A Revised Lake Trout Rehabilitation Plan for Ontario Waters of Lake Huron

In this Document

INTRODUCTION

The Upper Great Lakes Management Unit (UGLMU) of the Ontario Ministry of Natural Resources is updating and revising the Lake Trout Rehabilitation Plan for Lake Huron. The original rehabilitation plan was developed in 1996. These recommended changes are based on the best available biological information. The public is being notified and requested to review the revised "draft" plan and provide comments prior to it being finalized and implemented. This consultation will help to factor social, economic and other considerations into the final plan. Below you will find a summary of the revised plan but a full version, associated background documents and a questionnaire can be obtained by request from the UGLMU at 519-371-0420 or through david.m.reid@ontario.ca.

HISTORY

Lake trout were once the dominant coldwater predator in Lake Huron. The invasion of sea lamprey into the upper Great Lakes and excessive exploitation left Lake Huron with only two small remnant lake trout populations.

Today, after many years of concerted management effort, the situation is much improved. The remnant lake trout population in Parry Sound is considered fully rehabilitated and natural reproduction of lake trout is occurring in many parts of Lake Huron. These achievements have been encouraging but much more work is needed before lake-wide recovery can be assured.

WHY REHABILITATE THEM?

There are many good reasons for re-establishing healthy lake trout populations in Lake Huron. This species plays a critical role in the ecology of the lake through its ability to occupy the abundant deep-water habitat and regulate the numbers of prey fish. Unlike salmon, which feed almost exclusively on alewife and smelt, lake trout consume less prey, have a much more varied diet, and provide stability to the fish community (as a keystone predator). In addition, they help buffer the harmful effects of invasive species and self-sustaining lake trout populations can provide opportunities for subsistence, commercial and sport fisheries.

REHABILITATION GOAL

The goal of lake trout rehabilitation has been modified from the original plan to stress the importance of lake trout as a stabilizing influence on the Lake Huron aquatic ecosystem. This is particularly important in light of the recent changes that have occurred

Revised Lake Trout Rehabilitation Goal

"To re-establish self-sustaining lake trout populations in Ontario waters of Lake Huron and thus allowing them to contribute to a healthy aquatic ecosystem by facilitating stability as the dominant top predator while maintaining viable populations and sustainable harvest through natural reproduction."

in Lake Huron including declines in prey fish and Chinook salmon abundance.

The revised plan also provides more clarity to short-, mid-, and long-term objectives by recognizing that rehabilitation will progress at different times in different areas of the lake (rehabilitation zones) and provides milestone indicators to monitor rehabilitation success.

Although management activities are targeted at rehabilitation zones it is expected lake trout, once established, will eventually occupy all suitable habitats in the lake.

ZONE IDENTIFICATION

The revised Plan supports the rehabilitation zones that were developed in the original 1996 plan and attempts to refine their boundaries to take into account newer information on lake trout movement and critical habitat requirements. Part of this refinement also includes the identification of areas shallower than 73 metres within each rehabilitation zone, which more accurately reflects critical habitat, and the conforming of zone boundaries to the grid map system which is used for data collection and analysis.

One of the key revisions of the plan is that rehabilitation zones have now been ranked based upon expectations of success (Table 1). This ranking system will assist in identifying stocking priorities, directing assessment activities and implementing protective regulations. One new off-shore rehabilitation zone is being proposed in the main basin of Lake Huron (Zone 17; Fig. 1). This zone, characterized by offshore underwater humps or hills, is a special type of habitat used by unique deeper-water strains of lake trout.

STOCKING

Stocking of hatchery lake trout remains one of the most important strategies for the rehabilitation program. Stocking densities have been revised and increased to a target level of 4.5 yearling lake trout per hectare in rehabilitation zones. This is the same stocking density that was successfully used to rehabilitate lake trout in Parry Sound. This proposed increase in stocking density does not mean more lake trout will be stocked on a lake-wide basis since the Provincial hatchery system that supplies these fish has a limit to their productive capacity. Instead, it is proposed that available hatchery fish will be concentrated in locations that have the best potential for success as directed by the new priority ranking of rehabilitation zones.

The different strains of lake trout currently being stocked into Lake Huron are still recommended in the revised plan. However, the plan recognizes that modifications may occur as information becomes available regarding which strains successfully contribute to natural reproduction. A deepwater strain of Lake Superior lake trout (known as "humpers" or Klondike reef lake trout) is recommended for the new off-shore rehabilitation zone in the main basin mentioned above.

Stocking only yearling lake trout is also recommended in order to take advantage of their higher survival relative to younger life-stages of lake trout. In order to identify the

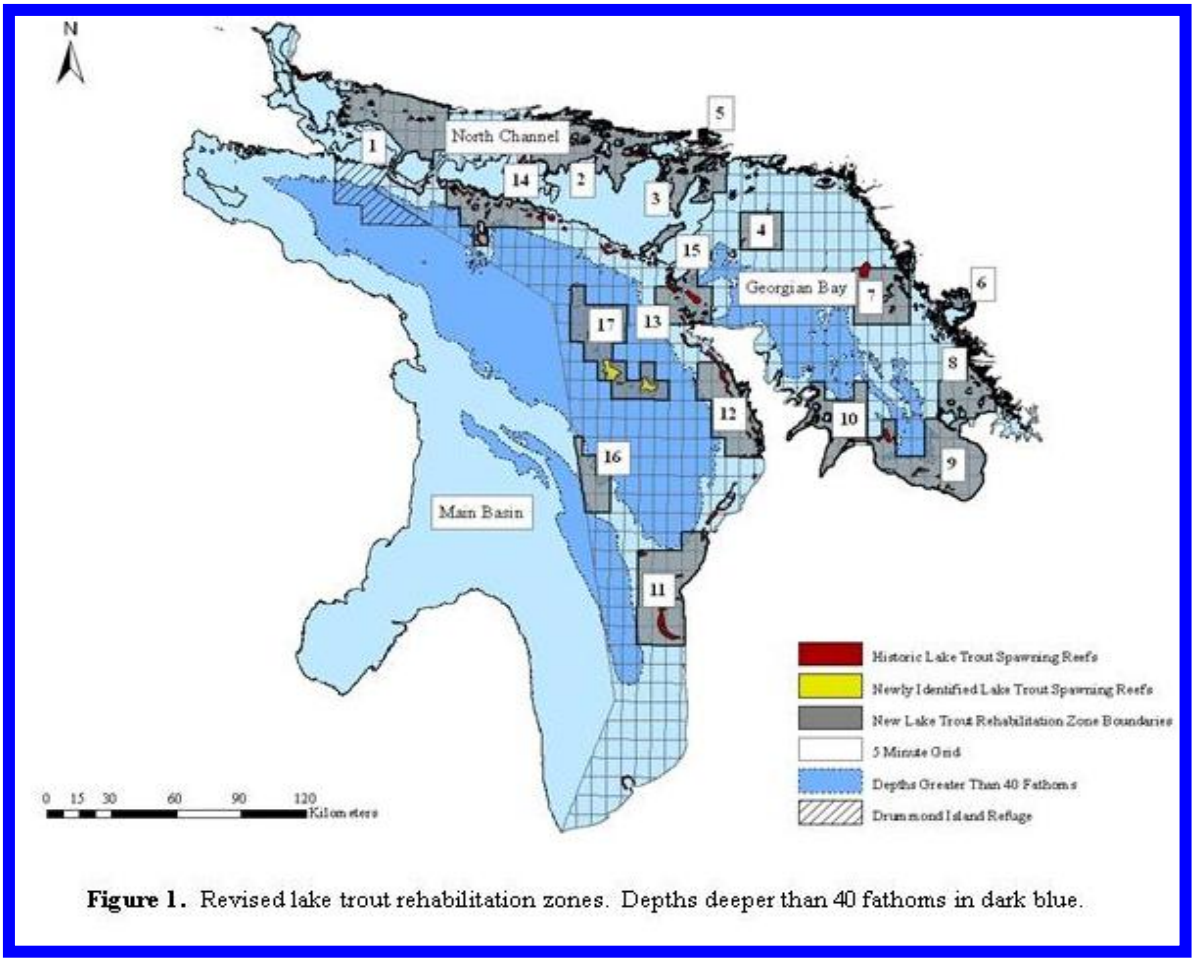

Figure 1. Revised lake trout rehabilitation zones. Depths deeper than 40 fathoms in dark blue.

origin of stocked lake trout the revised plan recommends that all fish be marked.

Marking of fish will occur by a combination of fin clipping and the use of coded wire tags (a tiny numbered piece of wire embedded in the flesh of the fish's snout). This will provide information on the recruitment of wild fish, movement and survival of stocked fish, and accurate age and growth information for the various strains of fish being used for rehabilitation efforts.

Additional recommendations include the continued assessment of variable year stocking in some locations (i.e. not stocking every year), stocking fish by boat in as many offshore rehabilitation zones as possible, and to consider night stocking to reduce the loss of stocked fish by predators.

It is proposed once abundances of wild lake trout account for at least 25% of the estimated population, stocking plans should be reviewed; stocking should be terminated

Table 1. Priority ranking of lake trout rehabilitation zones for Lake Huron (see Fig. 1 for locations).

Priority (Rank)	Name	Basin	Zone Number
1	Parry Sound	Georgian Bay	6
2	Iroquois Bay	North Channel	5
3	Limestone Islands	Georgian Bay	7
4	Frazer Bay	Georgian Bay	3
5	South Bay	Main Basin	15
6	Nottawasaga Bay	Georgian Bay	9
7	Western Bruce Peninsula	Main Basin	12
8	Western North Channel	North Channel	1
9	Point Clark	Main Basin	11
10	SW Manitoulin Island	Main Basin	14
11	Watcher Islands	Georgian Bay	8
12	Owen Sound/Colpoys Bay	Georgian Bay	10
13	Bruce Archipelago	Georgian Bay	13
14	Darch Island	North Channel	2
15	Grand Bank/Dawson Rock	Georgian Bay	4
16	Six Fathom Bank	Main Basin	16
17	North Lake Huron Humps	Main Basin	17

entirely once 50% of the population is of wild origin.

EXPLOITATION CONTROL

Compared to other fish, lake trout grow slowly, mature at older ages, have relatively low reproductive potential and have a long life expectancy which makes them vulnerable to excessive exploitation from both commercial and sport fisheries.

Recommendations for the commercial fishery include:

- an annual review of lake trout quotas relative to progress in achieving rehabilitation objectives,
- restrictions on fishing other species (e.g. lake whitefish) if the incidental catch of lake trout in gill nets is too high,
- promoting the use of alternative gear configurations that minimize incidental catch of lake trout (e.g. suspending gillnets off the lake bottom),
- encouraging the use of live capture gear (i.e. trap nets);
- implementing seasonal exclusions from areas where lake trout spawn,
- reducing commercial fishing activity in or adjacent to lake trout rehabilitation zones where fishing mortality is excessive.

Recommendations for the sport fishery include:

- implementing protective size limits,
- considering a closed winter season (Sept 30th to May 1st) where winter exploitation is excessive,
- reducing bag limits to one or no lake trout in rehabilitation zones with limited spawners (such as Iroquois Bay),
- applying“no-wild-fish-harvest” regulations where natural reproduction of lake trout is evident and the long-term rehabilitation objective has not been achieved,
- educating anglers in proper lake trout catch-and-release techniques.

It is recommended that all existing sanctuaries (areas of no commercial or sport fishing) be maintained and new sanctuaries for high priority rehabilitation areas be considered.

The revised plan also discusses sea lamprey control, native prey fish recovery, suppression of non-native species, current and future research needs.

CONCLUSIONS

The collapse of native lake trout in Lake Huron during the 1940’s ushered in an era of uncertainty and instability in the fish community. While progress has been slow in some locations, there has been growing optimism that lake trout rehabilitation is achievable. If lake trout are successfully rehabilitated it will create stability in the fish community which will help to impede the negative effects of existing invasive species and prevent new invasions.

The UGLMU invites you to review and comment on the entire Revised Lake Trout Rehabilitation Plan for Ontario Waters of Lake Huron and complete a questionnaire.

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