Golden Lake Walleye Improvement Strategy

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Golden Lake Walleye Improvement Strategy

Background:

There have been concerns over the past number of years regarding the declining walleye fishery in Golden Lake. Meetings were held in 1994 to discuss the status of the walleye fishery and strategies for fishery improvement. Unfortunately consensus was not reached and potential strategies were not implemented.

Another meeting was organized and held on March 11, 1999, again to inform various stakeholders of the history and status of the Golden Lake fisheries with emphasis on walleye and determine stakeholder desires in determining and implementing strategies. Stakeholders at that meeting included representatives from Outdoor Clubs, Municipalities, Algonquin Communities, the Golden Lake Cottage Association, tourism establishments on the lake as well as individuals and staff from the Anishnabek/Ontario Fisheries Resource Centre staff and MNR. Questions were posed in an afternoon workshop regarding stakeholder satisfaction with the present fishery, the type of fishery desired, whether or not an attempt should be made to rehabilitate the walleye fishery, potential strategies and information gaps.

At the March 1999 meeting stakeholders unanimously agreed that the walleye population had crashed and that they would like to see measures implemented to rehabilitate the fishery. Several ideas were presented on information needs, regulation and sanctuary changes, stocking and promoting angling opportunities for perch and bass. A commitment was made by MNR to establish a small working group (committee) to make recommendations for actions to be considered for Golden Lake. A committee was established with the first meeting being held May 6 1999.

The overall water quality in Golden Lake has improved with the construction of the sewage treatment plant in Killaloe. Although this is good generally, it has a negative effect on the productivity of the lake for walleye. Despite management efforts to improve the walleye fishery in Golden Lake, it is likely not realistic to expect a return to the days of the 1960's and 1970's.

Terms of Reference – Golden Lake Walleye Improvement Committee:

The Improvement Committee shall make recommendations towards the development of a Walleye improvement strategy for Golden Lake. This strategy will encourage sound principles of walleye management. The District Manager retains the authority to accept, reject or modify the Committee's recommendations and respond with reason(s) to the committee.

- The Improvement Committee will review and assess the present habitat information and needs that apply to the Golden Lake fishery.

- The Improvement Committee will review and assess the present regulations that apply to the Golden Lake fishery.

- The public will be allowed the opportunity to review the recommendations of the Improvement Committee. The Improvement Committee will be involved with the public review of their recommendations.

- The Improvement Committee will consist of 7 members.

- The Improvement Committee will determine one method of decision making for the group (i.e. majority rule, consensus etc.)

- Members of the Improvement Committee are expected to represent the spectrum of view held by the group or interest they are representing.

- MNR will record all minutes. After each meeting a copy of the said minutes will be provided to all members ASAP.

- MNR and the Anishnabek/Ontario Fisheries Resource Centre (A/FRC) will support the efforts of the Improvement Committee by providing fisheries biological expertise and other relevant material as required within existing budgets and technology.

- The Improvement Committee will work towards providing their recommendations to the District Manager by July 31, 1999.

Membership:

Gord McMillan - MacMillan's Cabins
Al Hastings - Pembroke Outdoor Sportsmans Club/Lake Resident (replaced in Janaury 2000 by Alfred Beck representing the Pembroke Outdoor Sportsmans Club)
Irene Autayo - Reeve, Township of North Algona/Wilberforce
Dan Mask - Councillor, Township of Hagarty & Richards
Norma Bailey - Golden Lake Cottagers Association/Algonquins of Greater Golden Lake and Area (changed in January 2000 to represent the Cottagers Association only).
Rita Culhane - Reeve, Township of South Algona
John Paul Kohoko - Golden Lake First Nation

Golden Lake Information:

Area Description:

Lake and Soil Characteristics:

- ✓ Golden Lake is located in North Algona and South Algona Townships as well as touching on Hagarty Township.
- ✓ It lies within the Bonnechere River watershed.
- ✓ It is 3552 hectares (8778 acres) in size with a mean depth of 8.5 metres and a maximum depth of 24.4 metres.
- ✓ Golden Lake lies within the Canadian Shield – characterized by rolling hills covered with shallow well-drained overburden showing frequent outcroppings of crystalline bedrock.
- ✓ The soils along the shoreline are composed of gravelly sandy loam, with several areas of localized mud.
- ✓ The area is covered with medium to heavy growth of mixed forest with active farmland scattered throughout the area.

Human Use Patterns:

- ✓ Recreational uses include boating, swimming and angling. The common game fish include largemouth and smallmouth bass, lake whitefish, yellow perch, walleye and northern pike.
- ✓ The lake is home to 349 cottages or permanent residences of which 72% lie along highway 60.

Water Quality:

- ✓ Bacterial water quality of Golden Lake is good.
- ✓ Overall water quality is good with low nutrient levels.
- ✓ There are no direct discharges of wastes into Golden Lake from communal or municipal sewage treatment facilities but prior to 1972 the Village of Killaloe Station was a source of contamination to Brudenell Creek.
- ✓ Alkalinity 31 mg/l. $CaCO_3$
- ✓ P.H. 6.9
- ✓ Total Phosphorous 0.014 mg/l. (low)
- ✓ Total Nitrogen 0.410 mg/l. (low)
- ✓ Mean Chlorophyll (a) 1.5ug/l. (low)
- ✓ Secchi depth 3.2 (Moderate) This reading has increased over the years with a current estimate of 4.1 metres.

Fishery Overview:

- ✓ Walleye were introduced into Golden Lake in the 1920's by the Ontario Department of Lands and Forests and became numerous

by the 1940's. Prior to introduction, the lake was dominated by lake trout and whitefish.

- ✓ By the 1960's and1970's Golden Lake was a productive walleye lake, well known for its walleye fishery. Golden Lake along with several other lakes and the Ottawa River likely supported 95% of the angling pressure for this species at the time in the area.
- ✓ The walleye fishery attracted large amounts of tourists (resorts). Along with local anglers this produced heavy angling pressure.
- ✓ In the early 1980's catch rates declined and a lack of small walleye was noted. There were likely a number of reasons for the decline including overharvesting.
- ✓ Golden Lake has provided a subsistence fishery for the First Nation People of Golden Lake (initially whitefish then walleye). Harvest methods continue and consist of gill netting in the fall for whitefish and spring harvest of walleye with spears and nets. There is little information on harvest rates.

Stocking History:

- ✓ Stocking of walleye commenced in 1922 and occurred 17 times between 1922 and 1954.
- ✓ Stocking consisted of variable numbers of fry, yearlings and possibly eyed egg stage.
- ✓ In addition, various other species were stocked between 1923 and 1961.. Lake trout, bass (both smallmouth and largemouth) and muskellunge.
- ✓ The overall number of walleye stocked is small in comparison to natural egg production.

Management History:

- ✓ Creel surveys were conducted in 1963, 1973, 1980-82 and 1988 by the Ministry of Natural Resources (MNR). McMillans resort conducted creel surveys from 1987-1991 and 1994. The Bonnechere Metis Association conducted a summer creel survey in 1994.
- ✓ Catch per unit effort (CUE) decreased substantially from 1963 and 1973 surveys (0.34,0.33) to values obtained in the 1980's surveys (range 0.01-0.16)
- ✓ Trapnet surveys were conducted in 1986, 1987, 1988 and in 1990 by MNR. Biological data collected was comparable to those collected during creel surveys. Larger fish dominated catches, growth rates were fast (indicating over-exploitation) and few young fish showed up in the catch. Over-harvesting was determined as playing a major role in the walleye decline.

Spawning and Recruitment Assessment:

- ✓ Walleye in Golden Lake utilize spawning habitat in the Bonnechere River below the Tramore Dam as well as shoals on the southeast shore of Golden Lake and at the bridge in Golden Lake and south in the Bonnechere River.
- ✓ In the spring of 1989 significant number of walleye were noted on spawning shoals in the lake.
- ✓ The relative importance of the spawning areas is unknown although Gardner(1963) thought that only a small proportion of Golden Lake walleye utilized the Tramore spawning area (not based on quantitative data).
- ✓ Tramore dam spawning area was not considered good spawning habitat in 1988 due to sand and small gravel substrate not being conducive to good egg survival.
- ✓ Work to improve the spawning area occurred and use of the improved spawning habitat confirmed in 1989.
- ✓ The Bonnechere River was surveyed for additional spawning sites and efforts made to more closely monitor shoreline development along Golden Lake and the Bonnechere River to protect spawning and rearing habitats.
- ✓ Information regarding egg survival, spawning numbers, substrate quality and the exploitation of spawning fish in the two areas is unknown.
- ✓ Some fish tagged at the Tramore dam have migrated to Round Lake early in the spawning run when the dam was open. It was discovered that since 1983 (coincident with the poor reproduction) Renfrew Hydro was removing all of the stop logs from the Tramore Dam each spring. Arrangements were made to leave 2 stop logs in at Tramore and to monitor water levels to ensure quality habitat through incubation. This had not been done on a consistent basis, as protection of property from high spring freshet water levels has been a concern to Round Lake cottagers.
- ✓ Electrofishing of areas of Golden Lake and the Bonnechere River and bottom trawling projects were initiated in 1988 to asses the status of young of the year (YOY) walleye and the composition and balance. Both procedures were unsuccessful at sampling YOY walleye. Conclusions were that recruitment is very low and that perhaps intense predation on emerging fry is contributing to failed year classes.

Recent Studies:

- The most recent fisheries assessment work has been conducted through Alqonquins of Golden Lake First Nation and A/OFRC studies supported by MNR.
- Results of the most recent fisheries assessment work on Golden Lake have confirmed that the walleye population in the lake is at low levels of abundance.
- 1996 Nearshore Commuity Index Netting (NSCIN) is a standard index trapnetting method. Only 5 walleye were caught (CUE of 0.18) which compares very poorly to the Provincial average (CUE 6.3).
- 1997 Walleye Spawning Stock Assessment/Tagging – 41 walleye were caught in 55 overnight trap net sets. Walleye ages ranged from 2 –12 years.
- 1997 Summer Creel survey to document angler effort and harvest. Estimated effort was 11,700 angler hours. Zero (0) walleye were observed. 24% of the total effort was targeted at walleye. Estimated catch included 566 smallmouth bass, 510 largemouth bass and 438 pike. The only species harvested was pike (estimated at 272).
- 1997 Fall Walleye Index Netting (FWIN) is a standard walleye assessment method, which utilizes graded mesh gill nets from 1 to 6 inches. A total of 23 overnight gillnet sets were completed with 38 walleye caught. Catch per unit effort (CUE) of 1.7 walleye per net is low compared to provincial FWIN database. Walleye ages ranged from 2 to 14 years. Age classes 12 and 13 were not present in the catch however all other age classes were, indicating that there has been consistent recruitment.

Recommendations:

The following recommendations have been discussed by the committee and are being made for consideration to the District Manager. They have been categorized, as Information Needs, Regulation Changes, Algonquin Support, Public Consultation and Other.

Information Needs:

1. RECOMMENDATION: MNR and other groups to seek funds to contract a comprehensive review and assessment of spawning areas in the lake and river.

2. RECOMMENDATION: All groups to seek out an organization to coordinate volunteers for a Golden Lake Walleye Watch.

Some information can be obtained on utilization of existing known spawning areas by conducting a "walleye watch". Volunteer groups across the District conduct this in conjunction with MNR.

3. RECOMMENDATION: Assess creeks flowing into Golden Lake to determine if there are suitable spawning areas and whether or not there are any barriers to fish reaching these areas (i.e. beaver dams).
There was some discussion with respect to creeks flowing into Golden Lake at the March 1999 meeting and committee meetings. Update: This was conducted during the summer of 1999 by MNR staff in conjunction with Ontario Rangers. No blockages of creeks prohibiting access to suitable spawning areas were discovered.

4. RECOMMENDATION: Determine information needs with respect to fish movement at the Tramore Dam and seek funding opportunities to conduct the work.
There is some concern that Walleye spawn at or above the Tramore dam and continue to Round Lake representing a loss to the Golden Lake Walleye fishery. Round Lake fish may also spawn there and be recruited into the Golden Lake fishery but this is less likely. Although the system should be considered one walleye fishery there is a need to determine fish movement to see if strategies need to be implemented to protect Golden Lake brood stock. Some possibilities include tagging through O/AFRC, a type of telemetry project to determine fish movement and flow studies to determine parameters with respect to walleye movement and flow.

5. RECOMMENDATION: In conjunction with the above it is recommended that MNR talk to Renfrew Hydro about leaving logs in the dam at the spring again. As a minimum establish some information flow so that it is known when logs are left or not in relation to walleye spawning. This may be undertaken in the context of a broader Bonnechere River Water Management Review project.

6. RECOMMENDATION: Develop a monitoring plan for the lake as part of rehabilitation efforts. A component of this could be sampling for young of the year (YOY) walleye.

Regulation Changes:

1. The committee recommends a closure of the walleye fishery for 5 years to be implemented as soon as possible. The closure would include the Bonnechere River up to the Tramore dam from Golden Lake and south to the Golden Lake dam.

2. Regulation changes would also be implemented such that when the closure expires the daily catch limit would be reduced to 2 fish (from 6). A minimum size of 50 cm would also be implemented. This means that a walleye would have to be larger than 50 cm to be kept.

The 50 cm size limit would allow improved recruitment by allowing fish to reach an age where they could spawn once or twice before being removed. This and the daily catch limit reduction are similar to what has been applied on a few other District lakes to reduce the harvest and aid in rehabilitation of the walleye fishery. A regulation change without a closure was considered but was more difficult for the Algonquins to support and did not result in rehabilitation of the walleye stocks in a reasonable time frame. It should be noted however that rehabilitation of the walleye stocks is a relatively long term proposition anyway.

Public consultation:

The committee recommends that public consultation on these changes occur in the form of an open house to be held in Golden Lake on May 27. The time would be from 1:00 PM to 4:00 PM with a brief presentation at some point in the afternoon. It is recommended that this open house be advertised in the Eganville Leader, The Weekender, Barry's Bay This Week and the Pembroke Observer. Alf Beck would also mention it in his column in the Pembroke Observer. Committee members would be free to explain the proposed changes to their groups and members of the public prior to this date. It is interesting to note that there have been several articles in newspapers with respect to this with few questions from the public to date. This is likely due to widespread public knowledge of the poor state of the Golden Lake walleye fishery and the recognition that to improve it something needs to be done.

Other:

1. RECOMMENDATION: User groups on the lake promote the utilization of bass and perch to reduce predation on young walleye and competition for habitat.
   This could be achieved through the cottage association or tourism business promoting a fish derby, fish fry or promoting the Family Fishing Weekend.

2. RECOMMENDATION: STOCKING - MNR to request fall fingerlings or equivalent for stocking Golden Lake a minimum of once over the 5 year period as soon as possible. MNR will not be able to approve the purchase of other walleye to stock at this time by other

groups as then fall fingerlings (fin clipped for monitoring purposes) would not be available from provincial hatcheries.
Although stocking is not the "cure all" that many people think, it is an important management tool. The committee has been informed of and discussed the need for fish of significant size (summer or fall fingerlings) due to predation problems in the lake. It is felt that stocking is required to give a boost of walleye in the lake in an attempt to put more spawners on the spawning areas thereby attempting to produce an increase in fry to allow some to escape predation. The optimum stocking rate of 25 fall fingerlings per hectare would translate into a need for close to 90,000 fall fingerlings. The rate for summer fingerlings would be 100 per hectare which would mean there is a requirement for over 350,000 summer fingerlings. This currently exceeds the capacity of Provincial hatcheries for both fall and summer fingerlings. Ideally fall fingerlings should be fin clipped to aid in future monitoring. Given the numbers it is likely more realistic for MNR to attempt to stock at half the recommended rate for 2 consecutive years if possible.

3. RECOMMENDATION: SANCTUARY – It is recommended that the existing sanctuary from the bridge to the Tramore dam from the first Saturday in March until the Friday before the 3rd Saturday in May remain as is after the 5 year closure expires.

Algonquin Support:

The Algonquins of Pikwakanagan have participated fully in this committee. It has been stated that if there is going to be a solution found for the declining Golden Lake walleye fishery, everyone must participate equally. They have supported a closure of this fishery from the start but also have recognized that discussions on what happens after a closure ends must also occur in terms of everyone participating again or the stocks could simply decline again and any gains would be lost. Algonquin support for rehabilitation of the walleye stocks can be summarized as follows:

1. Support for a five year closure on walleye.
2. Recognition that this is a conservation issue and enforcement of a closure would be by provincial agencies.
3. Reporting of numbers of fish harvested in the spring after the closure ends.
4. Discussions with fishermen involved in fall whitefish gill netting to explore the feasibility of alternatives such as live netting of fish with the release of walleye and exploration of funding sources for alternate nets if feasible. Conversely, if live netting and release is not feasible, there would be reporting of this incidental walleye catch and recognition by MNR that this is not a violation of the closure.

5. Spring harvest – modeling has occurred assuming a spring harvest of 200 walleye after the 5 year closure expires. If this target is exceeded (including catches along with fall whitefish) then an assessment of sustainability would occur along with discussions. Ongoing monitoring of the fishery is part of the overall strategy and further modeling may also need to occur based on creel surveys to support/refute other assumptions used in the modeling.

SUMMARY:

The above recommendations are part of an overall strategy to rehabilitate the Golden Lake walleye fishery. Closure by itself won't be sufficient and neither will stocking. The committee strongly recommends that the whole package be considered for implementation, including stocking, in order to put the fishery on the road to recovery.