

St. Lawrence River Discussion Paper

FISH COMMUNITIES AND FISHERIES OF THE THOUSAND ISLANDS AND MIDDLE CORRIDOR

Issues

Below is a synopsis of fish community issues and proposed management approaches. More detailed background information is provided in the main-body of the document. Please consider whether you support the proposed approaches.

Numbers of smallmouth bass and northern pike in the Thousand Islands - Middle Corridor section of the river have declined over the past decade. Sizes of smallmouth bass and northern pike have decreased. A number of factors could be contributing to these declines. These include, habitat changes; changes to weather patterns; reduced availability of food; changes to fish habitat; over-fishing; and, increased predation.

- *Ontario Ministry of Natural Resources (OMNR) and the New York State Department of Environmental Conservation (NYSDEC) are considering a reduction in harvest of these species to improve the fishery, by implementing new size limits or creel limits.*

Walleye were once common throughout the entire river. Populations began to decline after 1959. Recent studies show that walleye appear to be increasing however, they remain relatively uncommon in the Thousand Islands - Middle Corridor section of the river.

- *OMNR and NYSDEC think the walleye populations are currently favourable for anglers and plan on continuing current management practices and regulations*

Yellow perch have been and continue to be a very common species throughout the river. Perch populations in the Thousand Islands - Middle Corridor have remained stable and now appear to be increasing with no apparent decrease in size.

- *OMNR and NYSDEC think the yellow perch populations are currently favourable for anglers and plan on continuing current management practices and regulations.*

Several differences exist between New York and Ontario fisheries regulations. These include differences in open seasons and the presence or absence of minimum size limits. For example, a minimum size limit of 12 inches (305 mm) applies to bass only in New York waters of the St. Lawrence River.

- *OMNR and NYSDEC would like to know if the public would like to see the same regulations in both Ontario and New York waters of the St. Lawrence River.*

An increase in the minimum size limit for muskellunge is being proposed for Ontario waters of the St. Lawrence River in an effort to promote a record-class fishery.

- *OMNR and NYSDEC would like to see if there is public support for a 54-inch (1372) mm size limit for muskellunge in the St. Lawrence River.*

New York anglers are permitted to sell any hook and line-caught panfish that are not protected by minimum length and possession limits and come from New York waters of the St. Lawrence River.

- *NYSDEC would like to know if the public supports the continuation of this practice.*

OMNR and NYSDEC are actively involved in programs that focus on uncommon or unique fish species that are not sport fish, such as rare small fish, lake sturgeon, and American eels.

- **OMNR and NYSDEC would like to know the level of public support for management of such non-sport fish species**

Background Information

Fish Community

The fish communities of the Thousand Islands and Middle Corridor sections of the St. Lawrence River are very similar and extremely diverse. Historic reports indicate there are over 85 fish species in the St. Lawrence River. Between the period of 1987 and 1997 a total of 60 fish species was recorded in New York and Ontario waters of the Thousand Islands and Middle Corridor sections. These include bait/forage fish, and larger sport and non-sport fish species.

Similarities in fish community structure and how the fisheries resource is used make it possible to discuss these two sections of the river as one.

Notable Changes in Major Fish Populations and Fisheries

Major sport fish species for the Thousand Islands and Middle Corridor sections are smallmouth bass, northern pike, yellow perch, walleye, and muskellunge. Yellow perch, sunfish and brown bullhead support an important commercial fishery in Ontario waters.

New York and Ontario fisheries managers have worked together since 1987 to track changes in the Thousand Islands and Middle Corridor fish communities. New York State fisheries managers have conducted an annual index netting program since 1977. The annual index netting program combined with angler surveys about every five years provides information on fish abundance, age, length, angler catch, harvest and effort.

Index netting of the Middle Corridor occurred annually from 1987 to 1994. Index netting continues annually in the Thousand Islands section. Survey results from the Thousand Islands section are used when making fisheries management decisions

for the Middle Corridor because of the similarities in fish community structure and resource use.

Smallmouth Bass

While northern pike is a very popular sport fish of the St. Lawrence it is apparent that **smallmouth bass** is the preferred sport fish during the mid-summer months. Angler surveys show there is an obvious change in fishing pressure from northern pike to smallmouth bass once bass season opens. This trend continues even though a greater number of smaller bass are appearing in the angler's creel (harvest).

Smallmouth bass abundance in index nets has been on a similar, steady decline since 1989 in New York and Ontario waters of the Thousand Islands - Middle Corridor. In 1997, fish aged 4 and 6 years (1993 and 1991 year classes) made up over 50% of the catch in Ontario waters (Figure 1).

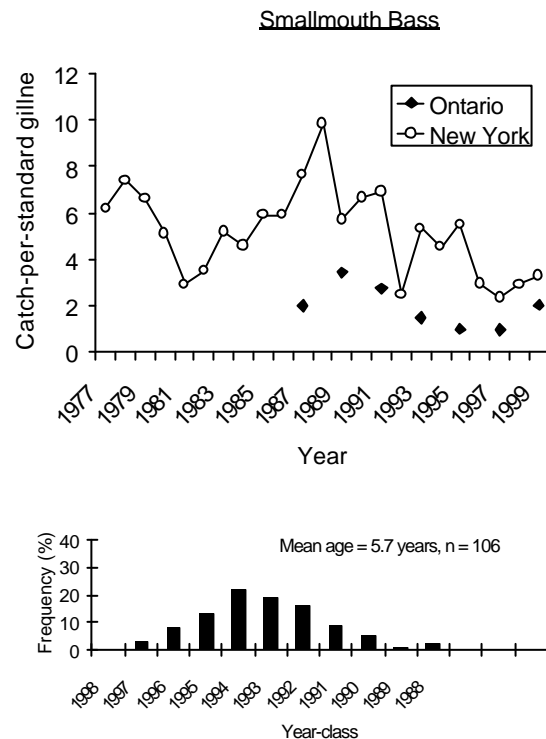


Figure 1. Upper panel shows smallmouth bass catch in standard gillnets set in New York and Ontario waters in the Thousand Islands area, 1977 to 1999. Lower panel shows age distribution of smallmouth bass

Why are there fewer smallmouth bass and why are the bass smaller?

- 1) Research on St. Lawrence River bass has shown that the majority of nesting males are between 305 and 356 mm (12 and 14 inches) long. Many of the smallmouth bass being kept by anglers in Ontario waters may very well be removed from the population before spawning for the first time.
- 2) The original range of smallmouth bass was limited to the Great Lakes-St. Lawrence system. Scientific evidence shows bass reproductive success in the St. Lawrence River is limited by temperature. Colder spring temperatures experienced in 1992, 1993 and 1994 may have delayed bass spawning, leaving later-nesting males vulnerable to anglers and limiting the early development of late-hatching fry. These factors can lead to reproductive failure and reduced survival or slower growth rates of young-of-the-year bass.
- 3) Loss or degradation of nearshore spawning and nursery habitats can also contribute to reproductive failure and slower growth rates in young fish. These diverse, submerged aquatic vegetation communities harbour invertebrates that are a valuable food source to young, developing bass.

In 1999, smallmouth bass aged 4 to 7 years (1992 to 1995 year classes) made up the bulk of the catch in New York waters. The New York assessment also showed a small decline in bass of legal size (305 mm or 12 inch). A minimum size limit of 12 inches (305 mm) restricts harvest of small bass in New York waters, but no size limit exists in Ontario waters.

The estimated number of smallmouth bass caught during a creel survey of the Ontario portion in the Thousand Islands increased between 1988 and 1994, however harvest estimates decreased. This may be the result of an increased number of anglers practising catch and release or an indication that the sizes of fish caught were not acceptable for harvest.

Interestingly enough, there was an increase in harvest of bass that were less than or equal to 305 mm (12 inches) in length. A similar shift to smaller bass is also seen in the fall index netting surveys in Ontario waters of the Thousand Islands.

Northern Pike

Catches of **northern pike** have declined in both New York and Ontario waters of the Thousand Islands and Middle Corridor sections throughout the 1990s. In 1997, fish aged 2, 3 and 4 (1995, 1994 and 1993 year classes) made up over 74% of the catch in Ontario waters (Figure 2). Similar aged fish made up the bulk of the catches in New York waters throughout the 1990s.

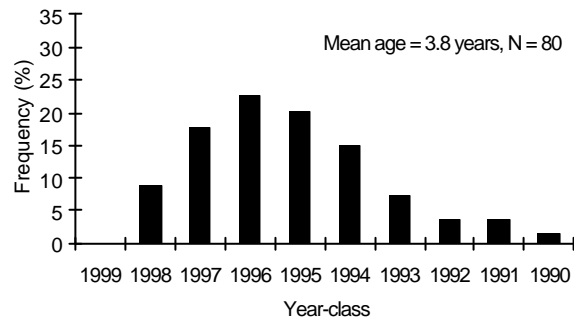
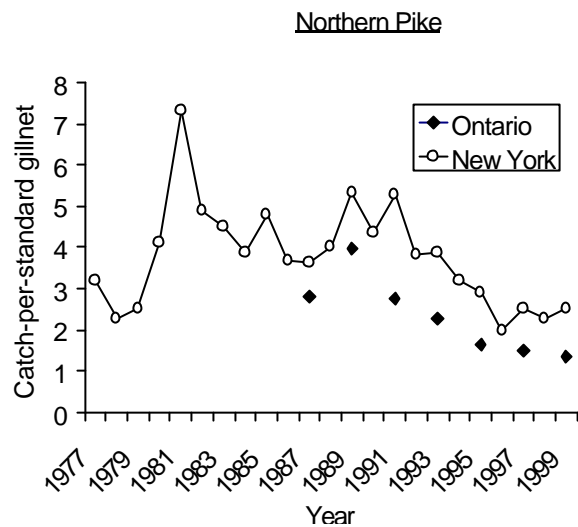


Figure 2. Upper panel shows northern pike catch in standard gillnets set in New York and Ontario waters in the Thousand Islands area, 1977 to 1999. Lower panel shows age distribution of northern pike caught during 1999.

Canadian and American anglers report that they are catching fewer larger pike, although lengths of pike in anglers' creels from Ontario waters between 1988 and 1994 were much the same. About 30 % of the fish were 600 mm (23.6 inches) in total length. A

A variety of environmental and physical factors can influence northern pike development from egg to adult stages.

- 1) Spawning success is linked to high water levels and flooding at time of spawning and stable water levels during the incubation period.
- 2) Developing eggs are sensitive to heavy siltation. Siltation can be increased by localized disturbances to shorelines or unstable shorelines that are subjected to heavy wave action or currents.
- 3) Under optimal conditions, pike grow at a very rapid rate during their first year of life. Young-of-the-year northern pike grow best in temperatures between 22-23°C. Future studies may show an increase in abundance and size of pike produced in 1998 and possibly 1999 because of the warmer temperatures we experienced earlier in the spring compared to the cooler spring temperatures experienced in 1992-1994.
- 4) Juvenile and adult fish prefer and grow best at water temperatures around 19°C. With increasing water temperatures, juvenile and adult pike are likely to move out of their traditional feeding areas and move to deeper water. Warmer temperatures tend to reduce growth rates in older pike.

minimum size limit in New York waters protects northern pike less than 22 inches (558.8 mm) from being harvested.

A comparison of 1988 and 1994 angler survey information shows a) anglers spent less time angling for northern pike in 1994; b) the number of pike caught for each hour fished dropped in 1994; and, c) total harvest of northern pike decreased in 1994. Anglers fish predominantly for northern pike at the start of pike open season and after September 1st until its close. Anglers tend to shift their effort away from pike once bass season opens.

Some anglers are concerned about declines in northern pike numbers and decreases in their size. While northern pike abundance has been relatively low throughout the 1990s, it remains within the normal range for this species since assessment work began in New York waters. Even so, in recent years the index-netting program has experienced several record low catches and overall lower catches in

Ontario waters. In addition, northern pike growth rates have declined in recent years.

Yellow Perch

Yellow perch are an important component to the commercial (Ontario) and recreational fishery of the Thousand Islands - Middle Corridor. During a 1994 angler survey of Ontario waters, yellow perch had the highest catch and harvest rates of all the major sport fish species in the Thousand Islands.

Perch remain the most abundant fish caught during the index-netting program in New York and Ontario waters of the Thousand Islands. In 1999, fish aged 3 and 4 years old (1996 and 1995 year classes) were the most abundant (Figure 3).

There does not appear to be the noticeable decrease in total length of perch compared to that of smallmouth bass and northern pike. Angler surveys in 1988 and 1994 show the majority of the perch harvest are between 170 and 230 mm (6.7 and 9.1 in) long.

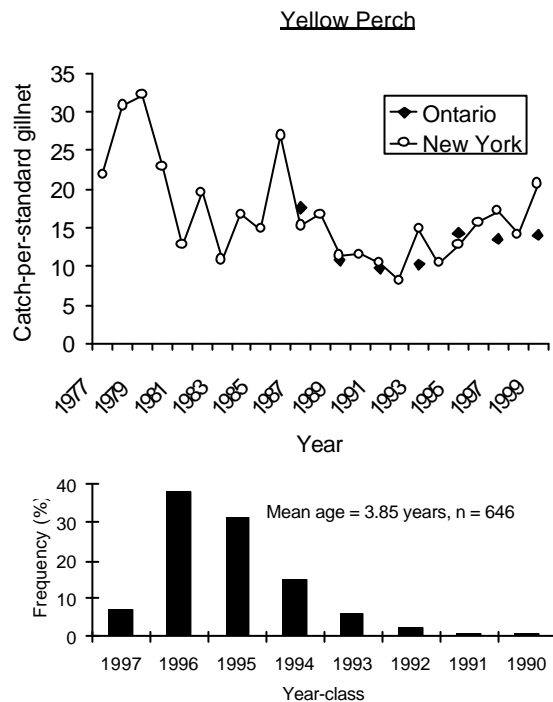


Figure 3. Upper panel shows yellow perch catch in standard gillnets set in New York and Ontario waters of the Thousand Islands area, 1977 to 1999. Lower panel shows age distribution of yellow perch caught during 1999.

Walleye

Walleye represent a very small component of the recreational fishery in the Thousand Islands - Middle Corridor section of the river. Catch and harvest estimates for walleye were the lowest of all the sport fish species during the 1994 angler survey in Ontario waters of the Thousand Islands. However, anglers harvested more walleye in 1994 than in 1988. Walleye catches are starting to show a slight increase during the index netting studies but still remain relatively uncommon in net catches throughout this part of the river (Figure 4).

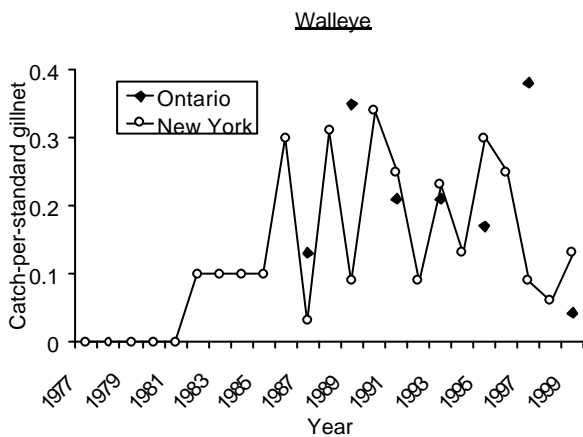


Figure 4. Shows walleye catch in standard gillnets set in New York and Ontario waters of the Thousand Islands area, 1977 to 1999.

Sunfish

Sunfish (pumpkinseed and bluegill) and brown bullhead are the second and third most important fish species to the Thousand Islands - Middle Corridor commercial fishery. Sunfish populations appear to have followed a similar trend to that of smallmouth bass, peaking in 1989 and gradually declining since that time. Brown bullheads have been showing a general decline in index netting surveys since 1987.

Angler interest in panfish species generally is not reported in angler surveys and catches of these species may be only incidental for most anglers. In comparison, bullheads represent an early spring fishery, accessed primarily at night and are therefore

not accounted for in a summer or early fall, daytime angler survey.

Muskellunge

Muskellunge are large, second in size only to the sturgeon. They are sensitive to physical habitat changes and poor water quality conditions.

Studies conducted river-wide suggest that muskellunge stocks have declined since the 1950s. Minimum size and catch and possession limits combined with habitat protection laws are used to manage muskellunge on the river. The promotion and growing popularity of catch and release fishing contribute to management efforts aimed toward maintaining a high quality fishery based on natural reproduction.

There are only a small number of waters that have the growth potential to produce record-class sizes of muskellunge. The St. Lawrence River is one of these water bodies. As such, an increase in the muskellunge minimum size limit from 112 cm (44 inches) to 137 cm (54 inches) is being proposed for Ontario waters of the St. Lawrence River in an effort to promote a record class fishery.

Other important fish species

Lake Sturgeon

Lake sturgeon is the largest of the freshwater fishes. They are extremely sensitive to physical habitat changes and poor water quality conditions. Sturgeon were historically important to the commercial fishing industry.

A history of over-fishing, habitat loss and degradation and blocked migration routes resulted in a serious decline of lake sturgeon populations throughout the river. The last commercial harvest of lake sturgeon from the Middle Corridor section occurred in 1984 and no recreational harvest is permitted for this species in either New York or Ontario waters.

Based on results from a variety of survey techniques used between 1987 and 1997, a number of sturgeon remain in the Middle Corridor section of the river. None have appeared in the Thousand Islands surveys

for that same time period. Efforts to restore lake sturgeon spawning habitat and re-establish the species through stocking efforts in several New York tributaries, one located in the Middle Corridor section, are still in the initial stages.

American eels

American eel numbers have shown a dramatic decline throughout its range. Harvest pressures, changes in ocean currents, blockage of migratory routes by dams, and habitat losses have been identified as the possible causes of these declines. Identification of the factor or factors that are causing the eel's decline is difficult because of the scientific uncertainty, the complexity of the eel's life cycle, and the broad range of the eel population. As a result, even though the current decline in the St. Lawrence River / Lake Ontario eel population is quite clear, it is not clear that local management actions would lead to an increase in the numbers of eel in the future.

OMNR and NYSDEC are working with other management agencies, including Faune et Parcs Québec and the New York Department of Environmental Conservation, to evaluate options for eel management on a global scale.

Rare fish species

The St. Lawrence River is home to a number of rare fish including channel darter, mooneye, pugnose shiner, blackchin shiner and bridle shiner. Although these species do not provide sport or commercial values, they do add to the diversity of the aquatic ecosystem, and could be basis of larger populations should the ecosystem become more favourable to these species.

Economic Values

Commercial Fishery

While no commercial net fishery exists in New York waters of the St. Lawrence River, commercial sale of hook-and-line-caught fish (primarily yellow perch) occurs. The magnitude of this commercial fishery is unknown, and is currently unregulated for those

species that are not protected by minimum length and possession limits (primarily panfish).

Ontario waters of the St. Lawrence River support a small but viable commercial net fishery. A number of fish species are targeted, including yellow perch, bullhead, carp, eel, suckers, rock bass, crappie and members of the sunfish family (pumpkinseed and bluegill).

Trends in sale value of certain fish species tend to influence the amount of fishing effort and therefore overall commercial harvest (Figure 5).

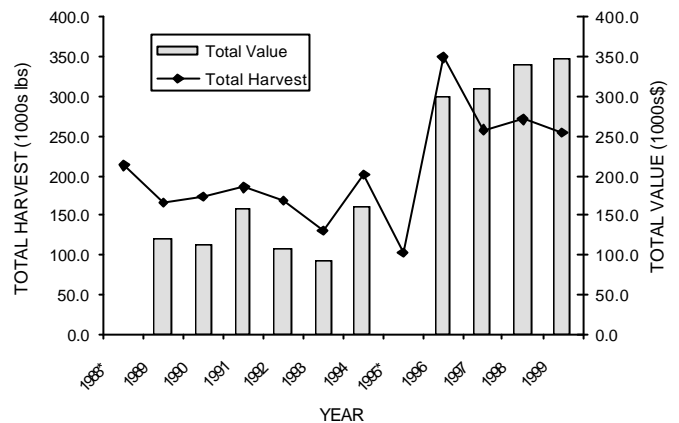


Figure 5. Thousand Islands and Middle Corridor 1988 to 1999 total commercial fish harvest (1000s lbs) and sale value (\$1000s).

Several of these fish species are placed under quota management in order to meet current fisheries management objectives and protect fish stocks. These species include black crappie, yellow perch, American eel and alewife. Over the years, allowable harvest quotas are seldom if ever met. As an example, a small quota has existed for alewife since 1996 and yet alewife has yet to appear in the commercial harvest. In addition to quotas, a commercial fishing licence also specifies area, season and gear type allowed in order to reduce problems of incidental catches of non-target species and minimize conflicts with other resource users.

Traditionally, brown bullhead, yellow perch and sunfish have accounted for the majority of commercial harvest catches. In 1997, these species accounted for 80% of the total catch for the

Thousand Islands - Middle Corridor commercial fishery.

In 1997, price per pound for eel (\$2.12) and yellow perch (\$1.99) were highest of all the commercial fish prices. The most important species for the Thousand Islands and Middle Corridor in terms of value were yellow perch (\$188,624), sunfish (\$34,756) and brown bullhead (\$29,279). Total value of the Thousand Islands, Middle Corridor commercial fishery for 1997 was 78% (\$310,650) of the Ontario commercial fishery for the entire river.

Recreational Fishery

Recreational fishing on the St. Lawrence River is an important component of local economies in both New York State and Ontario, each representing a multimillion-dollar value. While New York and Ontario expenditure estimates can not be directly compared, the following examples provide some idea of the overall value of the St. Lawrence River fishery. Anglers fishing New York waters spent an estimated \$30.7 million (US) locally in 1996. Ontario estimated that 1995 expenditures directly allocated to angling in Ontario waters of the St. Lawrence River was \$11.6 million (CAN).

Angler effort in New York waters of the river increased between 1973 and 1996. The Ontario study also reports an increase in angler effort for Ontario waters between 1990 and 1995. In comparison, angling effort throughout the entire Great Lakes system showed an overall decline over the same period. In 1996, 78,240 anglers spent an estimated 923,230 days in New York waters fishing primarily for bass and northern pike. Walleye and yellow perch were also targeted but not to the extent of bass or pike.

In 1995, 30,810 anglers spent an estimated 484,845 days fishing in Ontario waters. Angler surveys conducted in the late 1980s showed that anglers in Ontario waters also fish primarily for bass and northern pike. Yellow perch were of secondary importance, followed by walleye.

1999 Fishing Regulations

A comparison of the New York and Ontario recreational fishing regulations shows differences in open seasons for northern pike and bass on the St. Lawrence River. Several other differences apply to either salmon or trout species that make up a very small recreational fishery in the upper section of the Thousand Islands section (see Table 1).

New York State applies size limit restrictions to most of their sport fish except for yellow perch, rock bass, bluegill and pumpkinseed. Ontario applies a size restriction to only one species of fish in the Thousand Islands, Middle Corridor sections of the river. A muskellunge must be at least 112 cm (44 inches) in total length before it can be legally kept in Ontario waters. This same size limit applies to New York waters.

A committee, with representation from the OMNR, The Ontario Federation of Anglers and Hunters, Muskies Canada, and Northern Ontario Tourist Outfitters, made recommendations aimed at managing muskellunge populations in Ontario. The St. Lawrence River has been identified by the committee as one of a limited number of waterbodies in Ontario having the growth potential capable to produce muskellunge of world record size. In order to increase the opportunity for an exceptional fish to survive to record size, a 54" (137.2 cm), minimum size limit is being recommended. A **Record Class Fishery** designation could have substantial marketing opportunities and benefits to the local tourism.

The OMNR and NYSDEC are interested in hearing your opinion on the proposal to recognise the muskellunge of the St. Lawrence River as a **Record Class Fishery** with a recommended 54" (137.2 cm), minimum size limit.

In Ontario, a holder of a resident conservation fishing licence is subject to lower catch and possession limits than a regular, resident fishing licence holder. A similar licensing structure does not exist in New York State.

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Catch and possession limits in New York and Ontario waters vary slightly for most fish species. There are no catch limits within the entire

international portion of the river for yellow perch or panfish species except crappies.

Table 1. Summary of current fisheries regulations for Ontario (Division 11) and New York (Region 6) waters of the St. Lawrence River.

<i>Species</i>	<i>Open Season</i>		<i>Size Limit</i>		<i>Catch Limit</i>	
	<i>New York</i>	<i>Ontario</i>	<i>New York</i>	<i>Ontario</i>	<i>New York</i>	<i>Ontario</i>
Bass	3rd Saturday in June to November 30	Last Saturday in June to November 30	12"	None	5	6
Northern Pike	1st Saturday in May to March 15	1st Saturday in May to March 31	22"	None	5	6
Muskellunge	3rd Saturday in June to November 30	3rd Saturday in June to November 30	44"	44"	1	1
Walleye	1st Saturday in May to March 15	1st Saturday in May to March 15	18"	None	3	6
Sturgeon	Closed	Closed	NA	NA	NA	NA

Public inquiries should be directed to the following offices:

NYSDEC (315) 785-2262
OMNR (613) 476-3255

Fisheries assessment information presented in this paper was provided by the Lake Ontario Fisheries Management Unit, Ontario Ministry of Natural Resources, R. R. 4 Picton, Ontario K0K 2T0 and Region 6 Fisheries Unit, New York State Department of Environmental Conservation, 317 Washington Street, Watertown, New York 13601. Additional information was obtained by a review of scientific literature and reports from other sources.

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