

Clearwater Bay Lake Trout Strategy



Ministry of
Natural
Resources

Hon. Vincent G. Kerrio
Minister

Introduction and Background

From 1984 to 1987, the Ontario Ministry of Natural Resources (MNR) conducted studies on Clearwater Bay, Echo Bay and Cul de Sac Lake which are deep, cold trout-water basins in the north end of Lake of the Woods.

The studies included fisheries assessment of the harvest and habitat, including water quality and spawning shoals. Findings revealed that this area of the lake was being overharvested by the winter fishery and that reduced oxygen conditions along with higher than normal nutrient levels were prevalent in the main basins of Clearwater Bay and Echo Bay.

These problems were identified and presented to the public during the Kenora District fisheries management planning exercise in 1987. In presenting the available data, the MNR identified its desire to close

the winter lake trout fishery in the Clearwater Bay area as an interim measure, and to establish a committee to look for a long term management strategy. The objectives were to investigate the water quality problems and look for a management approach which would nurture the trophy lake trout fishery the Clearwater Bay area is noted for.

The majority of the public supported the January 1st to May 21st closure of the lake trout fishery in 1988. At the same time, a committee was established to find an acceptable way of managing this fishery.

Chaired by the MNR, the committee was presented with the information that led to the closure of the lake trout fishery. Figures 1 to 5 (below) provide a synopsis of this information.

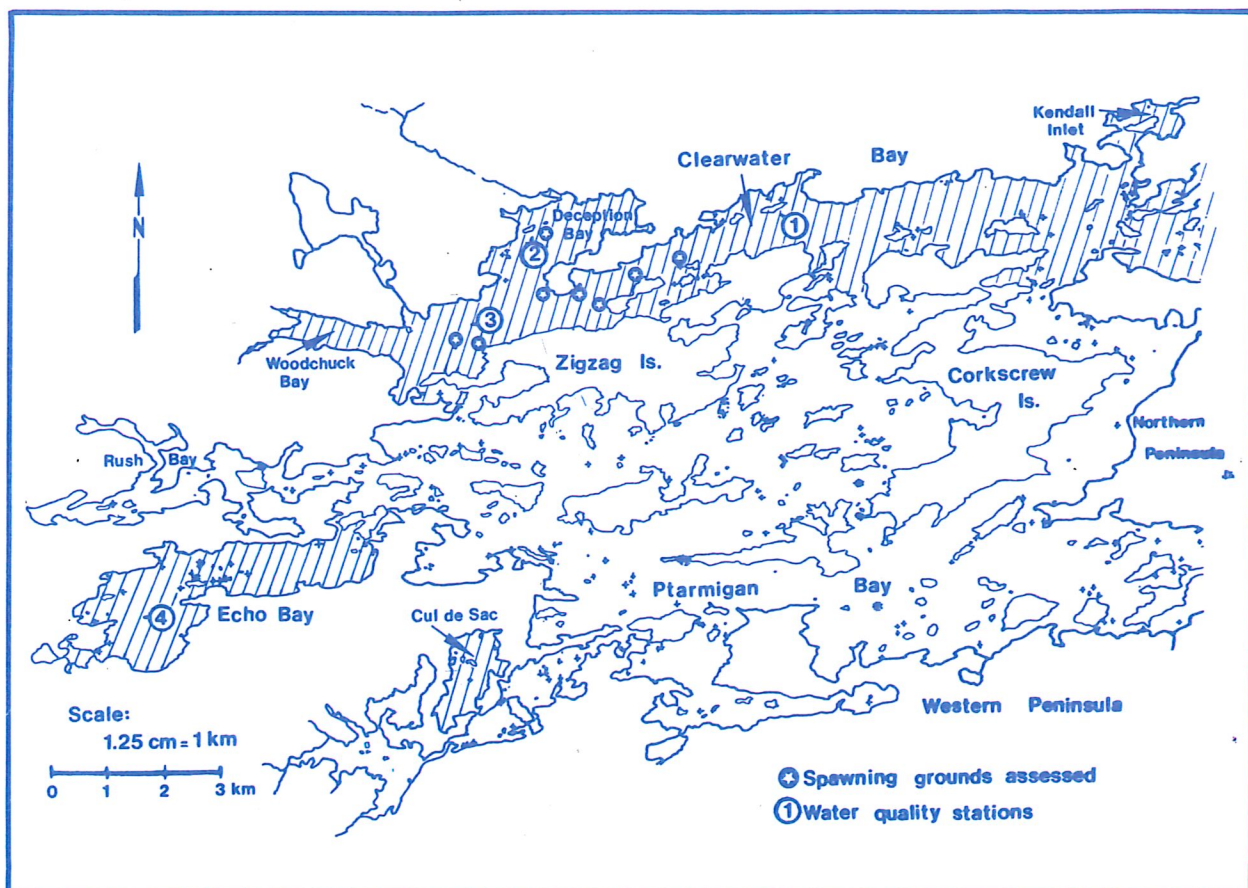


Fig. 1. Map of Clearwater — Echo — Cul de Sac Bays:

The area of concern includes Clearwater Bay, Echo Bay and Cul de Sac Lake, located on the northwest corner of Lake of the Woods. These are the primary areas

in the north end of the lake that are deep enough to provide cold, well-oxygenated water required by lake trout during summer months.

Fig. 2 Nutrient input-effects on bottom oxygen and lake trout spawning shoals

Lake trout waters are characteristically poor in nutrients, primarily phosphorous and nitrogen. Recent water testing in Clearwater and Echo Bays has indicated that nutrient concentrations in the water are twice as high as the average for lake trout lakes in Ontario. It is suspected that major additions of nutrients have occurred. The primary sources are probably run-off from septic fields which service cottages surrounding the Clearwater Bay area along with other activities such as the fertilizing of lawns and gardens associated with cottaging.

Most sewage from cottages along the Clearwater Bay shoreline is treated in septic fields. A septic field system, when operating properly, uses a baffled tank to trap solids and floating scum from household sewage, followed by an underground network of perforated pipe (the "tile" field or leaching bed) to safely disperse and treat the liquid component through a layer of stone and soil. A properly functioning field prevents septic tank effluent, which has a strong odour and may carry disease organisms, from reaching the ground surface. As the effluent seeps through the soil and gravel of

the field, micro-organisms break down the organic pollutants in the effluent, and filter out bacteria and other disease-carrying organisms. It is important to note, however, that while a septic system is able to safely trap or digest organic pollutants from sewage, it does not necessarily remove dissolved nutrients such as phosphorous and nitrogen. Some nutrients will be absorbed into soil, and some will be taken up by shoreline plants, but most researchers agree that in the long run (e.g.: 10 to 20 years) most of the nutrients will reach the lake through groundwater flow.

Additions of nutrient into a water body act like fertilizer to stimulate increased growth and abundance of planktonic algae in the surface waters during summer months. When algae die, they settle to the lake bottom and decay, mainly by bacterial action. This process requires oxygen which is absorbed from bottom water. As oxygen is slowly depleted, these cold, deep waters, where lake trout have taken refuge during summer to avoid high surface temperatures, become inhospitable.

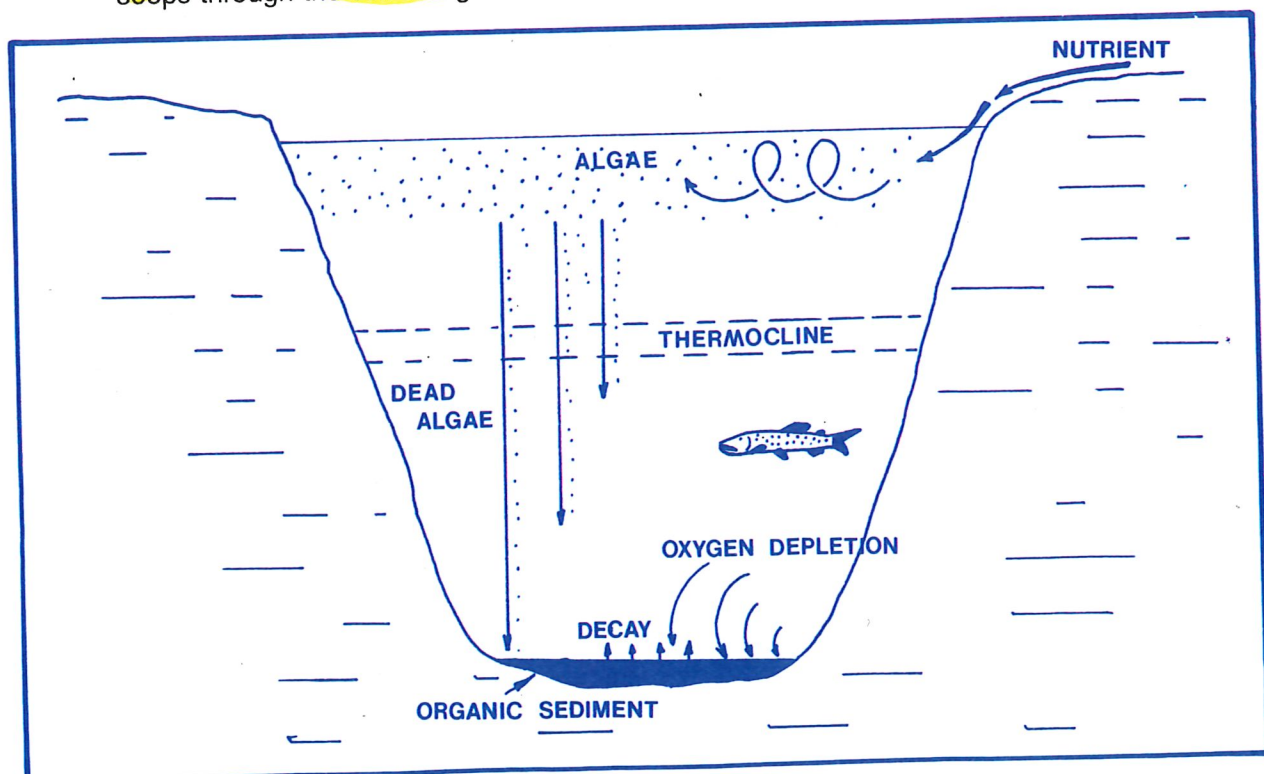


Fig. 2

Summertime oxygen depletion is limited to deeper waters because of lake stratification, whereby warm surface water lies on top of cold bottom water. Little circulation or oxygen exchange occurs between the two water layers, which are kept apart by a thin thermocline where water temperature and water density change dramatically over a short distance. In lakes with high production of algae, bottom waters may become completely depleted of oxygen by the end of summer. Mixing of top and bottom waters usually occurs in the fall and spring when top water is cool, and can be circulated by wind action.

Increased nutrients also lead to growth of attached algae which cover rocks in shallow water. Lake trout require clean boulder strewn shorelines and shoals for successful spawning and reproduction. They avoid areas which are covered over with algae or which have become silted in. There has been an observable loss in the number of lake trout spawning areas around Clearwater Bay during the last two decades due to accumulations of algae and silt. Silt accumulation has increased in recent years as clearing, development and erosion of shoreline areas have increased.

Increased nutrient - -> 1) increased growth of algae - -> increased amount of dead algae on bottom - -> increased decay - -> greater depletion of oxygen from water starting at bottom and working upwards - -> loss of lake trout summer habitat. 2) increased growth of attached algae on spawning shoals - -> accumulation of organic material (from algae) and silt (from shoreline erosion) - -> loss of lake trout spawning and rearing habitat.

angling pressure during open water, it was not until the late 1970's that local anglers "discovered" the availability and vulnerability of lake trout to winter fishing in this area.

Between 1982 and 1987, this winter fishery tripled in size, both in angling pressure and lake trout harvest; from 4300 man-hrs. of angling in 1982 to 15,500 man-hrs. in 1987; from 800 kg (1800 lbs.) of lake trout taken in 1982 to over 2400 kg (5300 lbs.) in 1987.

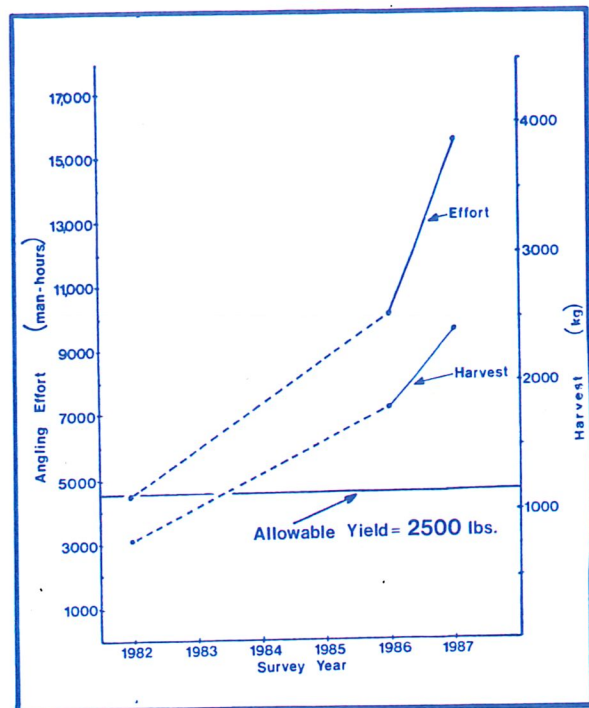


Fig. 3

A safe upper level of annual harvest for lake trout is about 1/2 kg per ha (1/2 lb. per acre). This would equal a harvest of about 1150 kg (2500 lbs.) a year for the Clearwater Bay area. Current harvests are almost double this safe upper level. Fish are being removed faster than they can be replaced.

Fig. 3 Effort and Harvest — Angling.

Although the Clearwater Bay area had always experienced some

Fig. 4. Decline in C.U.E. & Average Weight of Fish.

The dramatic increase in winter angling pressure and lake trout harvest in the Clearwater Bay area has been paralleled by a

corresponding decrease in the angling success rate and the average size of lake trout caught.

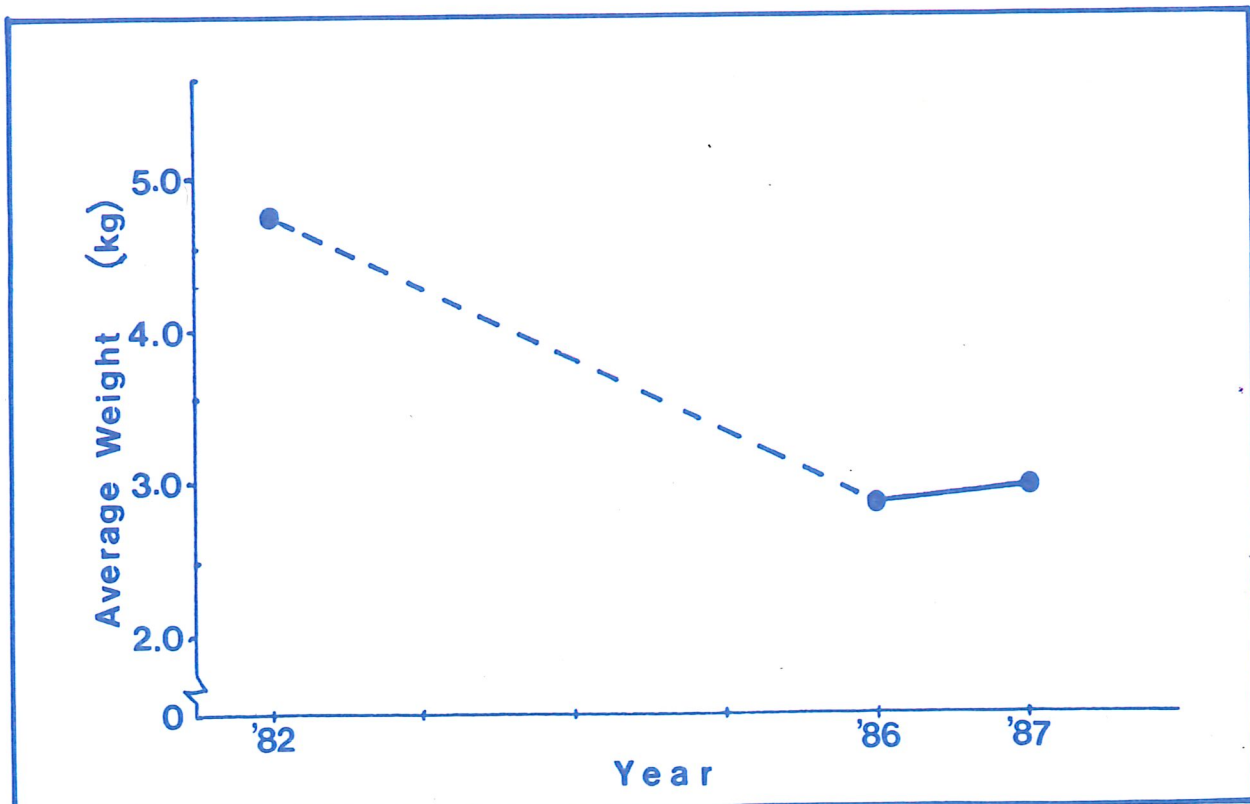
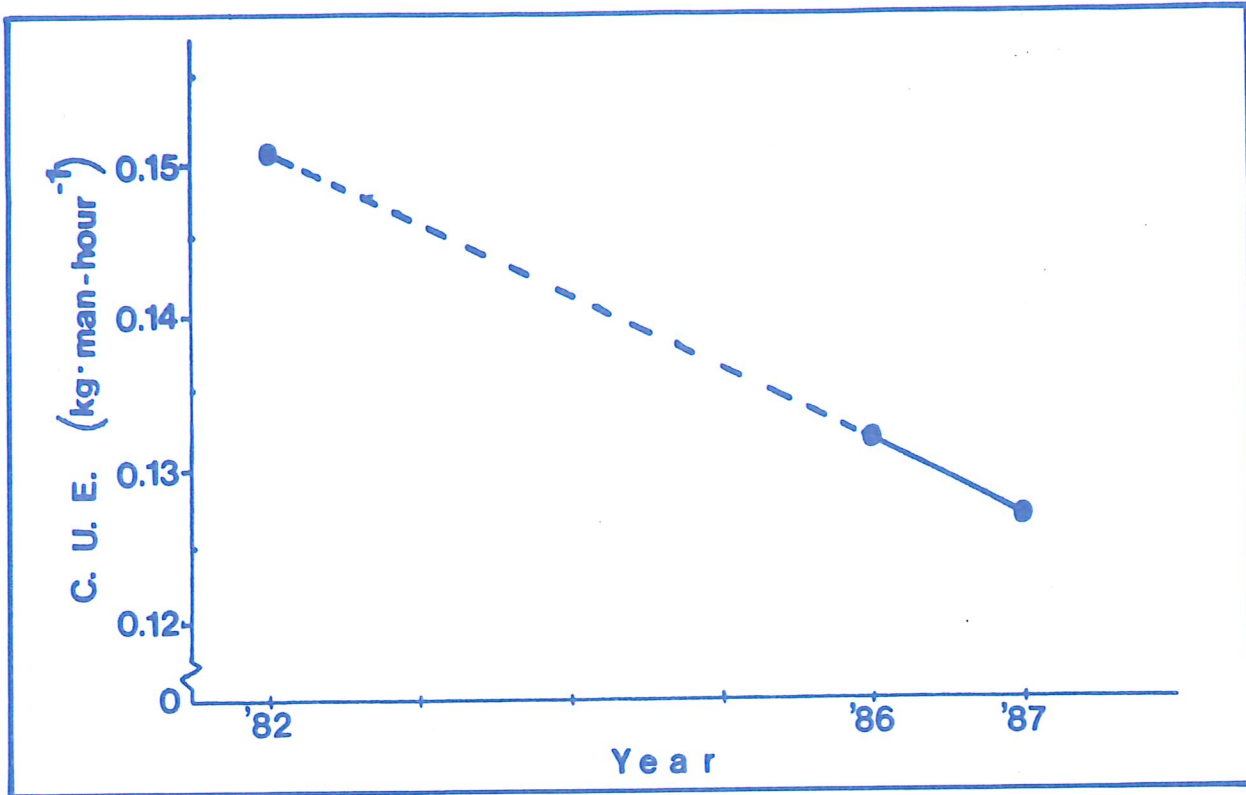


Fig. 4

The angling success rate, expressed as the catch-per-unit-effort in weight of fish caught per hour of angling, has steadily declined from about 0.15 kg (0.34 lbs.) per man-hour in 1982 to less than 0.13 kg. (0.25 lbs.) per man-hour in 1987.

The average weight of trout caught has also decreased from about 5 kg (11 lbs.) in 1982 to less than 3 kg (6 lbs.) in 1987. There has also been a corresponding decline in the percentage of mature fish caught by angling. In 1982, 75% of all fish caught were mature and had spawned at least once but by 1987 less than 30% of the catch was composed of mature fish. This indicates that angling has already reduced the number of current spawners in this population and is limiting the number of future spawners by the increased harvest of immature fish.

Fig. 5. Angler Residency.

Interviews with anglers have shown that an increasingly larger percentage are non-residents of Ontario from Manitoba and the United States, especially Minnesota. In 1982, local residents from Kenora-Keewatin area made up 80% of all anglers interviewed. By 1987, the number of local residents of Ontario had not changed appreciably but they now represented less than 45% of all anglers, while Manitoba and American fishermen comprised 35% and 20% of the total, respectively.

Anglers were being drawn from as far away as 400-500 km (250-300 miles) to the Clearwater Bay area by its growing reputation as a trophy lake trout producing area.

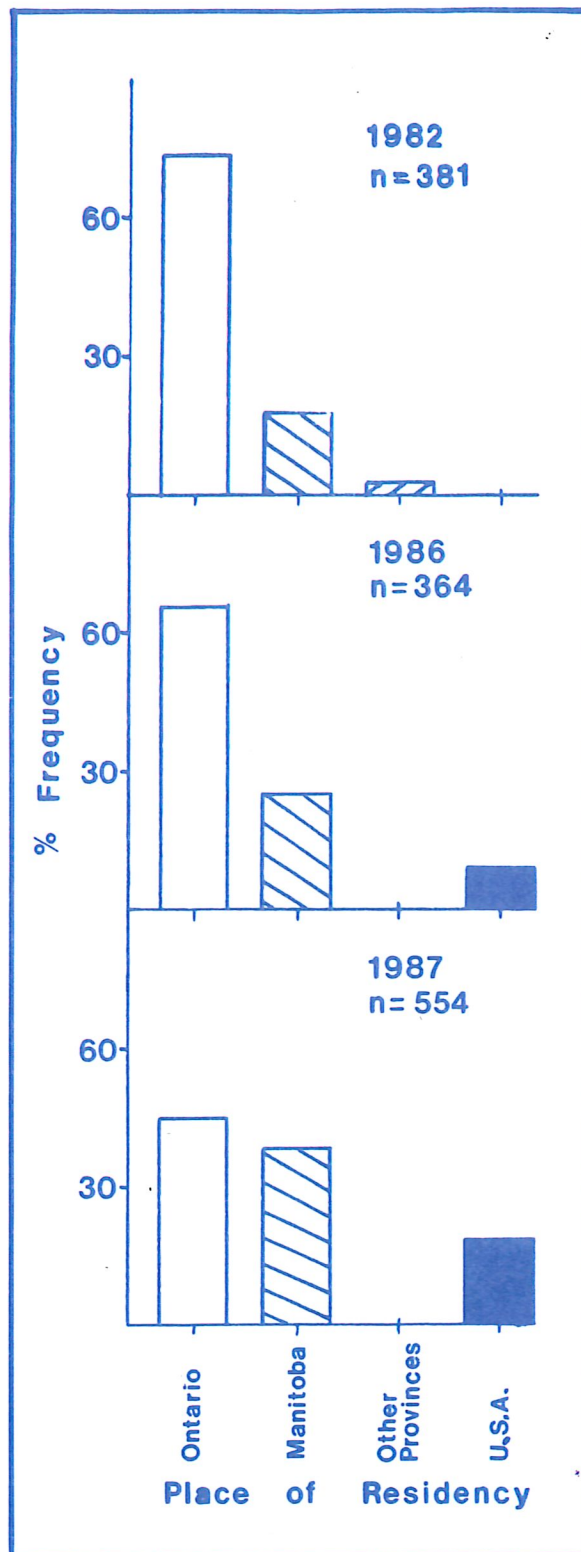


Fig. 5

Given the data as presented, the Kenora District MNR felt corrective measures were necessary if the trophy lake trout fishery of the Clearwater Bay area was to continue. To meet this objective, the MNR formed the Clearwater Bay Fisheries Advisory Committee. The specific task of this committee is to examine the problems faced

by lake trout in Clearwater Bay and to formulate a long-term strategy with which to manage this fishery. Besides local Kenora District staff of the Ministry of Natural Resources, this committee is made up of representatives from the Ministry of the Environment, the Ministry of Tourism and Recreation, a local area tourist operator,

elected representatives from the Washagamis Indian Band, and representatives from Treaty #3, the Lake of the Woods Property Owner's Association, the Kenora Sportsmen's Conservation Association and the Ontario Federation of Anglers and Hunters. To date, this committee has recommended the following management strategy:

- 1) The winter lake trout fishery on Clearwater Bay — Echo Bay — Cul de Sac Lake remain closed indefinitely from October 1st until the opening of the walleye angling season on the 3rd Saturday in May;
- 2) A tag system be adopted whereby anglers wishing to KILL a lake trout would have to tag the fish.
 - tags would be allocated by a draw system
 - application for a tag would be made in person at the Kenora District MNR office
 - only one tag per angler per season would be allocated
 - tag numbers will be limited so it is likely not all anglers will receive a tag
 - the system would allow for party fishing, whereby the person holding a tag wouldn't have to have caught the tagged fish
 - it is proposed that a maximum of 100 tags per year be issued initially, with a minimum allocation of 60% of tags to residents of Ontario and a maximum allocation of 38% to non-resident of Ontario property owners and 2% to the tourist industry; and
 - a fee for entering the draw or getting a tag was not discussed by the committee. It does however present some interesting possibilities. For example, moneys raised from a small fee could be administered by a group such as the Kenora Sportsmen's Conservation Association to be put into worthwhile conservation projects on Clearwater Bay.
- 3) Institute regulations to restrict all angling in the Clearwater Bay — Echo Bay — Cul de Sac Lake area to the use of single barbless hooks only and no use of fish or fish parts as bait.
- 4) Besides restrictions on angling to control lake trout harvest, the following actions are recommended to address the loss of lake trout habitat in the Clearwater Bay area:

- a cottage evaluation program be conducted by the Ministry of the Environment in 1989 to assess the current status of septic facilities servicing cottages in this area. The program will provide complete, up-to-date information about the number and locations of septic tanks and privies on the bay, their operating condition and the number of people using them. This information is essential to an understanding of the relative importance of nutrients from cottaging, and ways to help minimize their effects on the lake.

- in conjunction with the preceding program, a public education campaign be initiated to inform people about how to reduce nutrient inputs into the lake; and

- water quality and lake trout habitat monitoring in the Clearwater Bay — Echo Bay — Cul de Sac Lake area will continue on a regular basis.

- the Ministry of Natural Resources will pursue with the advisory committee the designation of Clearwater Bay, Echo Bay and Cul de Sac Lake as a restricted area. A restricted area order would control the amount and quality of future development by using guidelines and building permits to ensure that private land development was compatible with environmental values.

In arriving at the preceding actions, many questions have arisen as to why this course has been recommended as opposed to more conventional fisheries management strategies. The following are the most common questions asked and the MNR response.

Q. Why not stock trout in Clearwater Bay?

A. While stocking does have its place in fisheries management, it is not recommended for the Clearwater Bay area at present. Hatchery raised fish often do not survive and do as well as fish produced naturally in the wild, and there is still a valuable, naturally reproducing lake trout stock in the Clearwater Bay area. The lake trout population there also represents a unique gene pool of fish with rapid growth rates and a tremendous inherited potential for achieving trophy size. This would be jeopardized by stocking.

In addition, stocking is only a “band-aid” solution. It does not solve the real problems which threaten lake trout, especially trophy lake trout, in the Clearwater Bay area. At present rates of angling pressure, stocking would do little to maintain the current quality of this fishery. It takes 15-20 years to produce a trophy-sized lake trout in this area, which is much FASTER than in most other lake trout waters, but it is still a long time. Stocking also does nothing to address the habitat problems faced by these lake trout. Unless addressed, environmental conditions will continue to deteriorate to the extent that spawning areas and cold water habitat will be very limited or may even cease to exist. Neither natural or stocked lake trout will do well if habitat continues to deteriorate.

Q. Why not drop the limit to two or one fish per day from the current three?

A. By itself, a reduction in daily limit would do little to reduce harvest of lake trout in the Clearwater Bay area, given the trend to ever-increasing participation in this fishery. The angling success rate is already such that most anglers are fortunate to catch one trout per day.

Q. Why not shorten the open season for lake trout in this area to reduce harvest?

A. It is felt that shortening the season would, in the long run, only concentrate angling pressure within the new open season and alone, would not reduce or control harvest on Clearwater Bay. Shortened seasons, without other control measures, may reduce harvest by some unknown amount but will not ensure the survival of the trophy fishery.

Q. Why not allow “catch and release” only?

A. While the philosophy of “catch and release” is supported by MNR, a “catch and release only” fishery for lake trout in Clearwater Bay — Echo Bay — Cul de Sac Lake is not recommended. Catch and release angling does incur some mortality of fish, regardless of the care taken by anglers in unhooking and releasing them. Recent studies have indicated that up to 10-15% of lake trout, caught and released during open

water angling, may eventually die. The allocation of a set number of tags to harvest fish in Clearwater Bay area allows conscientious anglers the possibility of a trophy fish or to keep a badly injured fish to eat, provided of course, the fish is tagged.

Q. Why are only 100 tags being allocated?

A. The Clearwater Bay — Echo Bay — Cul de Sac Lake area could safely support an annual harvest of 1150 kg (2500 lbs.) of lake trout **under normal conditions**. Although this could eventually translate into 500 fish (averaging 2.2 kg or 5 lbs. each) or 500 tags, it has been recommended that a maximum of 100 tags per year be allowed initially for the following reasons:

- lake trout populations in this area have been severely stressed by overfishing during recent years and could not withstand harvests at even the 1150 kg allowable level;
- an annual harvest at about 100 fish per year would allow the population to slowly rebuild and provide for the development of trophy opportunities;
- it has been estimated that some mortality will result from “catch and release”. This loss has to be accounted for in the total number of tags allocated; and
- the primary object of harvest controls on the Clearwater Bay fishery is to maintain trophy lake trout fishing opportunities — this approach entails “stepping back” from a maximum allowable harvest level — for example, the province of Manitoba currently recommends an annual harvest at about 10% of the allowable yield to manage for a trophy lake trout fishery. This would translate into less than 50 tags for the Clearwater Bay area.
- the initial allocation of 100 tags is reasonable given the more productive water of Clearwater Bay in comparison to waters in northern Manitoba. The fishery will continue to be closely monitored to allow for adjustment of tags as necessary.

Q. Why control the use of bait and barbed tackle?

- A. The primary reasons for restricting the use of fish or fish parts and barbed hooks in this fishery are to reduce the mortality of hooked fish and to foster "catch and release" angling, as an enjoyable alternative to the more traditional harvest approach. Lake trout tend to swallow baited hooks, especially when dead-lining techniques are employed, more deeply than artificial lures alone. Hooks in the throat or gills can increase the risk of injury when the hook is being removed.

Barbless hooks reduce handling time when they are being removed which is an important consideration when trying to reduce stress.

Restrictions on the use of fish and fish parts only will still allow fishermen to employ leeches or worms when angling for walleye, bass and/or other species in this area.

The Ministry of Natural Resources wishes to thank the following representatives of various interest groups who have participated, as members of the Clearwater

Mr. Roger Clinton — Ash Rapids Camp

Mr. Herb Frost and Mr. Bob Sinfield
— Kenora Sportsmen's Conservation
Association

Mr. Jim Hook — Ontario Federation of
Anglers and Hunters

Mr. Dean Magnus — Lake of the Woods
Property Owner's Association

Q. What can cottagers do to help reduce nutrient inputs into the lake?

- A. Cottagers can help to minimize nutrient losses from their property in a number of ways:

1. ensure that septic tanks and tile fields are maintained for efficient functioning and are grassed over;
2. use low phosphate detergents (dishwasher detergents contain very high phosphate levels);
3. economize on the water that passes through the septic system (wash laundry in the city whenever possible);
4. do not fertilize cottage lawns;
5. **protect** the foreshore area from **clearing, erosion** or other disturbances;
6. **leave as much healthy forest as possible between the lake and new construction, septic fields or other development; and**
7. **encourage** your family, visitors and neighbours to **respect the lake and its shoreline as much as you do.**

Bay Fisheries Advisory Committee, in formulating the preceding management strategy:

Mr. Albert Sinclair — Washagamis
Reserve

Mr. Andy Sky — Grand Council
Treaty #3

Dr. Bob Steedman and Mr. Jake Vander
Wal — Ministry of the Environment

Mr. Dave Van Wagoner — Ministry of
Tourism and Recreation