LAKE NIPISSING INTERIM FISHERIES MANAGEMENT PLAN

2007-2010

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LAKE NIPISSING: Interim Fisheries Management Plan

2007-2010

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LAKE NIPISSING INTERIM FISHERIES MANAGEMENT PLAN (2007-2010)

EXECUTIVE SUMMARY

Introduction

The 2007-2010 Interim Fisheries Management Plan will serve as a guide for the management of Lake Nipissing over the next four years. Lake Nipissing is a valued resource socially, environmentally and economically, contributing an estimated $100 million annually to Ontario's economy. This plan recognizes and strives to protect all of the values of Lake Nipissing. It is based on assessment data and recommendations submitted during public consultation that occurred in 2004. Background information, pertaining to the state of the fisheries resource, was obtained from documents produced during the 2003 data review. The draft plan was presented to the public for comment, during open meetings held between Sept. 5 -12, 2006. The draft plan was posted on the Environmental Registry November 3, 2006. Pubic comments were received until December 18, 2006. The final plan has incorporated these comments where appropriate.

Status of the Fishery

Fisheries assessment data suggest that the adult walleye population (fish greater than 30 cm) remains in a stressed state. The recent implementation of a winter slot combined with the existing summer slot restriction (no walleye 40 – 60 cm) has resulted in positive steps toward healthy adult walleye population. Other populations such as northern pike, yellow perch and smallmouth bass appear to be healthy and sustainable. Recent analysis suggests that the growth potential among muskellunge is significant, and that this fishery would be best managed as a trophy fishery. Little is known about the current state of the whitefish population, however they are still considered to be an "under-utilized" species. The lake sturgeon population is still in a state of recovery, and warrants additional monitoring.

Major Influences and Proposed Management Actions

Several influences pertaining to the management of Lake Nipissing resource have been identified and used to guide the development of this plan. These have been organized in order of priority by members of the planning team, and include the following:

Primary Influences

- First Nations Fishery
- Fisheries Assessment
- Sport Fishery

Secondary Influences

- Fish Habitat Protection, Monitoring and Improvement
- Resource-Related Education
- Non-Compliance with Fishing Regulations & Other Enforcement Issues

Tertiary Influences

- Walleye Stocking
- Lake Levels
- Double-Crested Cormorants
- Water Quality

Proposed management actions to address each influence are identified.

Primary Influence: First Nations Fishery

Proposed Management Actions

- The Ministry of Natural Resources (MNR) supports Aboriginal subsistence fishing. With respect to the Nipissing First Nation commercial fishery, MNR will continue to pursue a formalized fishing agreement based on cooperation and respect, with the common goal of sustainability. The MNR seeks to build a relationship with the Nipissing First Nation fisheries department to cooperatively implement a management plan, including assessment and monitoring activities. The MNR believes it is imperative to reach a commercial fishery agreement to effectively manage the entire Lake Nipissing fishery.
- The MNR will continue to offer an Aboriginal Communal Fishing License (ACFL) to Nipissing First Nation (NFN) on a yearly basis. Provided Nipissing First Nation's commercial harvest catch remains biologically sustainable, MNR will not have a need to issue or enforce an the provisions of this ACFL. MNR will continue to seek accurate harvest reporting of the commercial walleye catch in order to effectively manage Lake Nipissing.
- The MNR will promote educational initiatives to be developed and implemented by the First Nations communities and partner groups.
- MNR will support the establishment of viable fish markets for non-target fish species, as well as walleye.

Primary Influence: Fisheries Assessment

Proposed Management Actions

- The Ministry of Natural Resources must fulfill critical assessment needs on Lake Nipissing, as outlined in the formal assessment plan (2000-2009). This assessment plan should be reviewed and updated where possible to reflect new insight/science. Such efforts are essential to understanding the local populations, and making informed management decisions which ensure the sustainability of the resource.

- Continue to support the involvement of community based groups in the management of Lake Nipissing. Such groups provide valuable support for various monitoring and assessment projects on Lake Nipissing.

Primary Influence: Sport Fishery

Proposed Management Actions

- The year round protected slot limit (40-60cm) for walleye will remain for the life of the 2007-2010 management plan.
- Effective January 1, 2007 the regulatory boundary of Lake Nipissing will extend to incorporate the west arm (water west of Hwy. 64).
- MNR will continue to promote additional angling opportunities where possible.
- Effective January 1, 2007, the winter angling season will be extended by one week (from March 7th to March 15th) for all species.
- A lengthened fall angling season will also be implemented January 1, 2007 by MNR for most fish species in Lake Nipissing, with the exception of walleye and yellow perch. For species such as muskellunge, northern pike, smallmouth bass and whitefish, the season will shift from an October 15th closure to November 30th.
- Assess the biological impacts of commercial ice huts on Lake Nipissing. This will be achieved by enhancing the existing winter creel survey to recognize commercial huts as such. In doing so, data pertaining specifically to commercial huts can readily be extracted, analyzed and compared to the non-commercial data.
- MNR will work with local stakeholder groups to develop various initiatives focused on the promotion of conservation fishing methods.

Secondary Influence: Fish Habitat Protection, Monitoring and Improvement

Proposed Management Actions

- MNR will continue to work with stakeholder and other partner groups, to develop and implement various habitat based initiatives. Such efforts should include:
  - Develop the capacity to complete the walleye/pike spawning inventories around Lake Nipissing.
  - Gain information pertaining to critical habitat locations for bass, muskellunge and lake sturgeon.
  - Implement an assessment project to insert radio tags into adult lake sturgeon, to determine critical habitat locations throughout the year.
  - A workshop focused on educating the public on habitat conservation, geared towards waterfront property owners. Outline measures which should be taken to avoid adverse impacts on shoreline habitat.
- MNR will continue to work with the Department of Fisheries and Oceans to obtain additional funds gathered from Fisheries Act infractions, and apply such funds to environmentally sound initiatives on Lake Nipissing.

Secondary Influence: Resource-Related Education

Proposed Management Actions

- The Ministry of Natural Resources will work cooperatively with the Lake Nipissing Stewardship Council, part of the Ontario Stewardship Program, to develop a comprehensive educational strategy. Ideally, such a work plan will lead to the creation of an educational unit, which will focus educational efforts on local schools and the broader public. Such initiatives should include workshops, seminars and school programs.

Secondary Influence: Non-compliance to Fishing Regulations & Other Enforcement Issues

Proposed Management Actions

- MNR will continue to review enforcement issues on an annual basis, to identify compliance needs and priorities where possible.
- MNR will continue to conduct enforcement blitzes at critical times of the year, in addition to delivering regular patrols.
- MNR will commit to conducting regular fall enforcement patrols on Lake Nipissing, to complement extended angling seasons.
- The North Bay MNR enforcement unit will plan to provide opportunities for up to three Nipissing First Nation members, who are graduates of natural resource management programs, to help them gain exposure to the MNR law enforcement program. This will include sponsorship for attendance at the Level One Enforcement course at a future date. This course is mandatory for any individual aspiring to become a Deputy or full-time Conservation Officer.

Tertiary Influence: Walleye Stocking

Proposed Management Actions

- Produce a formal report on the effect of stocking on walleye year classes since 2001.
- Shift current experimental focus from fingerling stocking to other enhanced efforts:
  - Eyed egg planting on barren spawning shoals to test the theory of imprinting by young walleye.

Tertiary Influence: Lake Level

Proposed Management Actions

- The Ministry of Natural Resources will continue to work as part of the Sturgeon River/Nipissing/French River (SNF) Water Management Group to continue a cooperative approach to water management.
- Priorities will include the maintenance of water levels to account for the balanced needs of the public, the environment and the specific fisheries resources of Lake Nipissing.

Tertiary Influence: Double-Crested Cormorants

Proposed Management Actions

- MNR will continue to conduct an annual assessment on Lake Nipissing to monitor the existing cormorant population.

Tertiary Influence: Water Quality

Proposed Management Actions

- MNR will support water quality monitoring through the Lake Nipissing Stewardship Council board of directors. Such efforts will be directed by the existing water quality subcommittee, which includes a representative of the Ministry of the Environment.

Lake Nipissing Interim Fisheries Management Plan 2007-2010

1.0 BACKGROUND INFORMATION

1.1 Introduction

Typically, a fisheries management plan review occurs every 5-6 years for Lake Nipissing. All assessment data collected during that time are compiled and analyzed to produce an updated state of the resource report for Lake Nipissing. This process also involves a review of all input and recommendations brought forward during formal public consultation sessions. The result of this planning process is the preparation of a new fisheries management plan for Lake Nipissing, which is in effect for the next 5-6 year term.

This 2007-2010 interim fisheries management plan will serve as a formal guide for the management of Lake Nipissing over a 4 year period. The planning process was initiated in 2004, but was suspended due to unforeseen circumstances. To this point, Lake Nipissing has continued to operate under the existing 1999-2003 fisheries management plan. Under the soon to be implemented Fisheries Management Zones, which will replace the existing Fishing Divisions, Lake Nipissing will be managed as a Featured Waterbody (FW) within Zone 11. As a FW, Lake Nipissing will be managed separately from other lakes in the zone and therefore requires its own management plan. This interim management plan will serve to meet the management, assessment and reporting needs of Lake Nipissing as an FW under the new Fisheries Management Zones.

1.2 Planning Area

At the time of writing, the planning area is recognized as Division 27 in the Ontario Recreational Fishing Regulations Summary (2005-2006). Effective January 1, 2007 the Minister of Natural Resources announced regulation changes affecting Lake Nipissing including a change to the planning boundary of the lake. The West Arm of Lake Nipissing, west of Hwy 64 (formerly part of Division 15) is now defined as part of Lake Nipissing, up to an including Cross Lake. The 2007 – 2010 interim fisheries management plan will incorporate this new area from a regulatory and management standpoint.

1.3 Data Sources

Information that has been used as the basis of this current Lake Nipissing Fisheries Management Plan includes the 2003 Lake Nipissing Data Review prepared by MNR Management Biologist Richard Rowe. This includes a detailed *Lake Nipissing Walleye Data Review* completed on January 28, 2004. These reports have been subject to critical reviews and serve as essential background documents used to write this interim management plan.

Past reports and documents have been referenced where appropriate, and are recognized in the bibliography found at the end of this document.

1.4 Public Input

The Lake Nipissing Stewardship Council (LNSC) is a non-profit charitable corporation formed in 1999. The guiding principle for this group is to preserve, protect, restore and improve the natural resources and environment of Lake Nipissing.

At the time of writing this plan, the business of this council is managed by a board of sixteen directors. The composition of the board is as follows:

- Two Directors nominated by the Nipissing First Nation Band Council
- Two Directors nominated by the Dokis First Nation Band Council
- Two Directors nominated by the Ontario Federation Anglers & Hunters, Zone D
- One Director nominated by the South Shore Association (SSA)
- One Director nominated by the West Nipissing Upper French River Tourist Association (WNUFTA)
- Two Directors nominated by municipalities adjoining Lake Nipissing
- Two Directors nominated by Lake Nipissing Partners in Conservation
- Two Directors elected at large by the membership by secret ballot at the AGM
- One Director nominated by Nipissing Environmental Watch
- One Director nominated by the North Bay Mattawa Conservation Authority
- One Director nominated by the Anishinabek/Ontario Fisheries Resource Centre

In May 2004, two public meetings were held to obtain public input into the new management plan for Lake Nipissing. The Lake Nipissing Stewardship Council submitted summaries of comments from these meetings, as well as written submissions, to the MNR. Several recommendations and driving influences, which have been addressed in this interim management plan, were brought forward at that time.

The document submitted by the LNSC, which presents the final recommendations made by the public, can be found in Appendix 1. Also, these recommendations appear throughout this planning document under the heading “Public Recommendations”.

A draft copy of the fisheries management plan was released to the public in September 2006 and presented at information sessions in Sturgeon Falls and North Bay. A notification on the Environmental Bill of Rights Registry was posted November 3, 2006. Public comment on the draft plan was received until December 18, 2006. Public comments were compiled and reviewed and subsequent

revisions to the plan were made. The planning team reviewed the revisions on February 26, 2007, and a final draft of the plan was approved.

1.5 Key Focus and Objectives

The predominant theme within this management plan is the walleye fishery, and the various influences surrounding this resource. This fishery currently and historically supports greater than 90% of all fishing effort on Lake Nipissing. This includes existing sport and First Nations commercial and subsistence fishery. Assessment data collected over the past 5 years suggest that the walleye population is still in need of enhanced protection, as was identified in the previous 1999-2003 management plan.

The goal of this management plan is to develop the means to ensure a healthy and sustainable walleye fishery, while accommodating the needs of all users where possible.

1.6 Format of Management Plan

This management plan has been divided into 5 key sections, and follows the format that was developed for the previous management plan:

- ***BACKGROUND: THE WALLEYE FISHERY***

  This section provides a brief state of the resource summary for the walleye population. It presents an overview of current stresses, population characteristics and management objectives.

- ***BACKGROUND: OTHER SPORTFISH POPULATIONS***

  This section provides a summary of the population status and management objectives for northern pike, muskellunge, yellow perch, smallmouth bass, lake whitefish and lake sturgeon.

- ***SIGNIFICANT INFLUENCES AND MANAGEMENT ACTIONS***

  This section presents the major influences derived from public consultation. The public recommendations to address each influence are provided, followed by an appropriate response by the management planning team. This team included the following representatives:

  Shaun Roberts- Large Lake Biologist, North Bay MNR (Plan Author/Coordinator)
  Gerry Van Leeuwen- Enforcement Supervisor, North Bay MNR
  Rick Calhoun- District Planner, North Bay MNR
  Phil Hall- Lands and Waters Technical Specialist, North Bay MNR

Norm Dokis- Resource Liaison Officer, North Bay MNR
Amanda Brosseau- Communications Specialist, North Bay MNR
John Thornton- Chair, Lake Nipissing Stewardship Council

- ***MANAGEMENT STRATEGIES***

Strategies have been developed to address each major influence. Selected strategies will represent the anticipated work plan for the next four years (2007-2010).

- ***FUNDING REQUIREMENTS FOR IMPLEMENTATION***

Details surrounding funding requirements for the effective implementation of this management plan are outlined. These requirements are immediate and will be implemented over the 4-year life of this management plan.

2.0 WALLEYE

2.1 State of the Resource

The sustainability of the Lake Nipissing walleye fishery has depended on the production of strong year classes to replenish its stocks on what appears to be a cyclical basis since monitoring of yearlings began in 1979 (Rowe, 2004a). The production of these year classes is dependent on many known and unknown biotic and abiotic factors. Some of these include available forage, spawning substrate, weather during and after the spawn, water levels, climate and growing season. Another critical factor that contributes to year class production is the presence of sufficient adult spawning fish in the population. Data collected from Fall Walleye Index Netting (FWIN, conducted annually since 1998) suggests that adult walleye biomass observed from 1998 to 2002 was sufficient to produce year classes strong enough to support relatively intensive fishing pressure (Rowe, 2004a). In 2003, FWIN results suggested that adult walleye biomass had declined to the probable minimum level capable of producing a strong year class. This dip in abundance was attributed to increased pressure and harvest. Assessment data collected from 1999- 2002 suggested that an annual total walleye harvest of approximately 66,000kg. At this rate of harvest, the data also suggested that there were some positive responses noted among the population. Such responses included a reduction in mortality (death rate), increase in adult abundance, and overall harvest levels that were within sustainable limits.

In 2004, a document that outlined several recommendations for the future management of the Lake Nipissing walleye fishery was produced. Under ideal circumstances (i.e. a healthy population, ideal growing conditions) it is estimated that Lake Nipissing is capable of yielding approximately 90,000kg of walleye annually (Rowe, 2004b). However, given that our objective for the walleye fishery to achieve a healthy status (this is defined by meeting or exceeding our management objectives – see Section 2.2), to manage at this level would have a high probability of failure. Given that the 1999-2002 data appeared to suggest positive trends in population status, a target yield that approximates the annual average during this period (~60,000kg), seems logical to meet management objectives at this time. This target yield may be adjusted over time, depending on population responses that are observed over the next four years.

2.2 Management Objectives

For the most part, previous management objectives appeared to be effective in progressing towards a healthy walleye population. Such objectives included a reduction in angler harvest rates, adult mortality rates maintained below 40%, and monitoring of the existing First Nations commercial fishery. However, a setback was encountered in 2003 with the sharp decline in adult walleye abundance.

Advancements in fisheries science have provided managers with many new tools that can be used to diagnose and manage fish populations. Probabilistic simulation is one such tool that can provide an idea of how likely it is that a given walleye population is over or under a maximum sustainable yield (MSY) reference point (Rowe, 2004a). Simply defined, MSY represents a level of harvest that should never be reached or exceeded, in order to maintain a sustainable fish population. All relevant assessment data and management tools, specific to walleye, have been used to identify appropriate walleye management objectives for the next 4 years. These management objectives include the following:

Population:

- To observe with 80% probability an adult walleye biomass above the MSY criterion by 2010
- To observe with 80% probability an adult female walleye mortality rate below the MSY criterion from 2007-2010
- To observe a statistically significant increase in adult walleye biomass by 2010 when compared to the 2003 estimate from FWIN
- To observe with 80% probability a total adult mortality rate (age 5 and older) of no greater than 40% for each of the next 4 years

Walleye Harvest:

- Angling- To ensure that the total walleye angling harvest over the next 4 years does not significantly increase relative to the previous 6 years, which in combination with the protected slot should afford more protection to adult walleye and increase overall adult walleye biomass
- Nipissing First Nation Commercial Harvest - To cooperatively manage this fishery with a defined harvest level that should lead to an overall increase of adult walleye biomass
- First Nation Subsistence Harvest- To ensure that any increase in First Nation subsistence harvest is accounted for when estimating the total annual walleye yield.
- Illegal Harvest- To ensure that there is no increase in illegal fish harvest over the next 4 years
- Overall Yield- To achieve with 90% probability that total yield values are below the MSY criterion over the next 4 years

3.0 OTHER SPORTFISH POPULATIONS

Information specific to species other than walleye has been collected, analyzed, and outlined in the following sections. Where sufficient data are available, the status of each population is summarized.

3.1 Northern Pike

- *Population Status*

Assessment data collected to 2004 suggests that the northern pike population is healthy and sustainable. However, while the numbers are stable, these are slightly below numbers predicted by the amount of available habitat. This slight depression in abundance is actually expected, given the direct competition posed by a strong walleye population.

Northern pike were subjected to over-harvest in the 1980s (Jorgensen et al, 1996). Such a recurrence should be prevented with effective monitoring and management strategies. Growth rates among the existing population have consistently exceeded those predicted by available habitat, and as such, Lake Nipissing is realizing its potential to produce high quality "trophy-sized" fish.

- *Management Objectives*

- To carefully monitor the pike population, in terms of angler harvest and abundance
- To prevent an occurrence of over-harvest
- To promote a high quality fishery through protection of the larger individuals in the population.

3.2 Yellow Perch

- *Population Status*

Fisheries assessment data suggest that the yellow perch population is sustainable, with numbers stable to increasing. Mortality has remained stable since 1998, and the proportion of catchable-sized perch (>20cm) has increased slightly. The majority of perch harvested still occurs during the winter season; harvest has been stable since 1987.

- *Management Objectives*

- To monitor the perch population
- To prevent the occurrence of an over-harvest.

3.3 Smallmouth Bass

- *Population Status*

Data pertaining to the status of the smallmouth bass fishery is quite limited in many respects. More information is required to complete a full status report on this species. However, some valuable insight has been provided by data collected during angler tournaments that were run each year at the same time of year, providing trend-through-time fisheries assessment data. This information suggests that there is an abundance of large, older smallmouth bass in the population. These competitive angling tournaments have increased in recent years and may continue to provide some diagnostic information pertaining to the status of this fishery.

In 2001, a Nearshore Community Index Netting (NSCIN) survey was completed in Callander Bay. The data collected during this study suggested that Callander Bay has an above-average abundance of smallmouth bass at a size that is also above average, compared to a provincial database. Overall, evidence does suggest that the smallmouth bass population appears to be healthy; although there are some signs that exploitation has increased between 1994 and 2002 (slight rise in mortality, increase in numbers, slight decrease in size). However, all parameters are still well within the limits of sustainability.

- *Management Objectives*

- To monitor the smallmouth bass population in Lake Nipissing
- To promote and maintain a healthy smallmouth bass population.

3.4 Muskellunge

- *Population Status*

Assessment data specific to muskellunge is limited. A trap-netting study conducted in 2000 observed a number of very large fish in the catch, 117-137cm and weighing 18kg and greater. This data suggests that Lake Nipissing has a high quality muskellunge fishery, from the perspective of producing large fish.

Studies on muskellunge growth rates have been used to develop biologically - based size limits designed to protect large individuals in a population (Casselman, 2005). Based on the analysis completed to date, it appears that Lake Nipissing is capable of producing very large fish, and therefore management objectives should attempt to address this in the future. Furthermore, this objective has gathered public support, as indicated during the public consultation process.

➢ *Management Objectives*

- To monitor the muskellunge population
- To maintain a healthy population of large muskellunge in Lake Nipissing.

3.5 Lake Whitefish

➢ *Population Status*

The status of the whitefish population in Lake Nipissing is largely unknown. Harvest levels remain very low, and these fish represent a small segment of the commercial harvest. As stated in previous reports, whitefish remain as an "under-utilized" species.

➢ *Management Objectives*

- To monitor the whitefish population in Lake Nipissing
- To maintain a healthy whitefish population

3.6 Lake Sturgeon

➢ *Population Status*

Severe overexploitation forced the closure of the lake sturgeon fishery (both sport and commercial) on Lake Nipissing in 1991. Since that time, efforts have been ongoing to assess the state of the remnant adult population, and to gauge recovery of the species in the lake. It is anticipated that many years of recovery are required before the resident population can support any level of exploitation.

➢ *Management Objectives*

- To continue to monitor the sturgeon population.

3.7 Other Species

Since 1999, FWIN data has shown an increasing trend in the number of White Bass that have been captured in nets.

Anecdotal reports suggest that the white bass fishery attracts the efforts of increasingly more anglers in the spring, who target these fish during the spawning period (May-June). Currently, the white bass is not considered to be a sought after sport fish by most local anglers. However, effort (and harvest) may increase in the future should this population continue to grow in Lake Nipissing. Future studies are warranted in order to characterize this population.

- *Management Objectives*

  - To adopt the assessment techniques required to gain a better understanding of other fish communities (including white bass) in Lake Nipissing, in terms of health, population trends and biological attributes.

4.0 SIGNIFICANT INFLUENCES AND MANAGEMENT ACTIONS

A number of influences were brought forward during public consultation that occurred in May 2004. These have been organized in an order of priority by members of the planning team. Influences include the following:

Primary Influences

- ✓ First Nations Fishery
- ✓ Fisheries Assessment
- ✓ Sport Fishery

Secondary Influences

- ✓ Fish Habitat Protection, Monitoring and Improvement
- ✓ Resource-Related Education
- ✓ Non-Compliance with Fishing Regulations & Other Enforcement Issues

Tertiary Influences

- ✓ Walleye Stocking
- ✓ Lake Levels
- ✓ Colonization by Double-Crested Cormorants
- ✓ Water Quality

In the following pages, each of the 10 influences identified are dealt with in the following manner:

Influence
A brief description of the influence is provided.

Public Recommendations
Recommendations to address the influence brought forward on behalf of the public by the Lake Nipissing Stewardship Council.

Planning Team Response
An explanatory response to the public recommendations is provided by the planning team.

Proposed Management Actions
The proposed management actions to address the influence are presented.

It should be noted that some actions have been taken prior to the completion of this management plan. Changes have been adopted after the expiration of the previous 1999-2003 fisheries management plan. These are acknowledged in the appropriate sections that follow. So, rather than being identified as “proposed”

actions, these are simply “actions” that address influences and objectives for this current interim plan.

4.1 PRIMARY INFLUENCES

4.1.1 First Nations Fishery

When combined, subsistence and commercial harvest by First Nations represents approximately half of the total annual harvest from Lake Nipissing. Harvest information was collected between 1995 and 1999, providing four complete years of harvest data. During this period, Nipissing First Nation reported an annual commercial catch by weight of approximately 22, 685 kg. The peak harvest level during this period was estimated to be 27,159kg. Since 1999, no annual harvest data has been reported by Nipissing First Nation.

In 2004 and 2005, the Ministry of Natural Resources developed a formalized licence for the commercial fishery on Lake Nipissing. An Aboriginal Communal Fishing Licence (ACFL) established regulations pertaining to harvest reporting, net marking, and harvest quota limitations. In 2005, Nipissing First Nation developed a set of “Fisheries Laws” which were intended to serve as a method of self-regulation for the commercial fishery. The ACFL and NFN’s Fisheries Laws were very similar; the main difference was the proposed harvest quota.

It is critical that the Ministry of Natural Resources and Nipissing First Nation work together to establish a single formalized agreement in order to actively and effectively manage a sustainable fishery on Lake Nipissing.

<u>Public Recommendations</u>

Recommendations that were submitted as a result of public consultation, as pertaining to the First Nations Fishery are as follows:

1. **Investigate, review and address the possibility of the gill net moratorium during the spring walleye spawning period be continued on an annual basis**
2. **Continue to pursue an effective reporting structure of commercial harvest**
3. **Continue to support and monitor First Nations fisheries efforts of self-regulation pertaining to harvest limitations**
4. **Continue to pursue a realistic quota system through the licensing of the First Nations commercial fishers**
5. **Pursue the adoption of a comprehensive native/non-native education program, to facilitate public awareness of First Nations’ Constitutional rights**
6. **Address the non-utilized by-catch, species other than walleye**

Public Recommendation 1: Investigate, review and address the possibility of the gill net moratorium during the spring walleye spawning period be continued on an annual basis

Planning Team Response

The planning team supports Nipissing First Nation's annual gill net moratorium and agrees that it may be a means to help limit the walleye harvest during the critical spring spawning period. A license with the condition that mirrors Nipissing First Nation's own self-imposed gill net moratorium would be required in order for MNR to enforce a gill net moratorium.

Proposed Management Actions

The Ministry of Natural Resources will continue to work with Nipissing First Nation to ensure that the adult walleye population is protected during critical spawning periods. This includes support for a gill net moratorium.

Public Recommendation 2: Continue to pursue an effective reporting structure of commercial harvest

Planning Team Response

The sustainability of fish stocks in Lake Nipissing relies on the ability to monitor local fish populations, including annual harvest levels for both the sport and First Nation commercial fishery. Annual data collection and information sharing will allow managers to gain an understanding of the stress placed upon the fishery each year, and help to provide a complete state of the resource report.

Proposed Management Actions

The MNR will continue to seek accurate harvest reporting of the commercial walleye harvest by building stronger relationships with the NFN fisheries department. Such a collaborative effort is critical to the sustainability of the fisheries resource.

Public Recommendation 3: Continue to support and monitor First Nation's fisheries efforts of self-regulation pertaining to harvest limitations

Planning Team Response

The planning team supports the efforts of Nipissing First Nation to self-regulate the commercial fishery. However, the Ministry of Natural Resources is the Crown agency that has delegated responsibility from the Government of Canada for managing natural resources in Ontario. Therefore, it is critical that an effective

partnership between MNR and First Nations be established as soon as possible to support sound management of the fisheries resource over the long term.

Proposed Management Actions

The Ministry of Natural Resources will continue to pursue a cooperative fisheries management agreement with Nipissing First Nation. This includes drafting a formalized agreement, data sharing, partnering for fisheries assessments and surveys, as well as facilitating training for a First Nation enforcement officer.

Public Recommendation 4: Continue to pursue a realistic quota mechanism with the First Nations commercial fishers

Planning Team Response

A realistic quota mechanism will allow managers to consistently and accurately monitor total annual harvest levels from Lake Nipissing. This information is critical to actively managing this local resource. Based on the information collected to date, the data suggests that walleye population in Lake Nipissing is still in a stressed state overall. As indicated in the 2003 data review, it has been recommended that a measured yield of 0.7 kg/ha (61,400kg) be the target harvest for the combined walleye fisheries (sport, commercial, subsistence) of Lake Nipissing. The ACFL, which has been issued to Nipissing First Nation by MNR, recognizes a 30,000 kg allocation to the Aboriginal commercial fishery. This suggested allocation appears to be the single recognizable difference between this licence and NFN's Fisheries Laws, which currently recommends an annual allocation of 45,000 kg. A commercial fishing walleye allocation of 30 000 kg will assure that the Lake Nipissing walleye population remains sustainable, and that Nipissing First Nation community needs are met. This is based on historical reports that suggest a harvest of 30 000 kg of walleye was never met or exceeded. There has been an estimated increase in the commercial harvest of walleye in the recent past.

Proposed Management Actions

A maximum harvest allocation of 30,000 kg has been established for the commercial fishery, based on assessment data and biological objectives for walleye. The MNR is prepared to re-assess the allocation based on current and complete data. MNR will continue to work with Nipissing First Nation to establish consistency between both parties, with respect to a commercial harvest allocation.

Public Recommendation 5: Pursue the adoption of a comprehensive native/non-native education program, to facilitate public awareness of First Nations' Constitutional rights

Planning Team Response

The planning team agrees that the development of an educational program would help a general understanding of First Nation's fishing rights on Lake Nipissing. Such an initiative would be best co-ordinated by partner groups such as the Lake Nipissing Stewardship Council, which has representation from both Dokis and Nipissing First Nation. MNR's Resource Liaison Officer has delivered traditional fisheries knowledge presentations to the N'Biising Secondary School and community members of the Dokis First Nation in an effort to educate Aboriginal youth and gain valuable feedback.

Proposed Management Actions

The MNR will promote educational initiatives to be developed and implemented by the First Nations communities and partner groups such as the Lake Nipissing Stewardship Council.

Public Recommendation 6: Address the non-utilized by-catch, species other than walleye

Planning Team Response

The non-utilization of by-catch is a concern raised frequently by members of the public. The planning team agrees that there is an immediate need to ensure the utilization of all harvested fish. Commercial fishery managers need to develop and pursue viable markets for species other than walleye.

Proposed Management Actions

The MNR will support the establishment of viable fish markets for fish species other than walleye (currently non-utilized by-catch).

4.1.2 Fisheries Assessment

The ability to track changes in population dynamics relies heavily upon repeated monitoring studies. Assessment results allow scientists and managers to recognize and react appropriately to changing trends. The Lake Nipissing walleye population is subject to significant pressures from the angling and commercial fisheries, in addition to various environmental pressures (e.g. habitat alteration, climate, etc.). Fisheries assessment data allows managers to track critical population parameters such as abundance, mortality and harvest, providing a glimpse into the state of the fisheries resource over time.

Lake Nipissing was once monitored by a Fisheries Assessment Unit (FAU); a group dedicated to assessing and monitoring the state of the fish populations and habitat in Lake Nipissing. The trend-through-time data set that was established

provided an invaluable tool to guide management decisions on the lake. However, in 1996 the FAU was dissolved, removing the capacity for MNR to implement an intensive monitoring program on Lake Nipissing. Since that time, MNR has been limited to conducting critical assessment work, which has often resulted in many shortcomings pertaining to the understanding of local fish populations. Should limitations continue to hinder assessment efforts, it will become much more difficult to make informed management decisions in the future.

Over the course of the winter of 1999, a working group consisting of fisheries managers, biologists, First Nations and Lake Nipissing stakeholders was assembled to develop a formal assessment program for Lake Nipissing. Based on these discussions and an intensive literature review, fisheries assessment techniques appropriate to Lake Nipissing were chosen for implementation (Rowe and Seyler, 2000). The final document, "A Fisheries Assessment Plan for Lake Nipissing" served to guide fisheries assessment and data collection for a 10 year period (2000-2009) Defined as a working document, this assessment plan would continually be reviewed and enhanced based on emerging science and assessment techniques. The information gathered over the life of the assessment plan would provide the essential means to strategically monitor resident fish populations in Lake Nipissing.

The long-term sustainability of fish stocks in Lake Nipissing depends on the implementation of an annual monitoring and assessment plan, to obtain the critical information needed to monitor population dynamics, current and future pressures, and the effect of angling regulations over time. Given the significance of Lake Nipissing and its fisheries resources, sufficient funding for management and assessment for the future is recommended.

Public Recommendations

Recommendations that were submitted as a result of public consultation, as pertaining to fisheries management are as follows:

1. **Continue to pursue and provide adequate funding necessary for annual fisheries assessment**
2. **Develop a long term strategy for data collection and funding**

Planning Team Response

After the development of the 10-year assessment plan for Lake Nipissing, the Ministry of Natural Resources was using this document as the guide for assessment until 2009. However, despite best efforts to meet annual requirements within the plan, it has become increasingly difficult to achieve the desired targets, based on available funding. The work plan that is outlined in the 2000-2009 assessment document is critical to the sustainable management of Lake Nipissing over time.

The MNR recognizes the importance of partnership organizations as contributors to fisheries assessment efforts on Lake Nipissing. These groups supply the additional funds and personnel required to implement a variety of worthwhile initiatives. The planning team views these important efforts a means to enhance the current understanding of fish communities in Lake Nipissing.

Proposed Management Actions

The Ministry of Natural Resources must fulfill critical assessment needs on Lake Nipissing, as outlined in the formal assessment plan (2000-2009). This assessment plan should be reviewed and updated where possible, to reflect new science pertaining to fisheries assessment techniques. Such efforts are essential to understanding the local populations, and making informed management decisions for the future.

Continue to support the involvement of community based groups in the management of Lake Nipissing. These groups provide valuable support for various monitoring and assessment projects on Lake Nipissing.

4.1.3 Sport Fishery

The predominant stress on fish populations in Lake Nipissing continues to be exploitation, including both angling and commercial harvest. However, from 1999-2003 inclusive, there was a marked decrease in total angling effort. Total angling effort averaged approximately 650,000 hours, or 7.54 hrs/ha (Rowe 2004a). Prior to this, total angling effort averaged over 1,000,000 hrs, or 11.85 hrs/ha. Therefore, annual total angling effort has dropped by approximately 34% when comparing recent versus historical averages.

The decreasing trend in angler effort reflects a similar trend in total angler harvest. Total walleye angling harvest by number and weight has decreased significantly over the past four years when compared to the previous 21 years of data. Total walleye harvest averaged 102, 711 walleye +/- 53,000 (95% confidence limits) or 44,102 kg +/- 25,000 kg by weight. In comparison, prior to this period, total angler harvest averaged 158,350 +/- 58,000 walleye or 90,819 kg +/- 32,000 kg by weight. Overall, the mean total annual angling harvest by weight has decreased by approximately 51% (Rowe, 2004a).

FWIN and harvest data from 1998 suggested that the Lake Nipissing walleye population was heavily stressed. Data from 1999 to 2002 suggested that the health of the walleye population was beginning to improve and the total harvest was at a sustainable level. A significant decrease in the open water angler harvest since the 1999 angling regulation changes contributed to the improved health of the walleye population. However, data from 2003 suggested that the improving trends had reversed to a point where sustainability was a concern. As such, it was

deemed critical to reverse this trend by reducing harvest of the prime spawning walleye.

Public Recommendations

Recommendations that were submitted as a result of public consultation, pertaining to the sport fishery are as follows:

1. **Institute a winter slot size for walleye**
2. **Pursue making all areas of Lake Nipissing part of Division 27, under the same regulations**
3. **Pursue and promote additional opportunities to alleviate pressure on the walleye fishery**
4. **Investigate, review, and address open water season extension for species other than walleye**
5. **Investigate, review and pursue restrictions and/or reductions to the number of commercial ice fishing huts on the lake and the licensing of the same**
6. **Promote and encourage the use of other conservation fishing methods**

Public Recommendation 1: Institute a winter slot size for walleye

Planning Team Response

The Lake Nipissing walleye population demonstrates good natural reproduction, slow growth, high natural mortality of small fish, and supportive of high angling pressure (Rowe, 1998). Given these characteristics, a protected slot size is considered to be an effective tool to be used to protect the spawning population and achieve harvest reduction targets.

In 2001, MNR produced a report on the post-release survival of Lake Nipissing walleye during the ice fishing season (Rowe and Esseltine, 2001). This report was based on results of an experiment conducted during the winter of 2000 and 2001, in which walleye were caught by angling in 30 ft of water, using common angling methods. In total, 152 walleye were captured and subjected to a holding period of up to 48 hours. A relatively high post-release survival rate of 81% was observed, and suggested that catch and release angling during the winter months was a viable conservation measure.

In January 2005, MNR instituted a protected slot limit (40-60cm) for the winter angling season. This added regulation was implemented in the absence of a new fisheries management plan for the lake, and remains consistent with the objectives outlined in this interim plan. It is recommended that this year-round protected slot be retained for the duration of this plan as a means to achieve the biological objectives for walleye.

Proposed Management Action

On January 1, 2005 MNR instituted a protected slot size for walleye in Lake Nipissing, making the lake subject to the same year round slot limit of 40-60cm. This year round slot limit will remain in place for the duration of this interim plan, and will be evaluated during the 2010 walleye data review.

Public Recommendation 2: Pursue making all areas of Lake Nipissing part of Division 27, under the same regulations

Planning Team Response

Effective January 1, 2007 the west arm of Lake Nipissing (waters west of Hwy. 64 up to and including Cross Lake) are subject to the same regulations as the rest of the lake. The west arm of Lake Nipissing was regulated under Division 15; with the January 1, 2007 regulation change it is now included as part of Division 27. The proposed Fisheries Management Zones (FMZ) will replace the existing Fishing Divisions, and Division 27 (Lake Nipissing) will become part of FMZ 11. However, Lake Nipissing will continue to be managed separately as a Featured Waterbody within FMZ 11.

Management Action

On January 1, 2007 the regulatory boundary of the lake was extended, incorporating the west arm of Lake Nipissing.

Public Recommendation 3: Pursue and promote additional opportunities to alleviate pressure on the walleye fishery

Planning Team Response

The Ministry of Natural Resources has and continues to promote angling opportunities for species other than walleye. Assessment data suggests that northern pike, yellow perch, muskellunge and smallmouth bass populations are currently healthy and sustainable, and can support increased angling pressure. In doing so, any measurable shift in angling pressure will help to alleviate effort exerted on walleye, and remain consistent with desired management objectives.

Proposed Management Action

The MNR will continue to promote additional opportunities where possible. See additional information under “Resource-Related Education”.

Public Recommendation 4: Investigate, review, and address open water season extension for species other than walleye

Planning Team Response

Assessment data suggests that other fish populations such as smallmouth bass, northern pike, whitefish and muskellunge are currently healthy and sustainable. The planning team agrees that consideration for an extended season for these other species is warranted, given the biological justification. Furthermore, the planning team agrees that such an extension should come with an extended enforcement commitment on the lake.

The team also feels that while the yellow perch population is also considered to be healthy, the season should continue to mirror that of walleye. Angling techniques used for perch are generally the same as those used for walleye. As a result, walleye are often captured when perch is targeted. Therefore, in retaining identical season closure dates, this "by-catch" factor can be eliminated.

Compliance rates among anglers exceed 90%, as reported by the district enforcement unit. A commitment to regular patrols during an extended season will be crucial to monitoring compliance on Lake Nipissing during the entire angling season.

Proposed Management Action

Effective January 1, 2007, a lengthened fall angling season has been regulated by MNR for most fish species on Lake Nipissing, with the exception of walleye and yellow perch. For species such as muskellunge, northern pike, smallmouth bass and whitefish, the fall season will shift from an October 15th closure to November 30th. This season extension will be monitored annually to assess any impacts, and evaluated during the 2010 data review.

Public Recommendation 5: Investigate, review and pursue restrictions and/or reductions to the number of commercial ice fishing huts on the lake and the licensing of the same

Planning Team Response

A licensing system was implemented in 2004 for the Lake Nipissing commercial fish hut operators, although no fee structure was established for that licence, as the province evaluated the concept of a commercial licensing system for province-wide application. A voluntary reporting survey was conducted in the winter of 2003 among local commercial ice hut operators to assess the potential impacts of these operations on fish stocks. A preliminary analysis of these data failed to identify an occurrence of excessive harvest. Therefore, to set further limitations at this time is not biologically justified, but could be investigated further with additional study.

Proposed Management Action

Assess the biological impacts of commercial ice huts on Lake Nipissing. This will be achieved by enhancing the existing winter creel survey to recognize commercial ice huts as such. In doing so, data pertaining specifically to commercial huts can readily be extracted, analyzed and compared to the non-commercial data.

Public Recommendation 6: Promote and encourage the use of other conservation fishing methods

Planning Team Response

The planning team agrees that the promotion of conservation fishing methods is an effective way to promote sustainability of the fisheries resource. It is recommended that the Ministry of Natural Resources continue to work with local stakeholder groups to develop and implement promotional initiatives. Efforts could include workshops and seminars that focus on conservation methods such as catch and release fishing, the use of barbless hooks, and appropriate fish handling techniques.

Proposed Management Actions

The MNR will work with local stakeholder groups to develop initiatives focused on the promotion of conservation fishing methods. Initiatives could include workshops and information seminars that deal with a range of topics including live-release techniques and low impact gear among others.

Note: *Additional information pertaining to the promotion of conservation fishing methods can be found within section 4.2.2: Resource-Related Education.*

4.2 SECONDARY INFLUENCES

4.2.1 Fish Habitat Protection, Monitoring and Improvement

Lake Nipissing continues to be stressed by factors affecting fish habitat, mainly as a result of shoreline development. This stress produces a slow, cumulative impact and often occurs without being immediately recognized. Shoreline development is likely to continue and even escalate in the future, with the inevitable increase in urban activity in communities such as North Bay and Sturgeon Falls.

The Ministry of Natural Resources currently provides a supporting role to the Federal Department of Fisheries and Oceans in terms of the fish habitat protection

and referral process. More specifically, MNR screens and refers work permit applications under the *Public Lands Act* and provides supporting information to DFO and Conservation Authorities when appropriate. It is critical that MNR have complete, up to date information pertaining to habitat values, to facilitate the review process (Rowe, 1998). This allows the appropriate authorities to make informed decisions concerning projects that potentially affect fish habitat.

Since 2000, the MNR has been working towards updating fish habitat information on Lake Nipissing. This initiative has involved several partners, including the Lake Nipissing Partners in Conservation, Lake Nipissing Stewardship Council, Sturgeon Falls Rod and Gun Club and Nipissing First Nation. As described in the previous plan, a spawning grounds investigation was first completed during 1980 - 1985, and consisted of mapping walleye and northern pike spawning locations around the lake. Recent efforts focused on updating information pertaining to walleye spawning locations, habitat quality and mapping several new sites. This project is ongoing, and requires more effort in the future. Unfortunately, with the exception of the work that has been done involving walleye and northern pike, there is very little information about the critical habitat for other species such as lake sturgeon, bass and muskellunge.

Continued development around the lake poses a serious threat to fish habitat, including critical spawning areas. It is critical to increase public awareness and promote habitat conservation around Lake Nipissing, particularly among those looking to develop their shoreline areas.

Public Recommendations

Recommendations that were submitted as a result of public consultation, as pertaining to fish habitat protection, monitoring and improvement are as follows:

1. **Fish hatcheries should be encouraged to continue operations**
2. **Pursue possible funding of fish hatcheries through the MNR**

Planning Team Response

The public recommendations noted under fish habitat protection, monitoring and improvement have been incorporated into section 4.3.1- Walleye Stocking, as the comments relate more closely to that influence.

However, it should be noted that the protection and conservation of fish habitat does represent a critical component of sound fisheries management for Lake Nipissing. The planning team feels that stakeholder groups could play an important role in the development and implementation of future initiatives to address various concerns surrounding fish habitat. Such initiatives will also be vital to raising awareness among the public about this serious influence.

Recently, money collected by the Department of Fisheries and Oceans, as a result of habitat infractions (fines), has been returned to the lake through donation to the Lake Nipissing Stewardship Council. This funding has been applied to environmentally sound initiatives that benefit the lake, such as spawning rehabilitation projects.

Proposed Management Actions

The Ministry of Natural Resources will continue to work with stakeholder and partner groups to develop and implement various habitat based initiatives. Efforts should include:

- Develop the capacity (manpower/funding) to complete the walleye/pike spawning shoal inventory around Lake Nipissing
- Develop the means to gain information pertaining to critical habitat locations for bass, muskellunge and lake sturgeon
- Implement a field assessment project to insert radio tags into adult lake sturgeon, to determine critical habitat locations during different times of year.
- Develop and implement a workshop focused on educating the public on habitat conservation. Such a workshop should be geared towards waterfront property owners, and outline the measures which should be taken to avoid any adverse impacts on shoreline habitat.

The MNR will continue to work with the Department of Fisheries and Oceans to obtain additional funds gathered from Fisheries Act infractions, and apply funds to environmentally sound initiatives on Lake Nipissing.

4.2.2 Resource-Related Education

Lake Nipissing is unique in terms of its diverse biological and social attributes. From a biological standpoint, the lake contains a high level of fish species and habitat richness. Socially, Lake Nipissing is the economic driver for the communities and local businesses that line its shore. Many local users rely on Lake Nipissing for the recreational benefits of its clean waters and healthy fisheries resources.

When looking at the suite of management tools that are deemed critical to guiding sound management decisions, assessment and enforcement generally receive the greatest attention. Public education is an often overlooked tool because of its perceived lack of immediate results. The potential effects that education can promote over the longer term are considerable.

The future health of Lake Nipissing will depend in part on public understanding of the diverse range of values associated with this resource. Education pertaining to the protection of the Lake Nipissing ecosystem is a need that has been consistently identified by MNR and the public.

Public Recommendations

Recommendations that were submitted as a result of public consultation, as pertaining to resource-related education are as follows:

1. **Comprehensive public education efforts imperative, as to the importance of Lake Nipissing to the community, economy, environment, and sustainability of the fisheries resource.**
2. **Encourage more youth involvement at elementary, secondary, and post-secondary levels.**
3. **Develop and provide relevant education materials to educational institutions**
4. **Pursue utilization of secondary school volunteer requirement to encourage youth involvement in data collection and collation with regards to the fishery.**

Planning Team Response

The planning team agrees that resource-related education is critical to creating awareness among resource users. Lake Nipissing represents a vital economic, social and environmental driver for the surrounding area. The health and prosperity of this resource plays significantly into the prosperity of adjacent communities.

A comprehensive educational strategy is warranted, and could incorporate the following themes:

- Ecological Diversity/Resource Values
- Sport fishing- Regulations, Conservation Fishing Methods
- First Nations Constitutionally Protected Rights and Nipissing First Nation Fisheries
- Fish Habitat Protection and Enhancement
- Enforcement/Compliance on Lake Nipissing
- Water Quality
- Invasive Species
- Walleye Stocking

Proposed Management Actions

The Ministry of Natural Resources will work co-operatively with the Lake Nipissing Stewardship Council, part of the Ontario Stewardship Program, to develop a comprehensive educational strategy. Ideally, a work plan will lead to the creation of an educational unit, which will focus educational efforts on local school

systems and the broader public. These initiatives should include workshops, seminars and school programs.

4.2.3 Non-compliance with Fishing Regulations & Enforcement Issues

Given the high level of angling pressure on Lake Nipissing each year, there are significant concerns surrounding angler compliance rates and the ability of MNR to sufficiently monitor compliance during the entire angling season.

Public Recommendations

Recommendations that were submitted as a result of public consultation, as pertaining to non-compliance and enforcement issues are as follows:

1. **Review current enforcement measures to ensure effectiveness and compliance**
2. **Pursue additional public awareness efforts of enforcement issues**
3. **MNR to pursue the possibility of hiring a native Conservation Officer**

Planning Team Response

The planning team agrees that enforcement measures should be reviewed annually, as a means to optimize the distribution of resources and to ensure the effectiveness of the program. Such measures are reviewed each year by MNR and adjusted according to compliance needs, with consideration for personnel and funding availability.

Should a First Nation hire a native enforcement officer, MNR would fully support the training for this individual which would promote a stronger linkage between the MNR enforcement program and local First Nation communities.

Proposed Management Actions

The MNR will continue to review enforcement issues on an annual basis, to fulfill compliance needs and priorities where possible. The MNR will also continue to conduct enforcement blitzes at critical times of the year, in addition to delivering regular patrols. The MNR will commit to conducting regular fall enforcement patrols on Lake Nipissing, to compliment extended angling seasons.

The North Bay MNR enforcement unit will plan to provide opportunities for up to three Nipissing First Nation members, who are graduates of natural resource management programs, to help them gain exposure to the MNR law enforcement program. This will include sponsorship for attendance at the Level One Enforcement course at a future date. This course is mandatory for any individual aspiring to become a Deputy or full time Conservation Officer.

4.3 TERTIARY INFLUENCES

4.3.1 Walleye Stocking

Over the years, a number of local groups have developed and operated fish hatcheries, culturing walleye for release in Lake Nipissing. These efforts were undertaken with good intentions and have promoted community involvement in lake stewardship initiatives.

Results of recent studies from scientific literature have suggested that supplemental stocking of fish (including walleye) may not be effective when naturally reproducing populations exist (e.g. Jennings et al, 2005). Some studies concluded that supplemental stocking may actually be detrimental to native populations, as the introduction of hatchery fish artificially increases competition for food and space, particularly in complex fish communities such as Lake Nipissing. Also, the introduced fish are not adapted to the new environment and tend to suffer high mortality upon release.

Supplemental stocking is not considered an effective management tool for Lake Nipissing based on recent, reputable science and the current existing viable walleye population. Despite the scientific evidence, supplemental stocking of Lake Nipissing remains an influence with the surrounding community.

Public Recommendations

Recommendations that were submitted as a result of public consultation pertaining to walleye stocking are as follows:

1. **Fish hatcheries should be encouraged to continue operations**
2. **Pursue possible funding of fish hatcheries through MNR**
3. **Review effectiveness of fish hatcheries and fish stocking measures with regard to sustainability**
4. **Pursue additional efforts and funding if merited**

Planning Team Response

Based on published results from waterbodies similar to Lake Nipissing, there is little evidence to suggest that stocking walleye is justified. Specifically, Lake Nipissing currently supports a naturally reproducing walleye population, with the ability to promote strong recruitment in the absence of stocking. To pursue additional funding for such efforts at this time is not warranted. Rather than focusing on stocking, the planning team feels that there are a number of potentially beneficial experiments that could be developed and conducted through the existing public hatchery.

For example, in recent years there has been some interest in determining the success of planting eyed eggs on barren spawning shoals. A worthwhile experiment to pursue on Lake Nipissing could involve planting eyed eggs on shoals and determining if these planted fish imprint on their birthplace and return as adults to spawn.

Annual FWIN assessment also serves to index young-of-the-year walleye (fish that were born in the spring of that year). This data can be used to analyze the effectiveness of recent stocking efforts.

Currently, additional stocking efforts and associated funding are not merited, given what is known about supplemental stocking.

Proposed Management Actions

- Produce a formal report on the effect of stocking on walleye year classes since 2001
- Shift current experimental focus from fingerling stocking to other enhanced efforts:

  - Eyed egg planting on barren spawning shoals to test the theory of imprinting by young walleye

4.3.2 Lake Levels

Water levels on Lake Nipissing are seasonally regulated by control structures found at various locations around the lake. Mainly, the northern parts of the Sturgeon River/Nipissing/French River (SNF) watershed are regulated by three main dams, those being on the South, Sturgeon River (Inflows) and the upper French River (Chaudiere dam: Outflow). These are managed by Ontario Power Generation, the Municipality of West Nipissing and Public Works Canada respectively. The main regulatory dam, the Chaudiere, manages water levels to accommodate summer navigation requirements, but also accounts for the needs of the fishery (critical spawning periods) and local residents.

Sufficient water levels in the spring are critical to the success of spawning walleye. As noted in the previous fisheries management plan, according to Jorgensen (1994), the optimum water level for the beginning of the spawning period at Wasi Falls is above 195.3 metres. For the remaining walleye in other parts of the lake, which tend to begin spawning slightly later than the Wasi Falls location, lake levels at that time are above 195.66 metres. Once the spawning period begins, water levels must continue to rise at or above historical levels throughout the spawning period to ensure that adequate habitat is available (Rowe, 1998).

Public Recommendations

Recommendations that were submitted as a result of public consultation, as pertaining to lake level fluctuations are as follows:

1. **Investigate the possibility of one management authority for the whole watershed**
2. **Review the effectiveness of current procedures**

Planning Team Response

The suggestion to have a single authority responsible for managing all of the dams in the Sturgeon River/Lake Nipissing/French River (SNF) watershed has surfaced frequently over the last 40 years. The lead agency for water management is presently the Ministry of Natural Resources as recommended in the 1992 SNF Water Management Plan authored by the now defunct SNF Water Management Board. Current water management practices are guided by the 1992 plan, which evolved out of recommendations of a Flood Reduction Study completed in 1981. The management plan recommendations were further refined in 1995 when Public Works and Government Services Canada (PWGSC) completed the Operating Guidelines for Lake Nipissing and the French River.

In 1999, Acres International was commissioned to review the water regulatory operations conducted on Lake Nipissing for a period of 1991-1999. The report completed in September 2000 concluded that during the 10-year period PWGSC consistently operated the dams in accordance with the principles and objectives underlying the 1995 Operational Guidelines. The report stated that, “Overall, the dam operator seems to have done an admirable job of balancing competing interests in a system where it is very difficult to do so”.

The Terms of Reference for the SNF Water Management Group were developed and approved in 2001. The group is represented by a broad range of citizens, interest groups and government organizations from locations within the watershed, along with the individual agencies that actually own and operate dams. The group operates in a co-operative manner and consistently arrives at decisions by consensus. This approach is consistent with water management planning processes, which are currently taking place throughout the province. There is no need or benefit in having a single management authority for the entire watershed as long as the existing group continues to work within the spirit and intent of the established terms of reference.

Proposed Management Actions

The Ministry of Natural Resources will continue to work as part of the SNF Water Management Group to continue a co-operative approach to water

management. Priorities for the future will continually include the maintenance of water levels to account for the balanced needs of the public and environment of Lake Nipissing.

4.3.3 Double-Crested Cormorants

Ontario's cormorant population was almost extirpated in the 1970's, mainly due to the widespread use of pesticides, including DDT. The use of such chemicals has since been banned and cormorant populations have re-colonized at a high rate in areas across the province.

In recent years, these birds have received a great deal of attention from the public, as they have been blamed for having negative impacts on fish stocks and the environment. In some areas of the province, some actions have been taken to control populations, either through oiling un-hatched eggs or culling adult birds. No such actions have been undertaken at this time on Lake Nipissing as there is currently no biological justification for this.

Lake Nipissing currently supports a total of five nesting colonies, located on various islands on the lake. Since 1998, the Ministry of Natural Resources has been monitoring these existing colonies on an annual basis to track any trends in population size. While the double-crested cormorant population on Lake Nipissing grew quickly from 1993 to 1999, recent nest counts suggest that the population may now be levelling off (Rowe, 2003).

Based on current knowledge, it appears that cormorant populations on Lake Nipissing are not having a significant negative impact on specific habitats or fish stocks in the lake.

Public Recommendations

Recommendations that were submitted as a result of public consultation, as pertaining to the colonization of double-crested cormorants are as follows:

1. **Continued study required to monitor all aspects of the effect of these birds on the sport and native fisheries**
2. **Continue to monitor and review data for possible control measures**

Planning Team Response

The planning team agrees that there is a need to continue monitoring cormorant populations on Lake Nipissing, to track any growth or reduction in numbers. Based on the information collected to date, there is no biological justification for controlling the population at this time. In fact, data suggest that the present population is not feeding heavily on sport fish, nor do they appear to be limiting the supply of forage fish available for sport fish. There have been no

observations of cormorants eating preferred fish stocks off spawning beds on Lake Nipissing (Rowe, 2003).

Proposed Management Actions

The MNR will continue to conduct an annual assessment on Lake Nipissing, to monitor the existing cormorant population.

4.3.4 Water Quality

Comparative water quality testing has been conducted periodically on Lake Nipissing since 1988, and earlier (Kelly-Hooper 2001). The most recent study occurred in 2004, with a report from the environmental monitoring and reporting branch of the Ministry of Environment. Generally, water chemistry has not changed significantly since the 1980's. Some elevations in particular components have been observed, however the lake is still deemed to be within acceptable parameters, as related to the Provincial Water Quality Objectives. It has been noted that Lake Nipissing does contain two significant bays, Callander and Cache, which exhibit notably different water chemistry than the rest of the lake.

Many local user groups have voiced concern over water quality in Lake Nipissing, and suggest that frequent testing be done to monitor any changes in water chemistry. This need becomes further supported by the increase in activity and development that is occurring around the lake.

Public Recommendations

Recommendations that were submitted as a result of public consultation, as pertaining to water quality are as follows:

1. **Continue all water quality study efforts**
2. **Encourage participation and involvement of all surrounding municipalities in monitoring water quality**
3. **Ministry of Environment to closely monitor the industrial effluent being released into Lake Nipissing**

Planning Team Response

The Lake Nipissing Stewardship Council contains representation from the main regulatory authority on water quality; the Ministry of the Environment. The lake now supports community based involvement in water quality monitoring through this council. Future monitoring programs are warranted for Lake Nipissing, and should be directed by the Lake Nipissing Stewardship Council, in partnership with the Ministry of the Environment.

Proposed Management Actions

The MNR will support future water quality monitoring through the Lake Nipissing Stewardship Council board of directors. Such efforts will be directed by the existing water quality subcommittee, which includes a representative of the Ministry of the Environment.

5.0 PROPOSED MANAGEMENT STRATEGIES

	OBJECTIVE	STRATEGY	ACTION
Walleye	To develop and promote a healthy and sustainable sport fishery on Lake Nipissing. To observe a significant increase in adult walleye biomass by 2010 when compared to the 2003 estimate from FWIN. To observe with 80% probability, a total adult mortality (age 5 and older) of no greater than 40% for each of the next 4 years. To ensure that the total walleye angling harvest over the next 4 years does not significantly increase relative to the previous 6 years, to afford more protection to adult walleye in an effort to increase overall adult walleye biomass.	Implement appropriate regulatory measures to promote a decrease in harvest of prime spawning fish. Utilize a year round protected slot limit to afford maximum protection to adult spawning fish.	January 1, 2005- Protected slot limit of 40-60cm implemented. Year round slot in effect.

	OBJECTIVE	STRATEGY	ACTION
Northern Pike	To monitor the pike population, in terms of abundance and harvest, to prevent over-harvest. Promote a high quality fishery through protection of larger fish in the population.	Implement regulatory measures to enhance protection of larger fish.	Catch limit of 4 (S) 2-tiered size based regulation, only 2 can be greater than 61cm, of which 1 can be greater than 86cm.
Yellow Perch	Prevent the occurrence of over-harvest.	Continue to monitor the population.	**For walleye, northern pike and yellow perch conduct annual FWIN and Creel surveys on Lake Nipissing** **Maintain existing regulations (season and catch limits).** **Responsibility:** MNR **Funding:** FWIN: $10,000 Creel: Open water and Winter: $31,000 **Timing:** Annual
Smallmouth Bass	To promote and maintain a healthy smallmouth bass population.	Monitor the smallmouth bass population.	Conduct NSCIN studies as outlined in 2000-2009 assessment plan **Responsibility:** MNR **Funding:** $2000/survey **Timing:** Begin summer 2007

	OBJECTIVE	STRATEGY	ACTION
Muskellunge	To maintain a healthy population of large muskellunge in Lake Nipissing.	Implement appropriate regulatory measures to enhance protection of large muskellunge, promote a trophy fishery	Effective January 1, 2007- Minimum size limit of 122cm (48") in effect. Monitor the success of regulations through assessment, including Creel, Index Netting as per 2000-2009 assessment plan. **Responsibility:** MNR **Funding:** Creel: $31,000 annual Index Netting: $2,000 **Timing:** 2007
Lake Whitefish	To maintain a healthy whitefish population.	Monitor the whitefish population	Implement assessment requirements as per the 2000-2009 Fisheries Assessment Plan **Responsibility:** MNR **Funding:** See Assessment Plan **Timing:** Begin summer 2007
Lake Sturgeon	To continue to monitor the sturgeon population and promote an increase in abundance.	Minimize all sources of exploitation (Sport/Commercial). Implement appropriate monitoring program to obtain a state of the resource picture	Implement assessment requirements as per the 2000-2009 Fisheries Assessment Plan

	OBJECTIVE	STRATEGY	ACTION
Lake Sturgeon			Retain lake wide season closure, sport and commercial, to promote recovery among the sturgeon population. Continue monitoring remnant adult population at 2 primary spawning locations: South River (Chapman's Chute) and Sturgeon River. **Responsibility:** MNR **Funding:** $2000 annually **Timing:** Annual for next 5-6 years Identify critical habitat locations and seasonal movement patterns for lake sturgeon using radio tagging methods. **Responsibility:** Area Biologist **Funding:** $5000 **Timing:** Immediately (May-June)

	OBJECTIVE	STRATEGY	ACTION
Other Species	To gain a better understanding of other fish communities in Lake Nipissing. To maximize angling opportunities where it is biologically safe to do so.	Adopt an appropriate assessment strategy for Lake Nipissing. Implement angling regulations	Implement the existing 2000-2009 Fisheries Assessment Plan. Adjust where required. **Responsibility:** MNR **Funding:** See Assessment Plan **Timing:** Immediately
	To monitor commercial ice hut operations on Lake Nipissing.	Implement a winter assessment survey to assess commercial hut effort and harvest.	Implement the following season change for these species for January 1, 2007: • Open water season closure- November 30. • Maintain October 15th closure date for walleye/perch Implement assessment through the existing creel survey. Recognize commercial huts as such through optional checkboxes on interview forms. **Responsibility:** MNR **Funding:** $11,000 (creel costs) **Timing:** Winter 2007

	OBJECTIVE	STRATEGY	ACTION
First Nations Commercial Fishery	Management of the commercial fishery at a biologically sustainable level that meets community needs	Continue to pursue partnerships with Nipissing and Dokis First Nations to cooperatively manage the Lake Nipissing fishery. Continue to support First Nations efforts to establish a gill net moratorium during the spring walleye spawning period.	Pursue a mutually acceptable agreement with Nipissing First Nation. Such an agreement needs to include a harvest allocation, harvest reporting protocol, and compliance plan. **Responsibility:** MNR **Funding:** Unknown at this time **Timing:** ASAP Continue to support First Nations efforts to establish a gill net moratorium during the spring walleye spawning period.
Fisheries Assessment	Address long-term data needs for the fisheries of Lake Nipissing.	Monitor fish populations on Lake Nipissing, to gain an understanding of populations other than walleye, and monitor population responses to regulation changes Continue community-based involvement in the assessment and management of Lake Nipissing	Implement the existing 2000-2009 fisheries assessment plan for Lake Nipissing. Maintain critical annual assessment workload (FWIN/Creel), implement other species-specific projects as funding becomes available. **Responsibility:** MNR **Funding:** Estimates outlined in existing assessment plan

	OBJECTIVE	STRATEGY	ACTION
Education	Develop an educational plan to educate about Lake Nipissing, its values and biological significance.	Work with community partners to develop an educational plan to be directed at school systems and the broader public. Educate about Lake Nipissing, its values and biological significance.	**Responsibility:** MNR in partnership with community partners **Funding:** To be determined **Timing:** Immediately
Non-Compliance with Fishing Regulations & Other Enforcement Issues	Review existing compliance strategy to evaluate effectiveness and maximize where possible. Direct more enforcement effort at Lake Nipissing.	Conduct a formal annual review of enforcement measures, adjust as appropriate	**Responsibility:** Enforcement personnel **Funding:** None required **Timing:** Annual, prior to open water angling season. Ensure that Lake Nipissing is recognized as a high priority in District Compliance Plan, particularly during critical times of the year. **Responsibility:** Enforcement personnel **Funding:** None required **Timing:** Immediately

	OBJECTIVE	STRATEGY	ACTION
Fish Habitat Protection, Monitoring and Improvement	Collect information pertaining to fish habitat locations in Lake Nipissing Develop the means necessary to complete a fish habitat inventory for all species and increase public awareness and involvement.	Continue to update existing habitat survey information, pertaining to walleye/pike spawning habitat in Lake Nipissing Pursue a habitat awareness initiative geared towards shoreline property owners, to stress the importance of habitat protection during shoreline development works. Include responsibilities of proponents/ agencies, authorization process/requirements, along with a comprehensive overview of fish habitat values and characteristics.	Complete an updated fish habitat needs analysis for all fish species in Lake Nipissing. MNR partnership with community based group and DFO to develop and implement a workshop dealing with fish habitat and development projects. Promote the need for community involvement in reporting habitat alterations around Lake Nipissing. **Responsibility:** MNR & partners **Funding:** To be determined **Timing:** Begin Spring 2007
Walleye Stocking	Evaluate the effectiveness of existing stocking programs on the walleye population in Lake Nipissing. Work with local user groups to gain a consensus surrounding stocking for Lake Nipissing.		

	OBJECTIVE	STRATEGY	ACTION
Walleye Stocking	Re-direct current stocking efforts	Promote experimental initiatives and lake stewardship projects. Conduct a formal stocking assessment study on Lake Nipissing, to evaluate year class strength in relation to successive years of fingerling stocking. Pursue the organization of an educational initiative to evaluate the influence of stocking, what has the science told us, and how this applies to Lake Nipissing. A workshop format that could include guest speakers from other areas, sharing experiences, insights.	Conduct experimental planting of eyed eggs on barren spawning shoals around Lake Nipissing. **Responsibility:** MNR & Partner groups **Funding:** To be determined **Timing:** Spring 2007
Lake Levels	Maintain water levels to meet the needs of the Lake Nipissing fishery as well as the needs of the public.	Continually review the existing water management system for Lake Nipissing through the cooperative Sturgeon River/Nipissing/French River (SNF) Water Management Group, to ensure that the needs of the public and environment are sufficiently balanced	MNR to continue to work as part of SNF Water Management Group, to cooperatively manage water level on Lake Nipissing. **Responsibility:** MNR **Funding:** None required **Timing:** Ongoing

	OBJECTIVE	STRATEGY	ACTION
Double-Crested Cormorants	Monitor the cormorant population on Lake Nipissing, and assess the effects on the local environment and fish stocks.	Review existing literature from other areas that document trends noted among other cormorant populations. Continue spring nest and egg counts.	Continue annual monitoring program on Lake Nipissing, which includes nest/fecundity counts, diet analysis. Update annual reports to recognize population trends. **Responsibility:** MNR **Funding:** None required **Timing:** Spring/summer (June) annually
Water Quality	Work with the Ministry of the Environment, through its representative on the Lake Nipissing Stewardship Council, to evaluate the need for an updated water quality survey on Lake Nipissing.	Develop and implement an updated water quality study for all parts of Lake Nipissing, if warranted.	**Responsibility:** MNR **Funding:** None required **Timing:** Spring 2007

6.0 FUNDING REQUIREMENTS FOR PLAN IMPLEMENTATION

Sufficient funding is crucial to the appropriate delivery of this interim fisheries management plan for Lake Nipissing. Most of the commitment must focus on the existing requirements associated with the existing 2000-2009 fisheries assessment plan, developed by Rowe and Seyler. This plan outlines an implementation schedule that would expire in 2009. This plan should be adjusted to account for recent assessment shortcomings, and advances in fisheries science.

Overall, an estimated $60,000 would be required annually, in order to cover the costs associated with core assessment (not including wages). It should be noted that the funding requirements noted herein are immediate, and in addition to costs associated with regular annual work planning. Core assessment projects include the following:

Fall Walleye Index Netting (FWIN)

Total Annual Cost: $10,000

FWIN represents the provincial standard for assessing walleye populations in Ontario. Since 1998, FWIN surveys have been completed on an annual basis on Lake Nipissing, and have provided essential information required to monitor the local walleye resource. Along with providing critical diagnostic information for walleye, this standardized survey technique provides valuable information pertaining to other fish species such as northern pike, yellow perch, and muskellunge, among others.

Open Water and Winter Creel Surveys

Total Annual Cost: Open Water- $20,000, Winter- $11,000

Creel surveys provide valuable information pertaining to angler harvest levels and the effects of regulation changes on angler effort and harvest. As noted in the previous management plan, creel surveys represent the only continuous data set for Lake Nipissing. The value of having such a trend through time picture cannot be overstated. In the absence of having updated creel survey information, the effects of new regulations cannot be sufficiently evaluated, nor can a relevant harvest estimate be obtained.

Assessing Other Species

The 2000-2009 Fisheries Assessment Plan for Lake Nipissing identifies a number of assessment requirements pertaining to fish populations other than walleye in Lake Nipissing. A complete implementation schedule can be found within the 2000-2009 Fisheries Assessment Plan for Lake Nipissing, which will require some adjustments to recognize changing needs.

Nearshore Community Index Netting (NSCIN)
Total Cost (per Survey): $2,000

This survey technique is conducted in the summer (Aug-Sept), and is a valuable tool for assessing nearshore fish communities.

Ice-out Trapnetting

Total Cost (per Survey): $2,000

As noted in the existing assessment plan, ice-out trapnetting has been used in other jurisdictions as a northern pike assessment tool. Conducted at the beginning of spring, this assessment technique has also proven very useful gaining valuable information pertaining to muskellunge population.

Adult Sturgeon Assessment

Total Annual Cost: $2,000

The Ministry of Natural Resources had been attempting to assess the remnant adult sturgeon population in Lake Nipissing. Using large mesh gillnets, these fish have been captured during the spring spawning period at the two main spawning sites. Such a survey provides valuable information used to characterize this population.

A complete funding summary for core assessment projects can be found within the Fisheries Assessment Plan for Lake Nipissing (2000-2009). This assessment plan will be updated to provide guidance up to and including 2010.

Other Funding Requirements

Enforcement: New Fishing Regulations

Total Cost: $10,000

On January 1, 2007 the MNR will implement a series of regulation changes on Lake Nipissing. Such changes will include an extension to both the fall and winter angling seasons. An increased enforcement presence will be required to assess angler compliance rates during the first year of implementation.

7.0 REFERENCES

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APPENDIX 1: Public Recommendation Summary

The following are the final recommendations as a result of the public consultation meetings that were held in May 2004, and from public input received by mail and e-mail. These final recommendations were summarized and submitted by the Lake Nipissing Stewardship Council on February 16, 2005.

These recommendations are to be addressed in the 2007-2010 management plan.

1. Sport Fishery

- Institute a winter slot size for walleye
- MNR to pursue making all areas of the lake part of District 27 and under the same regulations
- Pursue and promote additional sport fishing opportunities to alleviate pressure on the walleye fishery
- Investigate, review and address open water season extension for species other than walleye
- Investigate, review and pursue restrictions and/or reductions to the number of commercial ice fishing huts on the lake and the licensing of same
- Promote and encourage the use of other conservation fishing methods

2. First Nations Fisheries

- Investigate, review and address possibility of the gill net moratorium during the spring spawn of walleye be continued on an annual basis
- Continue to pursue an effective reporting structure of netting harvests
- Continue to support and monitor First Nations fishery efforts of self-regulation of harvest limitations
- Continue to pursue a realistic quota system through the licensing of the First Nations commercial fishers
- Pursue the adoption of a comprehensive native/non-native education program to facilitate public awareness of First Nations constitutional rights
- Address the issue of non-utilized bycatch

3. Future Fisheries Assessment

- Continue to pursue and provide adequate funding for annual fisheries assessment
- Develop a long term strategy for data collection and funding

4. Non-Compliance to Fishing Regulations and Enforcement Issues

- Review current enforcement measures to ensure effectiveness and compliance
- Pursue additional public awareness efforts of enforcement issues
- MNR to pursue the possibility of hiring a native Conservation Officer

5. Resource Related Education

- Comprehensive public education efforts imperative as to the importance of Lake Nipissing to community, economy, environment, and sustainability of the fishery resource
- Encourage more youth involvement at elementary, secondary and post-secondary levels
- Provision of relevant education materials to educational institutions
- Pursue utilization of secondary school volunteer requirement to encourage youth involvement in data collection, with regards to the fishery

6. *Fish Habitat Protection, Monitoring and Improvement*

- Fish hatcheries should be encouraged to continue operations
- Pursue possible funding of fish hatcheries through MNR

7. Walleye Stocking

- Review effectiveness of fish hatcheries and fish stocking measures with regard to sustainability and management
- Pursue additional efforts and funding if merited

8. Lake Level Fluctuations

- Investigate possibility of one management authority for the whole watershed
- Review effectiveness of current procedures

9. Colonization of Double-Crested Cormorants

- Continued study required to monitor all aspects of the effect of these birds on the sport and native fisheries
- Continue to monitor and review data for possible control measures

10. Water Quality Degradation

- Continue all water quality study efforts
- Encourage participation and involvement of all surrounding municipalities in monitoring water quality
- Ministry of Environment to closely monitor the industrial effluent being released into Lake Nipissing