

LAKE NIPISSING MANAGEMENT PLAN 1999 - 2003:

EXECUTIVE SUMMARY

Introduction

Background documents on the status of the Lake Nipissing fishery, and public input and recommendations relating to the fishery were reviewed during the winter of 1997-98. Using this information, a draft Lake Nipissing Fisheries Management Plan was prepared and presented to the public for comment in April 1998. Comments from the draft plan have been reviewed and incorporated, where appropriate, into the final plan. The Lake Nipissing Fisheries Management Plan will serve as a guide for the management of Lake Nipissing from 1999-2003.

Status of the Fishery

Rising mortality in the walleye population has been observed, and could be a threat to the sustainability of the walleye population. Northern pike and yellow perch should be managed with caution to prevent an occurrence or recurrence of an overharvest. Smallmouth bass and lake whitefish populations are not currently stressed. The lake sturgeon population is still in a period of recovery from past overexploitation and habitat losses.

Major Issues and Proposed Management Actions

Major issues relating to the sustainability of the Lake Nipissing fishery were identified as follows:

Primary Issues

Sport Fishery

First Nation Fisheries

Future Fisheries Assessment on Lake Nipissing

Non-Compliance to Fishing Regulations and Enforcement Efforts

Secondary Issues

Resource-Related Education

Fish Habitat Protection, Monitoring, and Improvement

Walleye Stocking

Tertiary Issues

Lake Level Fluctuations

Colonization of Double-Crested Cormorants

Water Quality Degradation

Proposed management actions relating to the major issues follow.

Primary Issue: Sport Fishery

Proposed Management Actions:

Regulation changes will be made as follows:

A) Walleye

Summer fishing season:

Protected slot 40 cm to 60 cm total length

Catch and possession limit of 4 walleye

Season closes October 15 (all fish species)

Winter Fishing Season

Season Opens January 1 (all fish species)

Catch and possession limit of 4 walleye

Season closes March 7 (all fish species)

B) Northern Pike

Catch and possession limit of 4 fish

C) Yellow Perch

Catch limit of 25, possession limit of 50

D) Lake Whitefish, Smallmouth Bass, Largemouth Bass, Lake Sturgeon

No changes

Supplemental to walleye regulation changes, the process of defining a new regulatory fishing division that surrounds Lake Nipissing will be initiated. This division will have seasons harmonized with Lake Nipissing, thereby eliminating

the possibility of increased fishing pressure beyond sustainable levels on surrounding lakes during season closures on Lake Nipissing.

In addition, consultation with the Sudbury District OMNR, recommending that identical regulation changes are proposed in the West Arm of Lake Nipissing, will begin immediately.

Furthermore, the process of rescinding the fall sanctuary in the Sturgeon River will be initiated on a trial basis, since spawning walleye protection should now be primarily afforded by the protected slot size.

Promotion of fishing for under-utilized species on Lake Nipissing will be undertaken.

Primary Issue: First Nation Fisheries

Proposed Management Actions:

MNR is not prepared to interfere with subsistence fishing of any kind. With respect to the Nipissing First Nation commercial fishery, MNR and the Nipissing First Nation will attempt to address all public recommendations through a sustainable fishing agreement.

MNR will pursue partnerships with the Nipissing and Dokis First Nations to co-manage the Lake Nipissing fishery toward the common management goal of sustainability.

Primary Issue: Future Fisheries Assessment on Lake Nipissing

Proposed Management Actions:

MNR supports the concept of community-based involvement in the management of Lake Nipissing through a board of stakeholders and will help pursue this idea.

The MNR, along with the Anishinabek/Ontario Fisheries Resource Centre (A/OFRC), biologists from other jurisdictions, and academic experts will determine long term essential data needs for all Lake Nipissing fish species and formulate strategies to collect this information.

The MNR, along with the A/OFRC, biologists from other jurisdictions, and academic experts will determine data collection needs to monitor the success of new fishing regulations.

The MNR will consider the A/OFRC as one mechanism to meet long term fisheries assessment data needs

Primary Issue: Non-Compliance to Fishing Regulations and Enforcement Efforts

Proposed Management Actions:

Enforcement on Lake Nipissing during critical times of the year will be identified as high priority in the North Bay District Compliance Plan.

MNR will encourage community partners and stakeholders to raise additional funds for enforcement purposes. If Lake Nipissing stakeholders and/or partners are able to raise additional funds, Lake Nipissing enforcement efforts can and will be increased.

The Deputy Conservation Program will be implemented if it is found to be applicable to Lake Nipissing.

Enforcement blitzes will continue in the spring.

Secondary Issue: Resource-Related Education

Proposed Management Actions:

Both an immediate and longer term resource-related education initiative will be an integral part of the management plan. The short term initiative will focus on information related to regulation changes, while the longer term initiative will focus on broader concepts related to the ecosystem of Lake Nipissing.

Secondary Issue: Fish Habitat Protection, Monitoring and Improvement

Proposed Management Actions:

MNR supports the concept of community-based involvement in the management of Lake Nipissing through a board of stakeholders and will help pursue this idea.

MNR will conduct a habitat assessment needs analysis for all major fish species on Lake Nipissing.

Secondary Issue: Walleye Stocking

Proposed Management Actions:

MNR will re-focus community efforts and funding on other lake stewardship initiatives that could include natural walleye spawning assessments and fish habitat assessment projects.

MNR will work with Lake Nipissing stakeholders to obtain agreement on the stocking issue.

Tertiary Issue: Lake Level Fluctuations

Proposed Management Actions:

The first consideration in water management levels will continue to be human lives and property, with fish populations as a secondary consideration.

MNR will request a response to the PAC recommendations from the agencies involved in water level management.

MNR will request data needed from Public Works Canada to assemble a water level report, as requested by the Public Advisory Committee.

Tertiary Issue: Colonization of Double-Crested Cormorants

Proposed Management Actions:

MNR will compile information from other lakes where cormorants have invaded.

MNR will undertake limited studies on the impacts of cormorants to Lake Nipissing and present the results to the public.

Public awareness information on cormorants will be prepared.

Cormorants will not be controlled at this time.

Tertiary Issue: Water Quality Degradation

Proposed Management Actions:

MNR supports the concept of community-based involvement in the management of Lake Nipissing through a board of stakeholders and will help pursue this idea.

MNR will compile public input concerning water quality issues and request a response from the Ministry of Environment.

Lake Nipissing Fisheries Management Plan 1999 - 2003

1.0 BACKGROUND

1.1 Introduction

A Lake Nipissing Fisheries Management Plan review is conducted approximately every five years. This process involves preparation of background documents on the status of the Lake Nipissing fishery, review of public input and recommendations, and preparation of an updated Lake Nipissing Fisheries Management Plan. The updated fisheries management plan is used to amend the North Bay District Fisheries Management Plan.

This document, *Lake Nipissing Fisheries Management Plan 1999-2003*, is the final product of the most recent Lake Nipissing Management Plan review. It will serve as a guide for the management of Lake Nipissing from 1999 to 2003, and will be used to amend the North Bay District Fisheries Management Plan.

1.2 Boundaries

The primary planning area is Division 27 in the Ontario Sport Fishing Regulations Summary (1997). This includes all of Lake Nipissing, the waters of the upper French River upstream of the Chaudiere dams, the Sturgeon River upstream to the MacMillan Bloedel Dam, the South River upstream to Chapman's Chutes, West Bay east of Highway # 64, the Veuve River upstream to the chutes in Caldwell Township, and Northwest Bay upstream to the falls on MacPherson Creek. In some cases, when dealing with habitat issues, the watershed area above the lake may be considered as secondary planning areas.

1.3 Background Documents

The current Lake Nipissing Fisheries Management Plan review began with the preparation of background information on the status of the Lake Nipissing fishery. A draft report, *Lake Nipissing 1995 Data Review* was prepared by Carsten Jorgensen, Richard Stronks, and Gary Preston, all of whom worked for the former Lake Nipissing Fisheries Assessment Unit. The assessment unit was closed in 1996, and as a result, this report was never completed.

Warren Dunlop of the Muskoka Lakes Fisheries Assessment Unit completed a report *Lake Nipissing Walleye Fishery Data Review, 1997* in September, 1997. Scott McLeod of the Anishinabek/Ontario Fishery Resource Centre (A/OFRC) completed *Nipissing First Nation Commercial Fishing Harvest Report* in July 1997. Mike Gillies of the A/OFRC completed *Lake Nipissing Walleye Spawning Assessment, Wasi Falls and Iron Island 1997* in February 1998. All of the reports mentioned above and their respective critical reviews have been used as background documents to help write this management plan.

1.4 Public Input

Gord Miller was appointed as an independent facilitator of public input during the management plan review process. Specific responsibilities are listed in the Terms of Reference for the District Fisheries Management Plan Review for Lake Nipissing 1997.

Public forums were held in December 1997 in Sturgeon Falls, North Bay and Garden Village to gather public input for the management plan. Questionnaires designed to gather additional input were circulated during these forums, and available at the North Bay District MNR office until January 31, 1998.

A Public Advisory Committee was formed, comprised of stakeholders around the lake. Stakeholders invited to participate on this committee are listed in the Terms of Reference for the District Fisheries Management Plan Review for Lake Nipissing 1997. Actual membership on the Public Advisory Committee (PAC) included:

Jim Antler, Northern Ontario Tourist Outfitters
Paul Bertrand, West Nipissing
Peter Bullock, City of North Bay
Len Houle, Ontario Federation of Anglers and Hunters
Carsten Jorgensen, Citizen at Large
John Link, Almaguin-Nipissing Tourist Association
Frank Marusich, Lake Nipissing Partners in Conservation
Kevin O'Grady, Lake Nipissing Partners in Conservation
Peter Rooney, Upper French River Cottagers Association
Bruce Sharpe, North Bay Anglers and Hunters
Dave Stewart, Citizen at Large

This committee was asked to represent public concerns and present recommendations regarding fisheries management for Lake Nipissing. The final recommendations made by the Public Advisory Committee appear in Appendix 1 and also appear throughout this document under the heading "Public Recommendations."

A draft Lake Nipissing Fisheries Management Plan was released to the public in April 1998 and presented at information sessions in Sturgeon Falls, North Bay and Garden Village. A notification on the Environmental Bill of Rights Registry was posted May 7. Public comment on the draft plan was received until June 7, 1998. Public comments were compiled and reviewed by the planning team on July 6, prior to formulating the final plan.

1.5 Key Issue and Primary Focus of Management Plan

The key issue and primary focus of this management plan is the walleye fishery. The walleye is the top predator in the Lake Nipissing fish community and the most sought after species in the lake. Trends in mortality and mean age of walleye catches indicate that the walleye population is currently being overexploited.

A primary goal for Lake Nipissing fisheries management is to provide recreational, economic and cultural opportunities through a stable and sustainable walleye fishery.

For the reasons stated above, the walleye fishery has received the most attention in this management plan, possibly at the expense of a more ecosystem-based approach to management.

1.6 Format of Management Plan

This management plan has been divided into five sections:

2.0 BACKGROUND: WALLEYE POPULATION

This section presents brief descriptions of problem diagnosis and walleye population characteristics, followed by walleye management objectives.

3.0 BACKGROUND: OTHER MAJOR FISH POPULATIONS

This section presents brief descriptions of population status and management objectives for northern pike, yellow perch, smallmouth bass, lake whitefish, lake sturgeon. A brief description of recent significant fish community changes is also presented.

4.0 MAJOR ISSUES AND PROPOSED MANAGEMENT ACTIONS

In this section, major issues from public input are defined and prioritized. Public recommendations to address each major issue are given, followed by a response to these recommendations and proposed management actions from the management planning team. The management planning team consists of

Richard Rowe, Biologist, MNR, Tomiko Area, Team Coordinator/Plan Author
Rick Calhoun, District Planner, MNR, North Bay
Wayne LeBelle, Communications Specialist, MNR, North Bay
Al Stinson, Resource Liaison Specialist, MNR, North Bay
Gary Couillard, Conservation Officer, MNR, North Bay
Cory Restoule, Representative, Dokis First Nation
Eric Stevens, Representative, Nipissing First Nation

5.0 MANAGEMENT STRATEGIES AND TACTICS

Proposed management strategies and tactics have been formulated to address each major issue and proposed management action. The strategies and tactics presented in this section will form the basis for work planning on Lake Nipissing for 1999-2003.

6.0 FUNDING REQUIREMENTS FOR PLAN IMPLEMENTATION

Essential funding requirements for implementation of this management plan are outlined and explained. These funding requirements are immediate and in addition to regular annual work planning that will take place during the implementation of this management plan over the next five years.

2.0 WALLEYE POPULATION

2.1 Problem Diagnosis

Exploitation has always been identified as the major stress on walleye populations in Lake Nipissing (Dunlop 1997, Jorgensen and Reckahn 1995, Anthony and Jorgensen 1976). All other potential population-limiting factors are secondary in importance when compared to exploitation. An increasing trend in total mortality and decreasing trend in mean age of catch are key observations that suggest that Lake Nipissing walleye are currently being over-exploited.

There is at present, insufficient scientific knowledge to know exactly what a sustainable harvest level is for Lake Nipissing walleye. It does appear that harvest levels could be currently exceeding sustainability, as mortality of walleye has continued to rise since the mid to late 1970s. More detailed information on status of the walleye fishery is available in *Lake Nipissing Walleye Fishery Data Review, 1997* (Dunlop, 1997).

The key problem to consider for this management plan is a rising trend in walleye mortality caused by overexploitation.

2.2 Population Characteristics

Low reproductive output and slow growth of Lake Nipissing walleye relative to other lakes are important considerations for management of Lake Nipissing walleye (Jorgensen and Gibson 1986). These observations are consistent with Jorgensen's walleye stock-recruitment theoretical model for Lake Nipissing (Jorgensen pers. comm.), which suggests that the Lake Nipissing walleye population requires an abundance of spawning-aged fish to remain sustainable.

2.3 Walleye Management Objectives

To reverse the rising trend in walleye mortality in the short term, and eventually stabilize mortality at a level below 40% over the long term.

To maintain and attempt to increase the abundance of adult walleye in population.

3.0 OTHER MAJOR FISH POPULATIONS

As mentioned earlier, the primary focus of this management plan is walleye. Limited information available on the population status of other species is presented below.

3.1 Northern Pike

A) Population Status

A preliminary review of data on northern pike failed to diagnose a specific problem with the population, but did determine that this population should be managed with caution to prevent a recurrence of an apparent overharvest in the early 1980s.

From the preliminary review, it appears that there could be many limiting factors contributing to observed low harvests and yield in the 1990s. These include past overharvest, present exploitation stress, and depressed recruitment. At least a portion of the observed depressed yield and harvest levels could be attributed to insufficient creel data collected on pike in the 1990s. Very few pike were sampled in the creel between 1990 and 1994 (Jorgensen, Stronks and Preston 1996).

Pike mortality, relative pike abundance, and pike habitat quantity and quality need to be carefully monitored in specific areas on the lake to gain a better understanding of pike population status and dynamics in specific pike areas.

B) Management Objectives

To prevent the occurrence or recurrence of an overharvest situation.

3.2 Yellow Perch

Population Status

A preliminary review of data on yellow perch suggests that the population is not currently overexploited, but could still be in a state of recovery from past overharvest.

Past over-harvest likely occurred between 1979-1984, when reported angler harvest levels exceeded theoretical maximum sustainable levels. Harvest levels then dropped in 1985-86 and have stabilized at this lower level to present day.

Observations that suggest the population is not currently overexploited are:

- A slight upward trend in winter catch per unit effort
- A stable mean age between 5-6 years old
- Strong year classes moving through the fishery.

Harvest and yield levels, although stable, have not approached their theoretical maximum level since the early 1980s, suggesting that the population may still be recovering from the effects of overharvest. The recurrence of an overharvest situation while the population is stable at this lower level could have a serious impact on the sustainability of the perch population. Therefore, the possibility of another overharvest period recurring should be prevented to assure the sustainability of the perch population.

B) Management Objectives

To prevent the occurrence or recurrence of an overharvest situation.

3.3 Smallmouth Bass

A) Population Status

No formal data review has been performed on the smallmouth bass fishery. Observations during the 1997 Northeastern Ontario Bass Association Tournament suggest that this fishery is in excellent shape. Mean age of tournament-caught fish was 7.2 years old, and mean fork length was 39.4 cm. Age and size structure in addition to apparent fishing success (CUE = 0.73) during the tournament suggests that Lake Nipissing smallmouth bass population is in excellent shape. Presence of abundant large fish suggest that population is not currently stressed, nor has it been in the past.

It is expected that bass angling on Lake Nipissing will soon increase due to angler success experienced during tournaments and as angling for species other than walleye is promoted. Therefore, the bass population should be considered when a long term monitoring program is developed.

B) Management Objectives

To maintain a healthy population of smallmouth bass.

3.4 Lake Whitefish

A) Population Status

There is very limited data concerning the status of whitefish in Lake Nipissing (Jorgensen et al. 1996). With low angling harvest relative to other species and no commercial harvest, the whitefish in Lake Nipissing are considered an 'under-utilized' species.

B) Management Objectives

To maintain a healthy population of lake whitefish.

3.5 Lake Sturgeon

A) Population Status

The sturgeon population on Lake Nipissing is still in a period of recovery from past overexploitation by non-Native commercial fisheries and spawning habitat losses. Non-Native commercial catches on Lake Nipissing declined from a high of 86,932 kg in 1903, to 305 kg in 1989. During this time, sturgeon was being fished well above its sustainable level, and spawning grounds such as the Sturgeon River were being degraded by incompatible development. Because of low catches and very little recruitment of young sturgeon into the fishery, the seasons for commercial fishing and angling for sturgeon were closed in 1991.

Since 1991, the Ministry of Natural Resources, in cooperation with several partners including the town of Sturgeon Falls, the Dokis First Nation and the Nipissing First Nation, has embarked on a series of projects to monitor and rehabilitate the sturgeon population. These have included water quality monitoring in the Sturgeon River, spawning bed rehabilitation in the Sturgeon and South Rivers, sturgeon tagging, and monitoring fry hatches. In addition, the town of Sturgeon Falls reared and stocked 730 sturgeon fingerlings into Lake Nipissing from 1992-1995.

The sturgeon population must be monitored for signs of recovery. It will take considerable time for the population to be healthy enough to support any type of sustainable exploitation.

B) Management Objectives

To continue rehabilitation efforts that lead to an increase in abundance of adult sturgeon.

3.6 Other Species

The most recent significant fish community changes have been a decline in burbot harvest and a dramatic increase in brown bullhead in caught in trap nets.

Burbot winter harvest numbers dropped from an estimated 11,588 to an estimated 494 in 1981. The average estimated winter harvest for 1991-1997 was 230. It is not known what has caused this decline; although it has been speculated that the population contracted an epidemic (Jorgensen 1994). Another possibility could be chronic angler overharvest which finally led to the species' demise, as there are many anecdotal reports of ling being stacked on the ice 'like cordwood' continually for at least a twenty year period.

According to early summer trap net data, brown bullhead abundance has increased dramatically. The mean annual trap net catch from 1981-1987 was 718. The mean catch

from 1988 - 1993 was 5906. The reason for this increase is not known, although it has been speculated that the 1980s was a warm decade which changed habitat to favour bullhead (Colby 1994 as cited in Jorgensen 1994).

Management Objectives

To gain a better understanding of entire fish community, its changes, and population interactions.

4.0 MAJOR ISSUES AND MANAGEMENT DECISIONS

Major issues surrounding the Lake Nipissing fishery were identified by the public during the public input phases of the management plan review. These issues have been compiled into a priority structure by the planning team as follows:

Primary Issues

Sport Fishery

First Nation fisheries

Future Fisheries Assessment on Lake Nipissing

Non-Compliance to Fishing Regulations and Enforcement Efforts

Secondary Issues

Resource-Related Education

Fish Habitat Protection, Monitoring, and Improvement

Walleye Stocking

Tertiary Issues

Lake Level Fluctuations

Colonization of Double-Crested Cormorants

Water Quality Degradation

The priority structure was defined by the planning team, with influence from the Public Advisory Committee to provide perspective on the relative significance of each issue as it relates to the sustainability of the Lake Nipissing Fishery.

In the following section, each issue is treated as follows:

Issue

Brief description of issue

Public Recommendations

Recommendations to address the issue brought forward on behalf of the public by the Public Advisory Committee.

Planning Team Response

An explanatory response to the *Public Recommendations* is given by the planning team.

Proposed Management Actions

The proposed management actions to address the issue are presented.

It should be noted that the *Public Recommendations* have been re-arranged, but not altered, to fit the issue priority structure defined by the planning team. Issues and recommendations brought forward by the Public Advisory Committee appear in Appendix 1 in their original format.

4.1 Primary Issues

4.1.1 Sport Fishery

Exploitation is the major stress on walleye populations in Lake Nipissing and historically, always has been (Dunlop 1997, Jorgensen and Reckahn 1995, Anthony and Jorgensen 1976).

Based on historic creel census data, it has been estimated that the sport fishery harvests an average of approximately 152,000 walleye from Lake Nipissing each year. The long term estimated seasonal averages (excluding illegal harvest) are as follows:

Summer: 100,500

Winter: 37,500

Fall: 14,000 (September and October estimates only)

The average annual effort for the sport fishery is estimated to be 1,001,069 angler-hours, or between 11-12 angler-hours per hectare. Sustainable effort levels for walleye have been estimated to be between 10 and 20 rod-hrs/ha/yr (Rob Korver, pers. comm.). Because effort levels for Lake Nipissing are within this range, it is unclear whether the sport fishery is above or below actual sustainable effort levels.

The current magnitude of the sport fishery represents a sustainability concern because of the current status of the walleye population.

Public Recommendations

Public Advisory Committee recommendations that pertain to the sport fishery are as follows:

1. With respect to walleye fishing season, it is recommended that:
 - If season-shortening is chosen as a management tool, then options in order of priority should be:
 - (i) Close the season earlier in the fall (First Sunday in November or earlier)
 - (ii) Open the season later in the winter (first Saturday in January)
 - (iii) Close the season earlier in the winter (second Sunday in March).
 - The May long weekend opening not be altered.
 - Angling for other species is closed for the same periods.

2. With respect to ice-fishing and cars/trucks on the ice, it is recommended that:
 - Ice fishing not be singled out for special regulation, that instead, management restrictions be consistent throughout the year.
 - The present inefficient system of registering ice-fishing huts is improved so that the person responsible for the hut can be identified.

3. Drawing on public input received concerning the management of walleye (yellow pickerel), it is recommended that:
 - A slot size of 40 to 60 cm be implemented and applied to all fish harvesting as a conservation measure.
 - Both the catch and possession limits are reduced to 4 per day.
 - The angling of species other than walleye be promoted.

4. With respect to the management of other sports fish, it is recommended that:
 - Muskellunge re-stocking is re-instituted on a periodic basis with limits left as they are.
 - A limit on yellow perch of 25 fish per day (possession 50) is instituted.
 - The limits on northern pike are adjusted to be the same as walleye.
 - No changes are made in bass or whitefish limits.

Planning Team Response

A) Walleye Management

The biological objectives for the walleye population are:

1. To reverse the rising trend in walleye mortality and eventually stabilize mortality at a level below 40%.
2. To maintain and attempt to increase the abundance of adult walleye in population.

To meet these biological objectives, it has been determined that an effective approach would be a harvest reduction that emphasizes protection of spawning fish.

i) Harvest Reduction

The current sustainable harvest level for Lake Nipissing walleye is not known. It is known that at the present level of angler harvest, mortality of walleye has continued to rise for a 20 year period, and now represents a sustainability concern for the walleye population. These observations suggest that angler harvest could be continually exceeding the true sustainable harvest level.

A logical first attempt toward reducing mortality and achieving a sustainable harvest level is to reduce harvest to a level that is measurably lower than previous levels. By setting a harvest level that is measurably lower than previous levels, analysts can evaluate the effects of the lower harvest in decreasing mortality and begin to obtain the needed information for determining the actual sustainable harvest level.

It has been determined that the sport fishery harvest level target for the next five year period should be 113,000 walleye. This represents an average 26% annual reduction of the estimated angler harvest level.

ii) Protection of Spawning-Sized Walleye

Given that the Lake Nipissing walleye population requires an abundance of spawning-aged fish to remain sustainable, mechanisms to protect spawning-sized fish and ensure recruitment of future spawning-sized fish should be implemented over the next five year period to ensure sustainability.

Because of the inherent characteristics of the Lake Nipissing walleye population (good natural reproduction, slow growth, high natural mortality of small fish, high angling effort) and public support, a protected slot size is deemed to be an appropriate protection measure and mechanism for harvest reduction during the summer fishing season.

A protected slot will increase fishing pressure on younger year classes (walleye aged 3, 4, and 5). Without a creel limit reduction in addition to the protected slot, mortality of the younger year classes may increase significantly enough to suppress recruitment of these ages into the spawning population. Therefore both a protected slot size and creel limit reduction are necessary to assure protection of present and future spawning stocks..

A protected slot of 40 cm - 60 cm total length in combination with a 4 fish catch and possession limit was chosen because:

- With a high rate of angler compliance, these measures should be effective in meeting the set harvest reduction target;

- These harvest reduction tools were effective in reversing the rising mortality trend and stabilizing the adult walleye population during computer population simulation with the Fisheries Management Support System (FMSS);
- Spawning-sized females are protected from summer fishing until age 12 (allowed to spawn 7 times if spawning begins at age 6);
- Some protection is afforded to female walleyes prior to spawning, which may improve chances of younger fish surviving to adulthood, and therefore, meet the objective of increasing abundance of adult population;
- These harvest reduction techniques seem to have public support, which could increase compliance and promotion of these regulations.

A possible enhancement to slot size regulations is a no live walleye regulation. A no live walleye regulation assures that fish are either kept or immediately released. Immediate release mortality rates for walleye are in the range of 0-3% (Percid Synthesis Workshop, 1998). Such a regulation would improve live release survival by assuring immediate release of unwanted fish. Delayed release mortality, even in live wells, ranges from 15-100% (Percid Synthesis Workshop, 1998). Without a 'no live walleye' regulation, an intensive catch and release education initiative will be essential to assure high survival rates of released fish. A no live walleye regulation should be considered in the future if the rising mortality trend does not reverse itself with the slot size/limit reduction alone.

A protected slot size during the winter fishing season cannot be recommended until a winter release mortality study be completed for walleye on Lake Nipissing. Therefore, harvest reduction and spawning-sized fish protection should be attempted through season changes and limit reductions during the winter fishing season.

An earlier fall season closure would contribute to spawning-sized fish protection and overall harvest reduction.

B) Northern Pike and Yellow Perch

The management objective for these species is to prevent the occurrence or recurrence of an overharvest. The Public Advisory Committee recommendations pertaining to these species are consistent with management objectives and are therefore supported.

C) Other Species

Bass and whitefish populations appear to be healthy and under-utilized. Therefore, the Public Advisory Committee recommendations pertaining to these species are supported.

D) Ice Hut Registration System

As a first step towards possible improvements, the ice hut registration system needs to be reviewed in an objective manner to determine its actual efficiency. The Lake Nipissing Partners in Conservation have agreed to assist the MNR with a review beginning in 1999.

E) Muskellunge Re-Stocking

Currently there is no biological basis to justify the stocking of muskellunge into Lake Nipissing.

Proposed Management Actions:

A) Walleye

Regulation changes will be made as follows:

Summer fishing season:

Protected slot 40 cm to 60 cm total length

Catch and possession limit of 4 fish

Season closes October 15 (all fish species)

Winter Fishing Season

Season Opens January 1 (all fish species)

Catch and possession limit of 4 fish

Season closes March 7 (all fish species)

B) Northern Pike

Catch and possession limit of 4 fish

C) Yellow Perch

Catch limit of 25, possession limit of 50

D) Lake Whitefish, Smallmouth Bass, Largemouth Bass, Lake Sturgeon

No changes

E) Supplemental to Walleye Regulation Changes on Lake Nipissing

Consultation with the Sudbury District OMNR, recommending that identical regulation changes are proposed in the West Arm of Lake Nipissing, will begin immediately.

The process of defining a new regulatory fishing division that surrounds Lake Nipissing will be initiated. This division will have seasons harmonized with Lake Nipissing, thereby eliminating the possibility of increased fishing pressure beyond sustainable levels on surrounding lakes during season closures on Lake Nipissing.

The process of rescinding the fall sanctuary in the Sturgeon River will be initiated on a trial basis, since spawning walleye protection should now be primarily afforded by the protected slot size.

Promotion of fishing for under-utilized species will be undertaken.

4.1.2 First Nation Fisheries

Lack of knowledge regarding the harvest levels of the First Nations fisheries have represented challenges to sustainable management of Lake Nipissing.

In 1997, it was estimated that the Nipissing First Nation commercial fishery harvests 26,000 walleye per year, based on sampling of two winter and two open water fishing seasons (McLeod 1997). There have been no estimates to date of harvest levels for Dokis First Nation or Nipissing First Nation subsistence fishing.

Public Recommendations

Public Advisory Committee recommendations that pertain to walleye harvest by First Nations fisheries are as follows:

With respect to the native fishery, the public feels that certain fishing practices on Lake Nipissing threaten the conservation of the resource. Specifically, gill netting, is of great concern, especially in sanctuaries and during the spawning period. Therefore, it is recommended that:

- Use of gill nets is eliminated in lieu of trap nets purchased with the assistance of the Government of Ontario.
- All measures are pursued to eliminate netting during the spawning season and netting in sanctuaries.
- A partnership in resource management is established with the first nations to co-manage the resource toward common management goals for this five year management period.

Planning Team Response

Nipissing and Dokis First Nations have certain hunting and fishing rights as set out in the Robinson-Huron Treaty of 1850. These rights were re-affirmed in section 25 of the Constitution Act of 1982.

Based on public input received, it is apparent that the First Nations fisheries on Lake Nipissing are poorly understood, and are subject to disagreements, rumours and speculation regarding their impacts and harvest levels. Most of the controversy is focused on the Nipissing First Nation commercial fishery.

The potential for a conservation concern caused by a gill net fishery does exist because there is no imposed or enforceable limit to this fishery. However, commercial gill net fishing considered by itself, at the 1997 reported levels does not represent a conservation concern at this time.

It is essential that information be continually collected on this fishery to gain a better understanding of its true impacts and harvest levels. This information must be conveyed to all users of the lake by Nipissing First Nation and the MNR.

The Nipissing First Nation is pursuing a sustainable fishing agreement with MNR that would designate a harvest level for commercial fishing, protect spawning fish, and provide a mechanism for enforcement assistance, if required. Other components of this agreement could include net-marking, a harvest reporting mechanism, funding for data collection and agreement administration, and recognition of the important role played by Nipissing First Nation in the management of Lake Nipissing.

All fish harvesting has an impact on the fishery and contributes to mortality. Fishing by First Nations is ultimately controlled by First Nations, and therefore, any efforts to limit fishing or change fishing practices must be directed by the First Nations. As an Ontario government agency, MNR can, at present:

- Provide assistance to First Nations in attaining more information about their fishery, and help transfer that information to their communities and the broader public through education initiatives.
- Express concerns to First Nations about the Lake Nipissing fishery and ask for assistance in addressing existing problems
- Suggest ways in which the First Nations can assist in addressing the Lake Nipissing fishery's existing problems.

The MNR fully supports the idea of establishing a partnership with the Nipissing and Dokis First Nations to co-manage the Lake Nipissing fishery toward the common management goal of sustainability.

Proposed Management Actions:

MNR is not prepared to interfere with subsistence fishing of any kind. With respect to the Nipissing First Nation commercial fishery, MNR and the Nipissing First Nation will attempt to address all public recommendations through a sustainable fishing agreement.

MNR will pursue partnerships with the Nipissing and Dokis First Nations to co-manage the Lake Nipissing fishery toward the common management goal of sustainability.

4.1.3 Future Fisheries Assessment on Lake Nipissing

Once regulation changes are put into effect, it will be essential to monitor walleye population parameters such as mortality, catch at age and harvest to evaluate population responses to changes in regulations. An estimate of actual abundance of walleye both before and after implementation of new regulations should also be attempted. These monitoring mechanisms must be reflected in a long term data collection strategy.

The Lake Nipissing Fisheries Assessment Unit of the MNR was responsible for the collection of assessment data on the lake for over 25 years. This data was used by MNR to make informed management decisions on the Lake Nipissing fisheries and ecosystem to ensure their sustainability. Since the closure of the Lake Nipissing Fisheries Assessment Unit, data collection by MNR relating to fisheries management has been minimal, and coordination of data collection has been logistically challenging.

To manage the Lake Nipissing fisheries effectively and assure ecological and economic sustainability, fisheries assessment data for Lake Nipissing must continue to be collected through other means.

Public Recommendations

With respect to future fisheries assessment on Lake Nipissing, the Public Advisory Committee stated:

With respect to ecological management and monitoring, the Public Advisory Committee recognizes that the sustainability of the resources of Lake Nipissing depend on the availability of high quality scientific information. Therefore, it is recommended that:

- A long term monitoring mechanism for the lake is established to assess fish populations, fish habitat and water quality.
- A management board for the lake be established and that this board seek to manage all or portions of the Lake Nipissing watershed. And, that this management include fish stocks, spawning grounds, fish habitat, water quality, water levels, and ecosystem management with regard to wetlands, waterfowl, furbearers and other ecosystem components.
- This management board might include representation from First Nations, angling and hunting organizations, tourism groups, environmental groups, property owners, municipalities, the province, and other appropriate stakeholders.

Planning Team Response

The planning team agrees that a long term monitoring mechanism must be established for Lake Nipissing. The planning team also supports, in principle, the concept of community-based involvement in management of the Lake Nipissing ecosystem through a board of stakeholders. This idea needs to be investigated further. As a starting point, membership, roles and responsibilities of such a board must be defined through a terms of reference.

The Anishinabek/Ontario Fisheries Resource Centre (A/OFRC) should be given serious consideration for a major role in the long term monitoring of Lake Nipissing either within, or independent of a board of stakeholders. A partnership between the Anishinabek Nation and the Ontario government established the Anishinabek/Ontario Fisheries Resource Centre (A/OFRC), which serves as an independent source of information on fisheries conservation and management within traditional harvesting areas. The A/OFRC is a not for profit corporation controlled by a Board with equal representation from Native and non-Native Directors. The roles of the Centre are to report on stock status, evaluate stresses on fish populations and habitats, promote the use of state of the art science and technology, and provide a forum for information sharing and participation with stakeholders. The professional, technical, and financial resources of the A/OFRC along with their good working relationship with Nipissing First Nation should be utilized for the benefit of all stakeholders.

Proposed Management Actions:

MNR supports the concept of community-based involvement in the management of Lake Nipissing through a board of stakeholders and will help pursue this idea.

The MNR, along with the A/OFRC, biologists from other jurisdictions, and academic experts will determine long term essential data needs for all Lake Nipissing fish species and formulate strategies to collect this information.

The MNR, along with the A/OFRC, biologists from other jurisdictions, and academic experts will determine data collection needs to monitor the success of new fishing regulations.

The MNR will consider the A/OFRC as one mechanism to meet long term fisheries assessment data needs.

4.1.4 Non-Compliance to Fishing Regulations and Enforcement Efforts

Lake Nipissing experiences the fourth-highest fishing pressure in Ontario, and has unlimited physical access. There is great public concern regarding a high rate of angler non-compliance to existing fishing regulations and a perceived lack of enforcement on Lake Nipissing.

Public Recommendations

With respect to non-compliance to fishing regulations and enforcement efforts, the Public Advisory Committee recommended that:

- More conservation officer effort is directed at the Lake Nipissing fishery, and at least one C.O. is assigned full time to the lake.
- The MNR seek community partners to investigate ways of flowing money through the Special Purpose Account to Lake Nipissing enforcement.
- A deputy conservation officer program is utilized to provide additional enforcement coverage.
- Enforcement blitzes at Jocko Point, North Bay Sewage Plant, South Bay, Deepwater Point and MacPherson Creek be undertaken during the spring fishing season.
- Enforcement efforts be substantially increased during the ice fishing season, especially during years of increased mobility.

Planning Team Response

The recommendation of increased enforcement effort on Lake Nipissing is supported. Additional conservation officers would greatly enhance enforcement capabilities on the lake. Using community partners to raise funds and flow money into a special purpose account to finance increased enforcement is feasible and encouraged.

The Deputy Conservation Officer program is currently under provincial review. When this review is completed, North Bay MNR Enforcement Section will examine the recommendations and determine if the new program will be applicable to Lake Nipissing enforcement efforts.

Because of the changing nature of fishing and enforcement areas of concern, it is not recommended that specific areas be defined for increased enforcement; rather that enforcement strategies be adaptable to ever-changing problems and areas of concern.

In general, during the winter months, Lake Nipissing already receives increased enforcement effort.

Proposed Management Actions:

Enforcement on Lake Nipissing during critical times of the year will be identified as high priority in the North Bay District Compliance Plan.

MNR will encourage community partners and stakeholders to raise additional funds for enforcement purposes. If Lake Nipissing stakeholders and/or partners are able to raise additional funds, Lake Nipissing enforcement efforts can and will be increased.

The Deputy Conservation Program will be implemented if it is found to be applicable to Lake Nipissing.

Enforcement blitzes will continue in the spring.

4.2 Secondary Issues

4.2.1 Resource-Related Education

A need has been identified for public education regarding protection of the Lake Nipissing ecosystem and proper stewardship of the fish resources.

Public Recommendations

With respect to resource-related education, the Public Advisory Committee recommended that:

A long term comprehensive public education program be developed in conjunction with community partners to be run in the schools and in the community at large.

Planning Team Response

The Planning Team supports the public recommendations. Education efforts should include the following topics:

- New and existing sportfishing regulations
- Enforcement efforts on Lake Nipissing
- First Nation fisheries
- cormorant colonization
- fish habitat protection
- walleye stocking
- water quality

Proposed Management Actions:

Both an immediate and longer term resource-related education initiative will be an integral part of the management plan. The short term initiative will focus on information related to regulation changes, while the longer term initiative will focus on broader concepts related to the ecosystem of Lake Nipissing.

4.2.2 Fish Habitat Protection, Monitoring, and Improvement

At the time of writing this management plan, the mechanism for fish habitat protection was still uncertain. MNR's role in fish habitat protection had changed to being primarily an information-provider to the federal Department of Fisheries and Oceans, who now has the lead role in reviewing, approving and enforcing development proposals that potentially involve the federal Fisheries Act. Decisions affecting fish habitat can now potentially be made without site visits. Therefore, it has become increasingly important for MNR to have detailed, updated fish habitat documentation to support the decisions made by DFO affecting development around fish habitat.

The last fish habitat survey was conducted on Lake Nipissing between 1980-1985. The mapping of walleye spawning grounds was the highest priority for the project, but potential pike spawning beds were also recorded during the investigation. Because of the size of Lake Nipissing, limited access, and ice conditions during spring break-up, the survey could not cover the entire shoreline at night during spawning. As a result, daylight investigations had to be carried out during the summer to record suspected spawning areas. The actual degree of spawning activity in these areas remains unknown.

In addition to these suspected spawning areas for walleye and pike, there is little, if any information available on spawning habitat of other species such as smallmouth and largemouth bass, muskellunge, or any other fish species. Nursery and rearing habitat for walleye and other species is another very important component of habitat that has not been documented.

It also seems apparent by the volume and content of shoreline development proposals that there is a general lack of understanding by shoreline property owners regarding the importance of natural shoreline areas as fish habitat.

At this time, there are many volunteer groups ready, willing, and able to work to improve fish habitat. The key to directing the efforts of these groups is to know what types of habitats are limiting, and what types need improvement. Without this information, volunteer efforts are at risk of being wasted on projects of little benefit to fish populations.

Public Recommendations

With respect to fish habitat protection, monitoring and improvement on Lake Nipissing, the Public Advisory Committee stated:

With respect to ecological management and monitoring, the Public Advisory Committee recognizes that the sustainability of the resources of Lake Nipissing depend on the availability of high quality scientific information. Therefore, it is recommended that:

- A long term monitoring mechanism for the lake is established to assess fish populations, fish habitat and water quality.
- A management board for the lake be established and that this board seek to manage all or portions of the Lake Nipissing watershed. And, that this management include fish stocks, spawning grounds, fish habitat, water quality, water levels, and ecosystem management with regard to wetlands, waterfowl, furbearers and other ecosystem components.
- This management board might include representation from First Nations, angling and hunting organizations, tourism groups, environmental groups, property owners, municipalities, the province, and other appropriate stakeholders.

Planning Team Response

The concept of community-based involvement in management of the Lake Nipissing ecosystem through a board of stakeholders is supported, and needs to be investigated further. As a starting point, membership, roles and responsibilities of such a board must be defined through a terms of reference.

Proposed Management Actions:

MNR supports the concept of community-based involvement in the management of Lake Nipissing through a board of stakeholders and will help pursue this idea.

MNR will conduct a habitat assessment needs analysis for all major fish species on Lake Nipissing.

4.2.3 Walleye Stocking

Several conservation-minded groups expend great amounts of time and effort operating small walleye hatcheries around Lake Nipissing.

Public Recommendations

With respect to walleye stocking, the Public Advisory Committee recommended that more hatcheries be established and more restocking done.

Planning Team Response

When stocking programs were initiated on Lake Nipissing, they were beneficial in that they provided a mechanism for community involvement in lake stewardship. Since that time, MNR and other jurisdictions have completed extensive reviews of walleye stocking

and have concluded that stocking is not effective in situations where walleye are stocked over existing native populations (OMNR Percid Synthesis, Li et al, Kawartha Lakes independent review REF).

Based on the science at hand, and because Lake Nipissing has an existing viable walleye population with no recorded major recruitment or reproduction problems, supplemental stocking is not an effective management tool to address the present situation.

Despite the scientific evidence, supplemental stocking of Lake Nipissing remains an issue with the surrounding community. An attempt to get agreement on this issue has not been made to date.

Proposed Management Actions:

MNR will re-focus community efforts and funding on other lake stewardship initiatives that could include natural walleye spawning assessments and fish habitat assessment projects.

MNR will work with Lake Nipissing stakeholders to obtain agreement on the stocking issue.

4.3 Tertiary Issues

4.3.1 Lake Level Fluctuations

Lake Nipissing acts as a storage area for the water from the northern portion of the Sturgeon River/Lake Nipissing/French River watershed. Public Works Canada owns and operates the Chaudiere Dams at the outlet from Lake Nipissing into the French River. These structures control the level of Lake Nipissing, and the flow in and the level of the French River. Public Works Canada manages the water level of Lake Nipissing to meet the requirement of filling Lake Nipissing for summer navigation, but adjust their operation to coincide with the needs of the fishery, tourist establishments and residents.

Production of walleye on Lake Nipissing is in part, dependent on water levels at the start of spawning (Jorgensen 1994 REF black binder 1-8). According to Jorgensen 1994, the optimum water level for the start of spawning at Wasi Falls is somewhere above 195.3 metres. When shoal-spawning walleye are considered, the optimum water level for the start of spawning on Lake Nipissing is estimated to be somewhere above 195.66 metres. Once spawning begins, water levels must continue to rise at or above historical levels throughout the spawning period to ensure that adequate spawning habitat is available.

Public Recommendations

Public Advisory Committee recommendations that pertain to Lake Nipissing water levels as they affect walleye spawning are as follows:

With respect to water levels, it is recommended that:

- A report be compiled which describes the actual water level curves achieved over the past seven years, and compares them to the target curves; and that this report be released to the public.
- The water level management system is structurally improved and the management decision-making is consolidated into one organization.
- A solution to the water level control problem is found by working together with the Lower French River residents.

Planning Team Response

According to the Sturgeon River / Lake Nipissing / French River (SNF) Water Management Plan (Acres International Limited, 1992), "Current water levels are quite acceptable to the Lake Nipissing fishery. However, any change in the existing levels, to address other issues, will impact on the fishery. For example, low water levels in spring greatly affect the availability of shoreline spawning shoals."

A logical starting point for examining the issue of water levels and their effect on walleye populations is to assemble a historic report comparing actual levels versus target levels defined in the SNF Water Management Plan over the past several years.

Once this report is compiled, the current water level management system can be evaluated by studying the results, and reviewing the Sturgeon River / Lake Nipissing / French River Water Management Plan (Acres International Limited, 1992) to identify possible areas for improvement.

Proposed Management Actions:

The first consideration in water management levels will continue to be human lives and property, with fish populations as a secondary consideration.

MNR will request a response to the PAC recommendations from the agencies involved in water level management.

MNR will request data needed from Public Works Canada to assemble a water level report, as requested by the Public Advisory Committee.

4.3.2 Colonization of Double-Crested Cormorants

The nesting population of double-crested cormorants on Lake Nipissing increased from 95 nests in 1993 to 638 nests in 1995. Current population status is unknown. The effects that cormorants are having on Lake Nipissing fish stocks is of public concern.

Public Recommendations

With respect to double-crested cormorants, the Public Advisory Committee recommended that:

- Information is compiled from other lakes where cormorants have invaded.
- A study on the impacts of cormorants to Lake Nipissing be undertaken and presented to the public.
- Public awareness information on cormorants is prepared.
- Cormorant populations are controlled if required.

Planning Team Response

The effects that cormorants are having on fish stocks were studied provincially in the early 1990s. This recent research suggests that concerns that cormorants are feeding on significant quantities of sport and commercial fish, and that a cormorant control program is needed, appear to be largely unfounded on an ecosystem basis. Most studies show that cormorants feed primarily on small non-sport/non-commercial fish. Further information is required in some localized areas to determine to what extent cormorants may compete with sport/commercial fish for the available forage fish prey base (OMNR Fish and Wildlife Section, 1997).

Despite this evidence that cormorants are, in general, not having significant effects on sport and commercial fish populations in other areas, this is disagreement on this issue with most Lake Nipissing stakeholders. Efforts should continue to be made by MNR in cooperation with other parties to monitor cormorant populations and their effect on fish stocks (OMNR Fish and Wildlife Section, 1997). Therefore, the recommendations of the Public Advisory Committee are supported by the planning team, with the exception of cormorant population control. Control of cormorants will only be considered and approved in specific areas where supported by studies and analysis and according to criteria for delineating, identifying and assessing local conditions. Currently, there is no justification for cormorant control on Lake Nipissing.

Proposed Management Actions:

MNR will compile information from other lakes where cormorants have invaded.

MNR will undertake limited studies on the impacts of cormorants to Lake Nipissing and present the results to the public.

Public awareness information on cormorants will be prepared.

Cormorants will not be controlled at this time.

4.3.3 Water Quality Degradation

The most recent water quality study was conducted by the Ministry of Environment between 1988-1990 (Neary and Clark 1992). Some concern has been expressed about the water quality of Lake Nipissing. The community of Garden Village in particular, expressed deep concern for the water quality of Lake Nipissing

Public Recommendations

With respect to water quality, the Public Advisory Committee recommended that:

A management board for the lake be established and that this board seek to manage all or portions of the Lake Nipissing watershed; and that this management include water quality issues.

Planning Team Response

The concept of community-based involvement in management of the Lake Nipissing ecosystem through a board of stakeholders is supported, and needs to be investigated further. As a starting point, membership, roles and responsibilities of such a board must be defined through a terms of reference.

Since the Ministry of Environment deals directly with water quality issues, this ministry should be consulted during any process of setting up a board of stakeholders involved with water quality issues.

Proposed Management Actions:

MNR supports the concept of community-based involvement in the management of Lake Nipissing through a board of stakeholders and will help pursue this idea.

MNR will compile public input concerning water quality issues and request a response from the Ministry of Environment.

5.0 MANAGEMENT STRATEGIES AND TACTICS

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