schedule 1, there are a number of terms that need explanation. "Buffer zone" means "no cut" zone between the water body (lake or stream) and activities of the timber company measured from either the edge of standing timber or the shoreline (see "Guidelines" under Schedule 1).

"Modified cutting" is designed to allow timber extraction that will not adversely affect the production of fish (ie. blocks, strips, patches, etc.). Additional protection would usually require a wider buffer zone. "Selective cutting" means the removal of certain high value trees. Culvert and bridge construction guidelines should soon be available. All qualifications in Schedule 1 must be approved by the District Manager on an individual basis.

Where modified cutting is permitted on either cold or warm water lakes, inlets and outlets will be protected by solid buffer zones. In addition to buffer zones designed to protect habitat, further restrictions may be necessary on high-use recreational waterbodies.

Implementation of these guidelines by Fish and Wildlife staff should involve the following steps:

1) Ensure that a commitment to Regionally and Provincially approved guidelines is present in logging companies' 20 year management plan.

2) Ensure that logging companies' 5 year operating plans include environmental protection guidelines that are described specifically.

3) Ensure compliance at the annual operation level through regular field inspection.

SCHEDULE 1a COLDWATER

TYPE	GUIDELINES	QUALIFICATIONS
A. Designated Class I & II lake trout lakes	1) 125 m. buffer zone (standing timber) for any logging activity. 2) 300 m. buffer zone for any road building activity. 3) 800 m. buffer zone for any all weather road construction.	Additional protection may be considered ie. closure of roads within 800 m. of the lake after logging.
B. Designated Class III lake trout lakes self-sustaining, naturally reproducing brook trout lakes.	1) 125 m. buffer zone (standing timber) for any logging activity. 2) 300 m. buffer zone for any road building activity.	Additional protection or modified or selective cutting and changes in road construction restrictions may be considered.
C. Sensitive areas on coldwater rivers and streams ie. springs, spawning areas, inlets, outlets, etc.	1) 125 m. buffer zone from shoreline for any logging activity. 2) Culvert and bridge construction should avoid these areas.	Additional protection or modified or selective cutting may be considered.
D. Coldwater rivers, streams and other cold water lakes (including non-reproducing brook trout lakes).	1) 60 m. buffer zone from shoreline for any logging activity. 2) Guidelines for culvert and bridge construction must be followed.	Modified or selective cutting may be considered.

SCHEDULE 1b WARMWATER

TYPE	GUIDELINES	QUALIFICATIONS
E. Warmwater spawning areas, wetlands, inlets and outlets, etc.	1) 125 m. buffer zone from shoreline for any logging activity. 2) Guidelines for culvert and bridge construction must be followed.	Modified or selective cutting may be considered.
F. Warmwater rivers and streams	1) 60 m. buffer zone from shoreline for any logging activity. 2) Guidelines for culvert and bridge construction must be followed.	Selective and/or modified cutting may be considered.
G. Walleye lakes	125 m. buffer zone from shoreline for any logging activity.	Selective and/or modified cutting may be considered.
H. Other warmwater lakes	60 m. buffer zone from shoreline for any logging activity.	Selective and/or modified cutting may be considered.

APPENDIX V

Examples of Input into the Operating Plan

SPECIFIC PRESCRIPTIONS

(A) Modified Timber Harvesting - moose winter concentration areas composed of:

- BM 487-894 - 1980-85 Allocation - unallocated stands 11, 12, 13, 26 and 245 adjacent to allocated stands.
  - 1985-90 Allocation - allocated stand 251, portion 241 and adjacent unallocated stands 242, 248, 294, 250 and portion 245.
  - allocated and unallocated portions of stands 220 and 221.
  - allocated stand 320 and E portion of 319 and adjacent stands 327, 328, 330, 332, 334 and 335.

All moose winter concentration areas will be harvested on a 50-50 cut and leave basis with the configuration to be determined between G.L.F.P. Forester, M.N.R. Forester and M.N.R. Wildlife Biologist. No timber harvesting activities should occur between December 1 and March 15 in wintering areas.

(B) Timber Reserves

(i) "Solid" - vary in depth from 200 feet to 600 feet:

200 feet -
- BM 487-894 - Oskondaga River (brook trout introduction, 1981)
- BM 488-894 - Dog River
- BM 488-901 - Savanne River
- BM 488-903 - Seine River
- RM 488-904 - Seine River
- BM 491-893 - Lac des Iles River
- BM 491-894 - Dog River & associated lakes
- BM 491-901 - Fall Lake and creek between Fall and Buck Lakes

400 feet -
- BM 491-894 - Muskeg Lake
- BM 492-893 - Lac des Iles, Cowan Lake, Tib Lake
- BM 492-894 - Buck Lake, Tib Lake
- BM 492-902 - Hogarth Lake, Herbert Lake
- BM 492-904 - Hawk Lake
- BM 493-893 - Chisamore Lake, Heaven Lake Cowan Lake

600 feet -
- BM 486-893 - Dog Lake
- BM 487-893 - Dog Lake, Dog River
- BM 488-903 - Lac des Mille Lacs
- BM 493-901 - Pakashkan Lake

(ii) "Modified" or "Block" - these reserves will be 200 feet deep (ie: 200' x 200' blocks) and, on all specified lakes, associated with "solid" reserves on inlets and outlets (ie: 200' blocks on either side of inlet or outlet).
- BM 487-893 - McCrimmon Lake, Toole Lake, Croskery Lake, creek between Kerfoot Lake, Lakes #1, 2 & 3.
- BM 488-894 - Trumper Lake, Wakinoo Lake, Orbit Lake

(iii) "Sensitive Sites" - nesting sites of eagles, ospreys or herons. Approved regional guidelines to be followed in all cases
- BM 491-904 - Heron nesting site - Trewartha Lake (see attached map)

(C) Access Control

(i) "Crossing Guidelines" - applicable to all stream and river crossings

(ii) "No Access" - within any reserve
- within 800 meters of:
- BM 492-893 - Lac des Iles
- BM 493-901 - Mooseland Lake

It should be noted that prescription of further areas requiring modified cutting, reserves, or access control may be necessary as additional data on fish and wildlife values become available. However, every effort will be made by Fish and Wildlife staff to ensure that:

(i) the Company is advised as soon as possible to facilitate harvest planning,

(ii) timber volumes tied up in additional reserves at the annual plan level will be kept to a minimum and,

(iii) if new data indicate that specified prescriptions are unnecessary, they will be revoked and the Company informed.