Inland Seas Angler

GREAT LAKES BASIN REPORT©

Special Report – Lake Ontario – Part 2

A Publication of the Great Lakes Sport Fishing Council
http://www.great-lakes.org

June 2010
Vol. 21, No. 6.4-1

Highlights of the Annual Lake Committee Meetings

Great Lakes Fishery Commission proceedings held in Windsor, ON

This section is a continuation of an extensive summary of the Lake Ontario annual Lake Committee. Because the full Lake Ontario report exceeded normal e-mailing parameters, we are sending it out in two sections.

The 2011 Annual Lake Committee meetings will be held in March, in Ypsilanti, MI

Lake Ontario

Index – Part 1

Index – Part 2

Notes:
Click on any graph or chart and pull the border to enlarge

Key
USGS = U.S. Geological Survey
OMNR = Ontario Ministry of Natural Resources
NYSDEC = New York State Dept. of Environmental Conservation
USFWS = U.S. Fish & Wildlife Service
CPE = Catch per effort
1 kiloton (kt) (1 kt = 1000 metric tons)

Annual Report, New York DEC Lake Ontario Unit & St. Lawrence River (NYSDEC)

Including Chapters:

2009 Lake Ontario Fishing Boat Survey

Seasonal Fishing Effort

Fishing effort from April-September 2009 was estimated at 77,863 completed boat trips **(Fig 1**), which was comparable to the previous 5-year average (2004-2008). Over the last 10 years, total fishing effort, as measured by fishing boat trips, continued to show a significant downward trend. Total fishing effort as measured by angler trips and angler hours in 2009 (224,900 and 1,244,726, respectively) were above previous 5-year averages (+6.0% and +17.8%, respectively

In 2009, there was an average of 2.89 anglers per boat trip which was the second highest in the 25-year dataset. The 2009 average trip length of 5.53 hours per boat trip was an 11.0% increase compared to the previous 5-year average and was the highest observed since 1993. The increased number of anglers per boat trip and increased trip length may have been due to cost savings efforts given the current status of the economy.

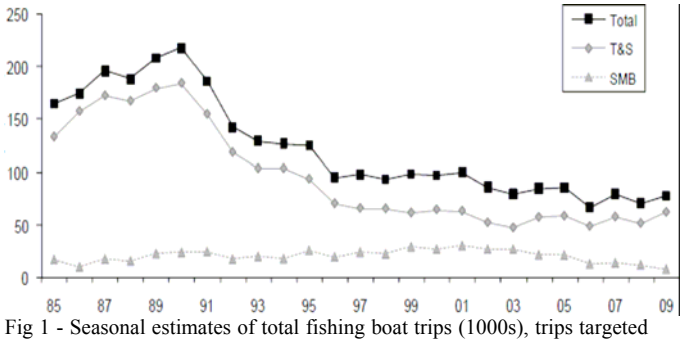


Fig 1 - Seasonal estimates of total fishing boat trips (1000s), trips targeted at trout and salmon (T&S), and trips targeted at smallmouth bass (SMB) during the traditional open season

Trout and Salmon Targeted Effort

Trout and salmon were the primary target of the boat anglers each year since 1985 (**Fig 1**). In 2009, trout and salmon anglers accounted for 80.4% of the total fishing boat trips, 85.2% of angler trips, and 92.7% of angler hours**.** Fishing effort targeted at trout and salmon was estimated at 62,599 boat trips, which was the highest estimated for trout and salmon anglers since 2001 and was a 13.2% increase compared to the previous 5-year average. In 2009, 36.1% of salmonine anglers were targeting a mix of two or more species and 8.6% were specifically targeting brown trout.

Smallmouth Bass Targeted Effort

Each year since 1985, smallmouth bass was the primary species targeted by anglers not seeking trout or salmon (**Fig 1)**. In 2007 and 2008, the first two pre-season catch and release periods covered by the survey since the regulation change, there were 496 (3.3% of April-September bass effort) and 367 (2.8% of April-September bass effort) fishing boat trips targeting smallmouth bass pre-season, respectively**.** In 2009, effort remained low with an estimated 644 boat trips targeting smallmouth bass during the pre-season catch and release period, representing 6.9% of the total smallmouth bass targeted fishing effort April-September.

Smallmouth bass fishing effort during the traditional open season in 2009 (June 20 to September 30) was an estimated 8,666 (+27.2%) boats trips, the lowest June-September estimate for bass anglers among the years surveyed and a 49.2% decrease compared to the previous 5-year average. Smallmouth bass anglers fishing during the traditional open season accounted for 11.1% of all (April-September) fishing boat trips, 8.4% of angler trips, and 3.9% of angler hours.

Effort Targeted at Other Species

Yellow perch and walleye were the third and fourth most commonly targeted species (preceded by salmonines and smallmouth bass) among open lake boat anglers in 2009, however, trips targeting these species only represented 2.7% of the total fishing boat trips.

Charter Boat Fishing Effort

In 2009, charter boats accounted for 12.8% of the total number of fishing boat trips, but with more anglers on board and longer trips, charter boats accounted for 22.5% and 28.2% of the angler trips (captains and mates counted as anglers) and angler hours, respectively **(Fig 2**). Although charter boats accounted for only 12.8% of total fishing boat effort, they accounted for 35.3% of the total salmonine catch in 2009. The 2009 estimated charter boat effort was 9,972 trips, which was slightly above (+6.0%) the previous 5-year average.

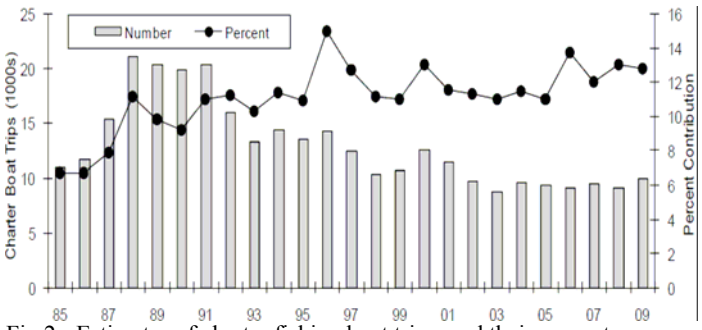


Fig 2 - Estimates of charter fishing boat trips, and their percent contribution to total fishing boat trips

Total Salmonines: Catch, Harvest and Fishing

Catch and Harvest

Total catch of all trout and salmon species was estimated at 228,287 fish (**Fig 3**), a 47.5% increase compared to the 2004-2008 average. The contributions of the other salmonines were 16.6% brown trout, 9.5% Coho salmon, 4.9% lake trout, and 0.6% Atlantic salmon. Anglers harvested 53.8% of the trout and salmon caught, which was an 11.1% decrease compared to the previous 5-year average. Estimated salmonine harvest was 122,723 fish a 31.5% increase compared to the 2004-2008 average.

Charter boats fishing for trout and salmon accounted for 35.3% of all salmonine caught in 2009, but represented only 15.9% of trout and salmon fishing boat effort. Charter boat catch rate of trout and salmon was 8.1 fish per boat trip which was the highest estimated in the 25-year data set. Charter catch rate per angler hour was 0.23 salmonines, a

16.0% increase compared to the previous 5-year average. Among noncharter boats, the 2009 catch rate was 2.8 trout and salmon per boat trip, also the highest estimated in 25 years and a 42.2% increase compared the 2004-2008 average. The 2009 seasonal harvest rate for all species of trout and salmon among boats fishing for trout and salmon was 2.0 fish per boat trip, a 16.8% increase compared to the 2004-2008 average harvest rate **(Fig 3)**.

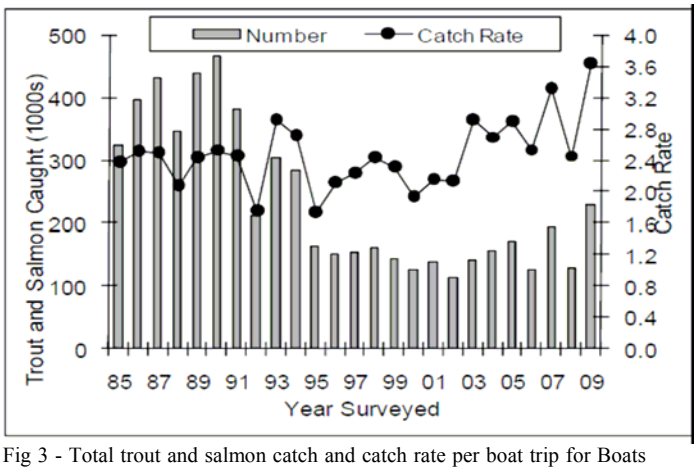


Fig 3 - Total trout and salmon catch and catch rate per boat trip for Boats seeking trout and salmon

In 2009, 51.1% of boats interviewed that were seeking trout and salmon did not harvest a single trout or salmon, this was 1.4 percentage points lower than the 2004-2008 average (52.5%; indicating slightly better fishing quality in 2009 compared to 2004-2008**.**

In 2009, 23.9% of the charter boats targeting trout and salmon harvested the maximum daily limit of three Coho salmon, Chinook salmon, rainbow trout, or brown trout in combination for their paying customers. This was 34.1% higher (better) than the 2004-2008 average and was the sixth highest in the 13 years with comparable regulations (1997-2009). Among noncharter boats fishing for trout and salmon in 2009, 1.6% harvested the maximum daily limit of three Coho salmon, Chinook salmon, rainbow trout, or brown trout in combination.

Coho Salmon

Coho salmon was the fourth most commonly captured and harvested (17.7% and 5.8% of total catch and harvest, respectively) salmonine in New York's Lake Ontario boat fishery. Catch and harvest were among the highest estimated in the 25-year data series **(Fig 4).** The estimated catch of 21,711 Coho salmon was 84.5% and 121.3% increases compared to the previous 5-year and 10-year averages, respectively. In 2007 and 2009, anglers experienced the best quality of Coho salmon fishing observed in the 25 years of surveys. In the New York waters of Lake Ontario, Coho salmon catch and harvest rates are typically highest during April and May and in the western portion of the lake.

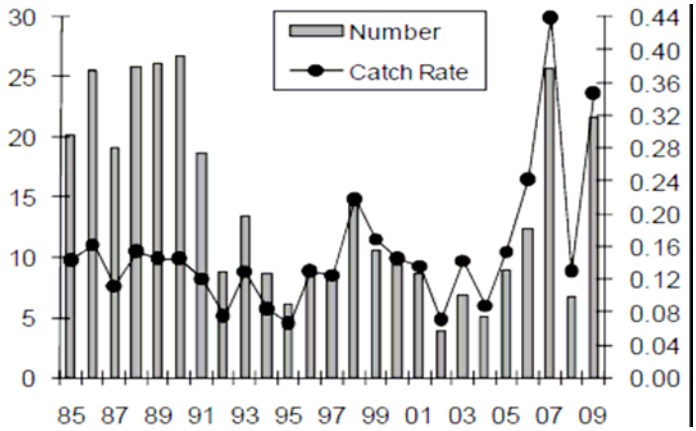


Fig 4 - Total Coho salmon catch (1000s) and catch rate per boat trip for boats seeking trout and salmon

Chinook Salmon

Catch and Harvest

Chinook salmon dominated the catch and harvest of trout and salmon in New York's Lake Ontario boat fishery annually since 2003, and were the most commonly captured salmonine in 14 of the 25 years surveyed. In 2009, Chinook salmon catch was estimated at 101,427 fish, representing 44.4% of the total 2009 salmonine catch. This was a 28.4% increase compared to the 2004-2008 average and was the seventh highest Chinook salmon catch in the 25 years surveyed **(Fig 5**). Harvest in 2009 was estimated at 54,985 Chinook salmon, which represented 44.8% of the total salmonine harvest. The majority of the Chinook salmon catch in 2009 occurred during May (40.3%) and July-August (43.0% combined.

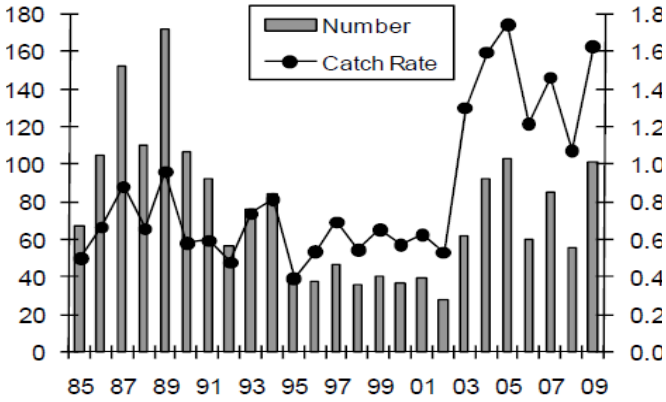


Fig 5 - Total Chinook salmon catch and catch rate, and harvest and harvest rate per boat trip for boats seeking trout and salmon

Fishing Quality

The quality of Chinook salmon fishing in Lake Ontario was excellent each year from 2003-2009, with catch rates the highest estimated among the 25 years surveyed for seven consecutive years. The 2009 seasonal catch rate among all boats fishing for trout and salmon was 1.62 Chinook salmon per boat trip, the second highest among the 25 years surveyed and a 157.1% increase compared to the 1985-2002 average. Among charter boats, the 2009 Chinook salmon catch rate was 2.8 fish per boat trip, the fifth highest rate among years surveyed. Among noncharter boats, the

2009 catch rate was 1.4 Chinook salmon per boat trip, which was the highest quality of Chinook salmon fishing experienced by noncharter anglers in the 25-year data series.

Chinook salmon harvest rates were at or near record highs in recent years, with the 2003-2009 estimates 84.2% higher, on average, than the harvest rates prior to 2003 (1985-2002 average = 0.47 fish per boat trip, 2003-2009 average = 1.43; **Fig 5**).

Rainbow Trout

Rainbow trout was the second most commonly caught and third most commonly harvested salmonine in 2009, and contributed 24.0% and 19.8% of the total trout and salmon catch and harvest, respectively. Rainbow trout catch in 2009 was estimated at 54,709 fish, which was the highest estimated since 1994, and was 144.3% and 170.5% higher than previous 5-year and 10-year averages, respectively. Only 44.4% of all rainbow trout caught during 2009 were harvested. The catch rate and harvest rate were the highest and third highest estimated among the 25 years surveyed (0.87 and 0.39 rainbow trout per boat trip, respectively. Monthly catch and harvest rates were highest in July and August.

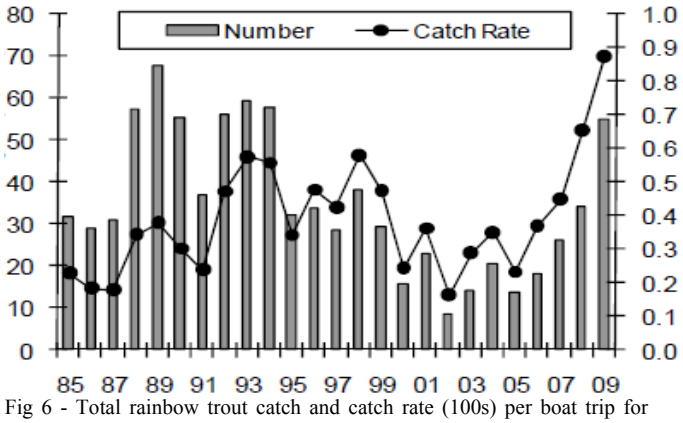


Fig 6 - Total rainbow trout catch and catch rate (100s) per boat trip for Boats seeking trout and salmon

The 2009 rainbow trout catch rate was the highest estimated among the 25 years surveyed rainbow trout per boat trip. The rainbow trout catch rate among charter boats was 1.91 fish per boat trip, the highest rate in the data series and among noncharter boats, the 2009 catch rate was 0.68 rainbow trout per boat trip, the highest estimate in the data series

Atlantic Salmon

In 2009, before initiation of the creel survey, anecdotal reports from anglers indicated that Atlantic salmon were being caught in greater frequency than what typically occurs. The 2009 seasonal lakewide catch (1,273 fish) and harvest (532 fish) estimates were the highest since 1994.

Brown Trout

Catch and Harvest

Among trout and salmon species, brown trout was the third most commonly caught and second most commonly harvested in 2009. Brown trout accounted for 16.6% and 20.3% of the total salmonine catch and harvest, respectively**.** Brown trout catch rates (seasonal, charter and noncharter) were variable over the 25-year data series with no significant trend **(Fig 7).** The brown trout catch rate among boats targeting trout and salmon was 0.60 fish per boat trip which was comparable to the previous 5-year (+3.6%) and 10-year (-0.1%) averages. In 2009, charter boats targeting trout and salmon accounted for 54.2% of the brown trout catch.

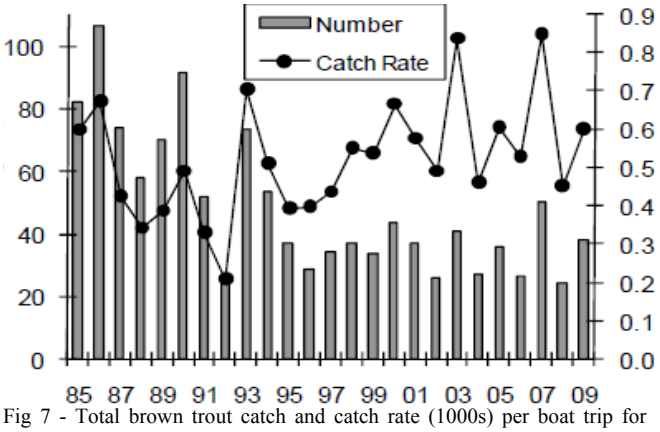


Fig 7 - Total brown trout catch and catch rate (1000s) per boat trip for boats seeking trout and salmon

Brown trout catch rate among charter boats was 2.06 brown trout per boat trip in 2009 and the fifth highest in the 25-year data series. The charter boat catch rate per angler hour was 0.06, a 36.8% increase compared to the 2004-2008 average and the sixth highest in the data series. Among non-charter boats, the 2009 catch rate was 0.32 brown trout per boat trip, a 19.3% decrease compared to the previous 5-year average**.**

Lake Trout

Catch and Harvest

Total lake trout catch was estimated at 11,241 fish, which was the highest estimated since 2004 and a 29.0% increase compared to the 2004-2008 average; however, was the fifth lowest in the 25-year data series**.** Estimated harvest was 4,733 fish. Declines in lake trout catch and harvest in recent years are attributable, in part, to both the excellent fishing quality for other salmonine species (possibly less effort directed at lake trout) and the low abundance of adult lake trout. Among charter boats fishing for trout and salmon, the seasonal catch rate was 0.62 lake trout per boat trip, among noncharter boats fishing for trout and salmon, the seasonal harvest rate was 0.01 lake trout per boat trip.

Smallmouth Bass

The 2009 catch estimate of 30,528 fish (+49.3%) during the traditional open season was the lowest in the 25 years surveyed and was 71.1% lower than the previous 5-year average **(Fig 8).** Smallmouth bass was the sixth most commonly caught species, preceded by yellow perch (102,442 caught), Chinook salmon (101,427 caught), round goby (58,310 caught), rainbow trout (54,709 caught), and brown trout (37,911 caught). An estimated 22.4% of the

smallmouth bass caught during the traditional open season were harvested.

Both catch rate and harvest rate among boats targeting smallmouth bass during the traditional open season were the lowest recorded (**Fig 8).** An estimated 2.05 bass were caught per boat trip, a 59.4% decrease compared to the 2004-2008 average**.** Over the 25-year data series the five lowest smallmouth bass catch rates occurred during the last five years (2005- 2009).

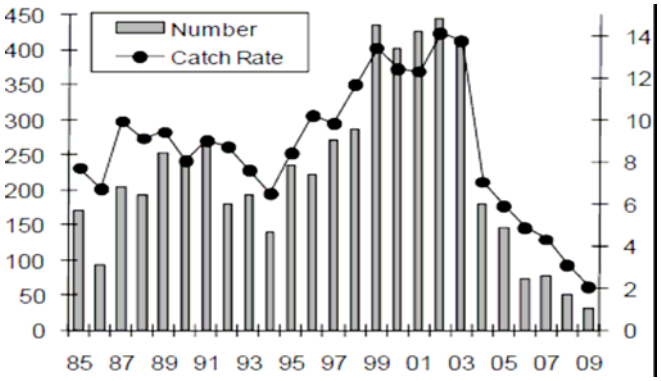


Fig 8 - Total smallmouth bass catch and catch rate (1000s)per boat trip for boats seeking smallmouth bass during the traditional open season

In 2009, 53.6% of boats specifically targeting smallmouth bass during the traditional open season failed to catch at least one bass, the highest value among the years surveyed. The decline in fishing quality coincides with an exponential increase of round goby in angler catches. Round goby abundance and distribution in Lake Ontario, as determined from prey fish bottom trawling assessments, also increased since they were first reported.

Yellow Perch

The 2009 estimated catch (102,442 fish) and harvest (51,653 fish) of yellow perch were the highest estimated among the 25 years surveyed and were 91.8% and 157.2% increases compared to respective 2004- 2008 average **(Fig 9).** Monthly harvest estimates for yellow perch were well above previous 10-year averages each month June through September. Additionally several angler reports indicated above average yellow perch fishing along the eastern portion of the lake.

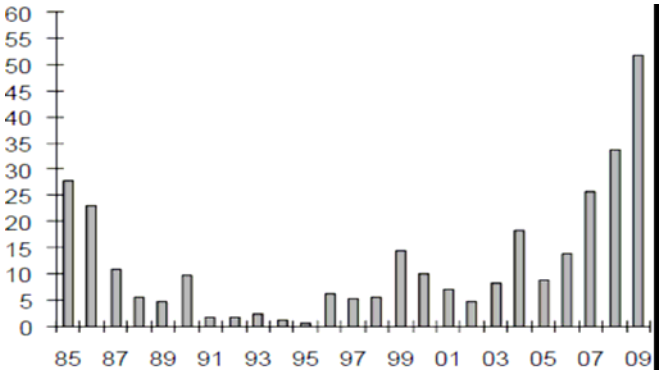


Fig 9 - Total yellow perch harvested by all fishing boats

Walleye

Walleye have always been a minor component of the open lake boat survey, although angler interest in this species is high and, as part of management programs, fingerling stocking has occurred in many Lake Ontario embayments. In 2009, there were an estimated 147 and 123 walleye caught and harvested, respectively **(Fig 10).** Fisheries assessment data and anecdotal angler reports suggest that walleye populations and fisheries are greatly underestimated by this survey.

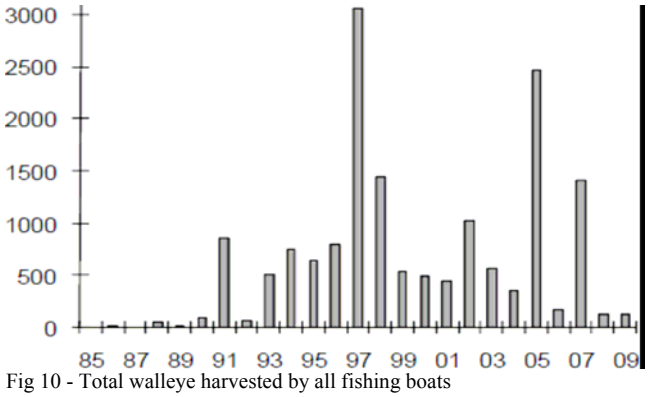


Fig 10 - Total walleye harvested by all fishing boats

Eastern Basin Warmwater Fisheries Assessment, 1976-2009

Since 1976, 44 fish species were captured during the eastern basin gillnetting assessment. In 2009, 899 fish were captured in net sets, representing 19 warmwater species (885 fish) and six coldwater species (14 fish). In 2009 only seven warm water species were captured and CPUE was lowest. Since 1990, smallmouth bass and yellow perch were the most common species, averaging 32.1% and 29.4% of the total warmwater catch, respectively. White perch was again the third most commonly caught species representing 9.6% of the catch.

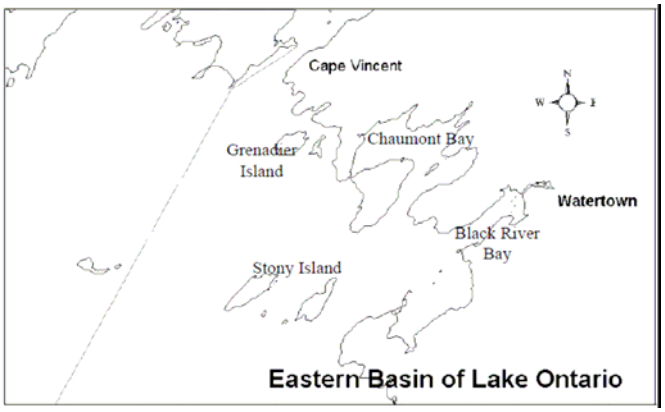


Fig 1 - Map of New York waters of eastern basin showing five area strata used in the 1980-2009 warmwater assessment

Round Gobies

The occurrence of gobies in smallmouth bass stomachs has increased each year since 2005, and gobies were present in 59.0% of the 144 nonempty smallmouth bass stomachs processed in 2009 (mean=1.6 gobies/stomach). Gobies were also present in walleye diets each year from 2006-2009.

Gizzard shad were caught (mean CPUE=0.1) in this assessment for the first time since 2002.

Yellow perch
In 2009, yellow perch total lengths ranged between 6.4 in and 11.8 in, and averaged 8.8 in. Approximately 36% of perch captured were > 9 inches (Figure 17). This is a decrease from 2008 when 55% of the perch captured were > 9 inches.

Alewife
In 2009, alewife CPUE (1.2) was the highest observed since 1992, however, was well below levels observed through the 1970s and 1980s. Although this survey does not effectively assess alewife abundance because it is not fully vulnerable to our gear, the trends we observed were similar to those observed in Lake Ontario bottom trawl surveys.

Walleye
The walleye 2009 mean stratified CPUE of 2.6 was 36.9% and 52.0% above the previous 5-year and 10-year averages, respectively. In 2009 we observed the second highest total catch of age-1 walleye since the assessment began in 1976 suggesting a strong 2008 year class. Fall 2008 bottom trawling conducted by Ontario Ministry of Natural Resources indicated that a strong 2008 year class of walleye was also produced in the Bay of Quinte. Walleye total lengths ranged between 9.7"and 29.2", and averaged 22.1". Walleye weights ranged from 0.3 lb to 13.0 lb and averaged 5.1 lb.

Smallmouth bass
In 2009, smallmouth bass was the most commonly captured species, representing 31.2% of the total catch. Data indicated that strong year classes were produced in 1987, 1988, 1995, and 1997. In 2007, smallmouth bass CPUE declined 41.3% from the 2005-2006 average to 6.4. CPUE increased again in 2008 (CPUE=9.3) and 2009 (CPUE=9.8). The decline in number of cormorant feeding days and their dietary shift to round goby appear to have reduced predation pressure on smallmouth bass.

Mean length-at-age remained at or near record high for all ages 2-10. Smallmouth bass total lengths ranged between 7.8 in (197mm) and 21.6 in (548mm), and averaged 14.2 in (359.5mm). Bass weights ranged from 0.22 lb (98g) to 5.8lb (2,633g) and averaged 2.0 lb (893.5g).

Lake Trout Rehabilitation in Lake Ontario

During 2009, the number of yearling lake trout stocked in May (511,180) was slightly above the target level of 500,000. The adjusted catch of age-2 lake trout with bottom trawls during the 2009 juvenile lake trout survey was 2.4 times greater than the 2008 value, but remained low and was 72% below the mean for the 1983-1989 year classes. Adult lake trout catch per unit effort from the gill net survey in 2009 increased for the second consecutive year from the historic low observed in 2007, but was 56**%** below the 1986-1998 average.

The rate of wounding by sea lamprey on lake trout caught in gill nets was 1.22 fresh (A1) wounds per 100 lake trout and was below target (2 wounds per 100 lake trout) for the second consecutive year after six years of rates exceeding the target. Estimates from the NYSDEC fishing boat survey indicated that, for the sixth consecutive year, angler catch and harvest of lake trout remained near record lows. The relatively poor fishing for lake trout in 2009 was likely related to the declines in adult population size since 2004 and to good fishing for other salmonids, including Chinook salmon, Coho salmon, and rainbow trout

Condition of adult lake trout in 2007-2009 increased from the relatively low values observed during 2000-2006 to a level equivalent to the high values observed during 1996-1999. The improved condition of juvenile lake trout observed during 2006-2008 declined in 2009 to a level equivalent to the long term mean for the data series. Reproductive potential for the adult stock, determined from the annual egg deposition index, rose by 88% from the historic lows observed during 2007-2008.

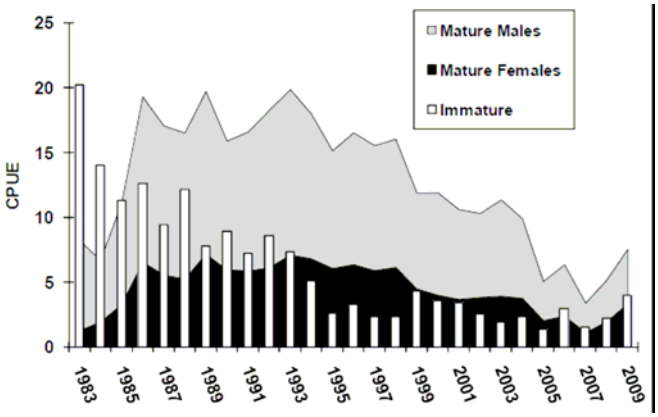


Fig 1 - Abundance of (sexes combined) lake trout from catches made with Gill nets set in U.S. waters, during September 1983-2009

Three age-2 naturally produced lake trout were collected in trawl survey catches providing evidence of a 2007 year class, but age-1 fish were absent for the fifth consecutive year. We caught no wild yearling lake trout during 2005-2009 and have no evidence of a naturally produced year class in 2008.

Thousand Islands Warmwater Fish Stock Assessment

Stock composition

A total of 37 species have been represented in Thousand Islands gill net sampling between 1977 and 2009. Annual catch (for 32 net sets) has historically ranged from 932 fish of 17 species in 2001 to 2,080 fish of 19 species in 1988. In 2009 the catch was in the typical range at 1,160 individuals (adjusted to multifilament standard); diversity was typical with 16 species represented **(Fig 1**).

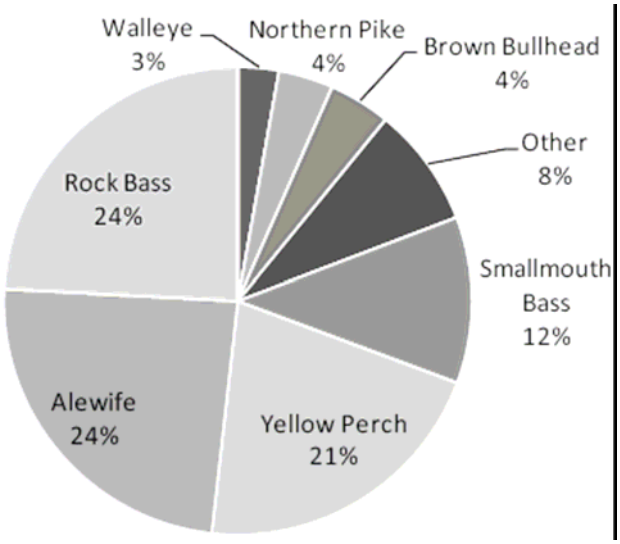


Fig 1 - Composition of the fish stock assessment sample of the St. Lawrence River Thousand Islands area in 2009

Primary recreational fishery targets

Smallmouth bass

Smallmouth bass are the most sought-after sport fish in the New York Thousand Islands fishery. Abundance of smallmouth bass was relatively high in the late 1970's, declined through 1982, then increased to its highest recorded level in 1988. After 1988 bass abundance generally declined and was low from 1996 through 2004 **(Fig 2)**. The 2005 catch increased and the 2006 catch reached its highest level since the 1988 peak. Catch declined somewhat in 2007, increased again in 2008 and declined in 2009. The trend in abundance of smallmouth bass is currently unclear. An expanding cormorant population in the nearby Eastern Basin of Lake Ontario was implicated in suppression of smallmouth bass recruitment. Cormorants may also have affected Thousand Islands bass. Cormorant predation pressure has lessened since 2005 due to lower population levels and a switch to consumption of round goby at St. Lawrence River cormorant colonies. Younger bass, ages 3-6, have been more abundant since 2006 relative to earlier years. Age 2-4 bass, especially, were caught at a rate higher than previously **(Fig 2**). This may indicate increased abundance of these fish but probably also reflects a change in catchability of young bass, due to increased growth. A strong 2005 year class was apparent in 2008 and 2009.

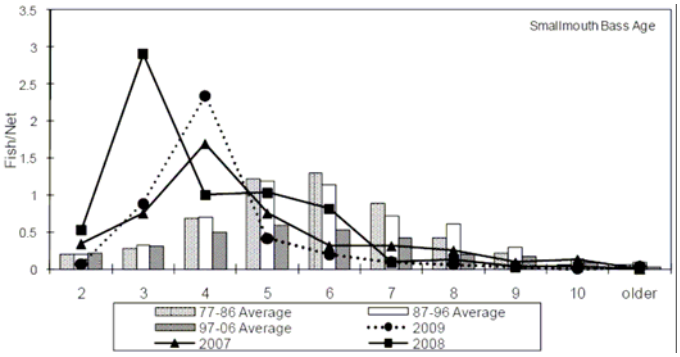


Fig 2 - Smallmouth bass age distribution in the St. Lawrence River Thousand Islands area

Smallmouth bass are now generally reaching legal size, 12" (305 mm), before age-5. In 2007 age-5 averaged a record 13.7 in (348 mm). .Size at age remained high in 2008 and 2009. Smallmouth growth has also increased recently in Lake Ontario's Eastern Basin, in Lake St. Lawrence and in Lake Erie. The most recent increase in growth is probably related to abundance of round goby as prey.

Northern Pike

Northern pike are an important part of the New York fishery and are the most highly sought-after fish in the Province of Ontario Thousand Islands fishery. From 2001 through 2009 abundance generally declined. Age-4 and younger fish have been less abundant recently than in earlier years. Evidence suggests that spawning habitat changes resulting from reduced water level fluctuation may be impairing recruitment. Pike were less abundant, particularly at ages-3 and 4, in 2003 through 2009, suggesting continuing recruitment problems. Cormorant predation on young fish has also been implicated as factor interfering with pike recruitment. Older fish have thus far shown little decline, suggesting that survival of recruited fish has improved relative to earlier years. Changes in the prey community, particularly reduced alewife abundance, may have caused a reduction in northern pike growth. Growth in 2001-2006 was faster than the 1987-96 average. Growth measured in 2003-05 sampling had returned to higher 1977-86 levels. Total length of age-4 pike in 2007 through 2009 suggests that growth may be declining again.

Yellow Perch

Catches increased dramatically in 2006 and remained moderately high in 2007 and 2008, but declined in 2009. Age-4 perch were above recent average abundance in 2009 and age- 3 fish were well represented in 2008, indicating that a relatively strong 2005 year class is present **(Fig 3)**. Age-3 and 4 perch were abundant in 2007; age-4 and 5 were above the recent average abundance in 2008 suggesting relatively strong year classes were produced in 2003 and 2004. Relatively poor representation of older perch in recent years suggests that mortality rates have increased. Growth rate has generally increased since 1994. Size at age-4 increased substantially in recent years, and was at or near 7.1 in (180 mm) in 2007 to 2009. Increased growth may be attributable to the availability of round goby as forage.

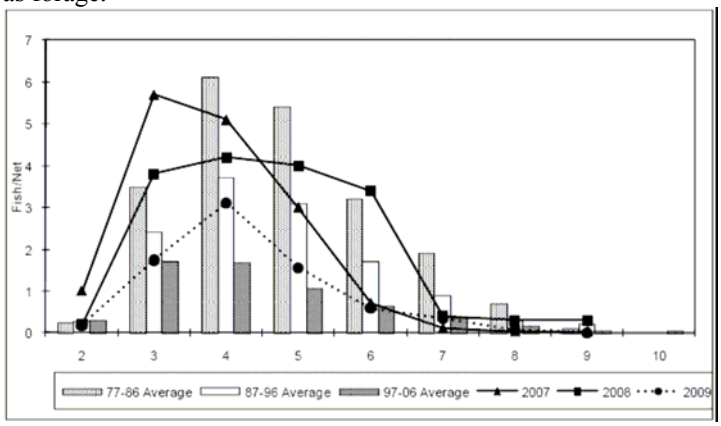


Fig 3 - Yellow perch age distribution in the area

Walleye

Walleye were first captured in 1982 and were caught regularly in low numbers throughout the 1980s and 1990s. Abundance increased in the early 2000s and, while still relatively uncommon, walleye were caught at substantially higher rates in 2005 to 2009 period.

Salmon, Trout and Smelt

Coho salmon, Brown trout and lake trout were captured occasionally in the 1980s and early 1990s. Rainbow smelt were captured in 1979. All of these species were considered strays from Lake Ontario.

Alewives

Alewives were frequently captured during the 1970s and 1980s. They were detected at very low levels from 1989 through 2006. The catch rate in 2009 was the highest yet recorded **(Fig 4**). Alewives in the Thousand Islands are commonly regarded as strays from Lake Ontario and we assume that this recent increase in catch rate reflects conditions in Lake Ontario.

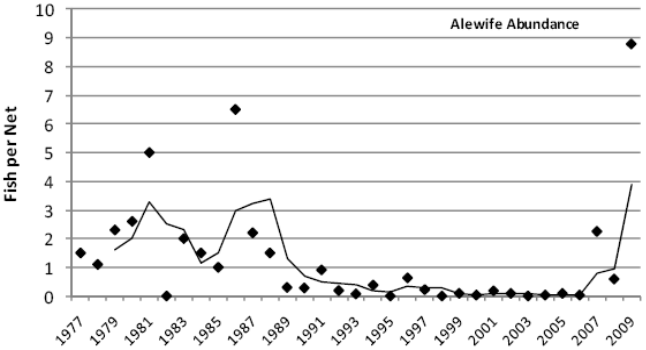


Fig 4 - Abundance index for alewife in the area (with 3-yr moving average).

Lake St. Lawrence Warmwater Fisheries Assessment

A sample of 630 fish comprising 19 species was collected. The catch was dominated by yellow perch (41.6%), rock bass (21.3%) and walleye (15.4%). Total CUE decreased by 23.6% from 2008 to 19.67, which is well above the long-term average of 17.1**.** Total CUE is generally driven by fluctuations in the yellow perch population. Yellow perch CUE decreased 27% from 11.22 in 2008 to 8.16 in 2009**.** Despite the overall decrease, the 2009 catch is still in the top three for the survey. Few perch <6" were collected in this assessment, while a high proportion of fish >9" (33.6%) were collected **(Fig 1**). It is possible that as growth rates have increased that fish are now recruiting at age-2**.** Round goby have become a forage source for most piscivorous species in the river. It is probable that increased growth rates seen since the expansion of gobies (circa 2000) are a result of perch exploiting a new forage base.

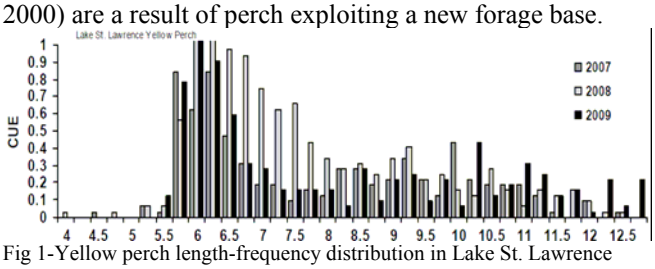


Fig 1-Yellow perch length-frequency distribution in Lake St. Lawrence

Localized impacts on yellow perch populations from predation by Double-crested cormorants have been reported previously in Lake St. Lawrence. Regurgitated cormorant pellets were collected in 2009 from Strachan Island, located in the lowermost portion of the fisheries assessment area. Pellet analysis indicated that diet was comprised predominantly of round goby (75.4%) and yellow perch (14.6%). Yellow perch had been the dominant forage until 2005 comprising from 50-60% of the diet. Total number of fish consumed at the colony in 2009 was estimated at 4.07 million, with round goby and yellow perch dominating at 3.07 and 0.6 million respectively. The number of active nests at Strachan Island decreased from 301 in 2008 to 261 in 2009. While diet analysis has focused on the Strachan Island colony, it should be noted that the Bergin Island colony (2.1 miles upstream) was 2.6 times the size of the Strachan Island colony in 2009, therefore total consumption in lower Lake St. Lawrence is significantly higher.

Pellet analysis has shown round goby consumption has risen from 43.4% of the diet in 2006 to 75.4% in 2009. With the dominance of gobies in the diet, it is likely that cormorants have less population depression effect on yellow perch than previously reported, regardless of the increase in total nesting in Lake St. Lawrence.

Smallmouth bass CUE had been relatively stable from 1998-2004, went through an unexplained expansion in 2005, followed by an abrupt decrease in 2006-07, and an increase in 2008. Smallmouth bass CUE decreased to a record low of 1.0 in 2009. The bulk of the catch are bass >13" in length, which is a typical pattern in Lake St. Lawrence. Predicting year class strength of smallmouth bass has been difficult within this program. The lack of fish in 2009 is most likely a sampling anomaly rather than a real indication of population depression.

Walleye CUE increased by 56% from 2008 and represents a record high catch for this assessment. The length-frequency distribution of the walleye catch **(Fig 2)** was dominated by juveniles (< 18 in), primarily age-2 fish. The high number of age-2 fish (2007 year class) is odd, since typically a strong year class of this magnitude will be evident at age-0 or 1. No indications of a strong 2007 year class were apparent in previous surveys, suggesting possible increased catchability due to increased growth rates. The 2005 and 2008 year classes, reported previously, remain relatively strong as age-4 and age-1 fish, respectively.

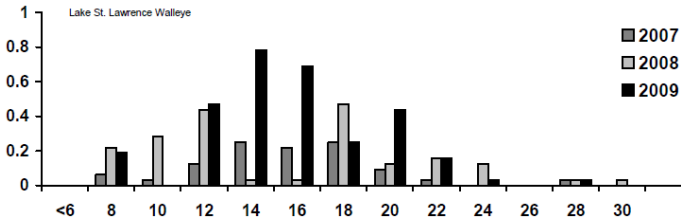


Fig 2 - Walleye length-frequency distribution in Lake St. Lawrence

Northern pike CUE increased by 11% from 2008 to 0.31 in 2009, which remains below the long term average of 0.5. Total length ranged from 21.5-33.0". With the exception of 2006, northern pike CUE has been declining since 2002. A similar decline is also apparent in the Thousand Islands assessment.

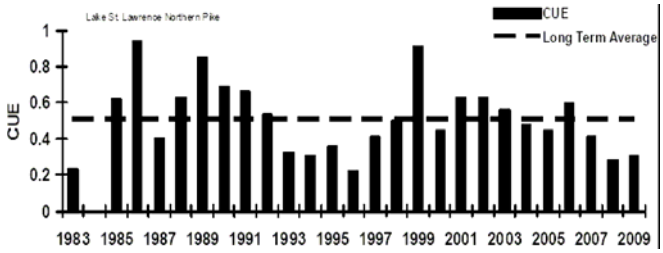


Fig 3 - Total CUE for northern pike in Lake St. Lawrence, 1983-2009

2009 Salmon River Wild YOY Chinook Seining Program

Seasonal base flows mandated by the Federal Energy Regulatory Commission hydroelectric licensing agreement (FERC 1996) have resulted in a dramatic increase in natural reproduction of Chinook salmon in the Salmon River since 1997.

Numbers of YOY Chinook caught were lower than anticipated with a mean peak catch of 93 per haul during the last 3 weeks of May (mean=195, 2001-2008). Catches the first two weeks of May were slightly above average but they dropped off to well below average during the normal peak (Figure 2). This was probably a result of high flows that caused a relatively high rate of flushing of fish from the river during that time period. Numbers of fish captured at each site for each week are depicted in Figure 3. The single largest catch at a given site was 452 at Pineville. Based upon numbers of fish caught at each site, most of the successful spawning appears to have occurred between Pineville and Altmar.

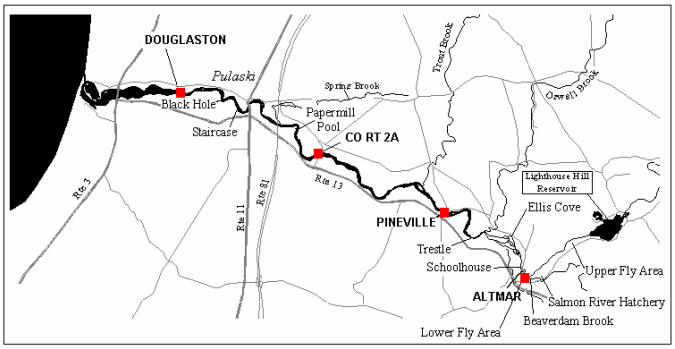


Fig 1 - Sampling sites for the USGS Salmon River seining program

The larger catches of YOY Chinook generally occurred in springs that followed Octobers with higher flows. Flows during the first three weeks of October explained 86% of the variability in our peak catches from 2001 through 2008. We were catching fewer fish than anticipated in 2009 but we also noted that the flows were relatively high during our sampling efforts. Addition of the 2009 data point to the catch vs. October flow relationship reduced the explained variability in mean peak catches from 86% to 76%.

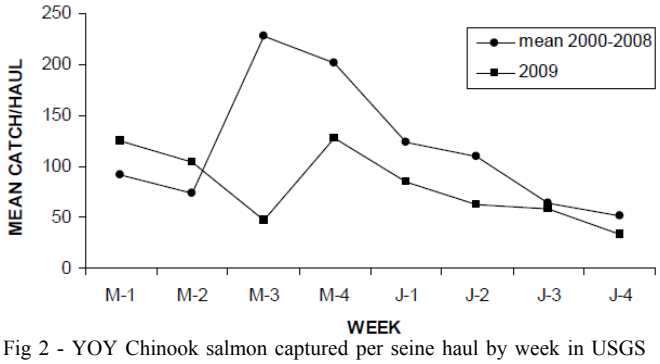


Fig 2 - YOY Chinook salmon captured per seine haul by week in USGS Salmon River seining program for 2000-2009

The question of how naturally reproduced Chinook survive relative to hatchery Chinook and what contribution the wild fish make to the overall lake adult population remains unanswered. Fortunately, NYSDEC has acquired a fish marking trailer from Northwest Marine Technology and the entire hatchery Chinook salmon stocked in the Lake Ontario system from both New York and Ontario were marked with an adipose fin clip in 2008 and 2009. This marking study will provide a variety of information including the relative contribution of wild Chinook to the Lake Ontario and Salmon River systems.

Population Characteristics of Pacific Salmon at the Salmon River Hatchery

Hatchery Sampling

Staff at the Salmon River Hatchery processed 4,611 steelhead during the spring 2009 spawning operations. Washington (Chamber's Creek strain) winter run fish comprised 98% (4,514) of the returns. Marked Skamania strain summer run fish (left pelvic/adipose) accounted for the remaining 2% (97). A total of 2.6 million Washington steelhead eggs were taken from 811 females. The Skamania egg total was 77,440 from 19 females. Biological data were collected from 608 Washington strain steelhead. Returns of Pacific salmon in the fall included 2,810 Chinook salmon (785 females) and 4,594 Coho salmon. Biological data were collected at the hatchery from 897 Chinook and 376 Coho. The egg totals were 3.3 million Chinook from 661 females and 1.8 million Coho from 675 females.

Chinook Salmon

Growth

The mean weight of age-1 Chinook males (jacks) sampled in 2009 were about 0.25 lbs above the average for all previous years sampled **(Fig 1).** Age 2 males were 0.3 lbs heavier than historical average and the females were a pound lighter than their average but significantly heavier than the historical low observed in 2007**.** Age 3 fish of both sexes were almost 2 lbs below their historical averages but significantly heavier than the lows observed in 2003-2005 and 2007 (males) and 2005 and 2007 (females).

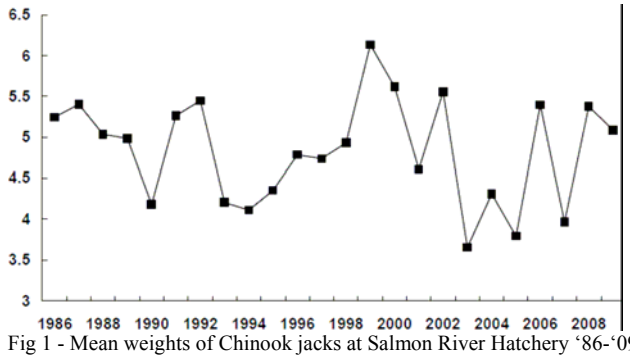


Fig 1 - Mean weights of Chinook jacks at Salmon River Hatchery '86-'09

Wet weight condition of large Chinook was measured by predicting the weight of a 36-inch fish from linear regressions on natural log transformed lengths and weights. The predicted weight was 17.1 lbs in 2009. This is the second year in a row with above average condition (16.6 pounds historical average) following seven consecutive years of below average condition. The estimated age structure of the 2009 Chinook salmon run to the Salmon River Hatchery was 5% age-1 males, 25% age-2, 68% age-3, and 2% age-4.

Chinook Marking Study

In 2008, the NYDEC purchased an automated fish marking trailer (Autofish) from Northwest Marine Technology Inc. Funding for the purchase came from the natural resources damage settlement with the Occidental Chemical Corporation. This is the first Autofish system in the Great Lakes Basin, and is capable of adipose clipping and/or applying coded wire tags to salmon and trout at a rate of approximately 6,000 fish per hour. DEC received the system in mid-March 2008, and marked all 1.27 million of the 2008 year class of Chinook salmon stocked by both New York and Ontario. The fish were reared and marked at New York's Salmon River Hatchery and Ontario's Ringwood Fish Culture Station.

Stockings for future broodstock for both agencies (NY-Salmon River, Ontario-Credit River) received both adipose clips and coded wire tags. Fish destined for other stocking sites in NY and Ontario were marked with an adipose clip only. All stocked Chinook salmon (2.3 million) were marked similarly in 2009. This study will allow us to evaluate various aspects of the contributions of naturally reproduced and hatchery reared Chinook salmon to the fishery, improving the fisheries management decision process.

Age 1 jack returns in 2009 provided the first sample of marked fish returning to the hatchery from the 2008 marking. We sampled 175 jacks and found that 155 fish (87%) were from the Salmon River stocking- having both adipose fin clips and coded wire tags (CWTs). Some 10% (15 fish) had adipose clips but no CWTs. These fish were likely stocked at one of the other sites and strayed to the Salmon River. The remaining 3% (5 fish) had no clip or tag and were likely fish that were naturally reproduced in the Salmon River. None of the tagged fish sampled in the hatchery were from the Ontario-Credit River stocking.

Quality control checks during the marking and tagging process revealed that clipping accuracy was 99% and tagging efficiency was 98%. Observed ratios in the returns suggest that the vast majority of returns to the hatchery are from the Salmon River stocking followed by much smaller components of strays from other stocking sites and wild fish. Age 1 Chinook observed in the Lake Ontario Fishing Boat Survey consisted of 45 fish, 20% of which were unmarked and presumed wild. This, not surprisingly, suggests that wild fish are much more prevalent in the system than indicated in the hatchery returns. We expect a much more reliable picture to develop as more marked fish from different age and year classes enter the fishery.

NYSDEC plans to ramp up sampling efforts in 2010-2015 as we get more marked fish into the system to determine hatchery contributions to the open lake and the Salmon River non-hatchery return. We expect to find a higher percentage of wild fish in samples from the main stem of the Salmon River compared to those from the hatchery based on the amount of natural reproduction we are seeing in the river.

Coho Salmon

Average weights of age-2 Coho salmon of both sexes were relatively low and slightly over a pound below their respective long term averages in 2009 **(Fig 2)**. Males were lighter only in 1990 and 2004 and females were lighter in 1990 but the differences were not significant. Reasons for the relatively poor growth observed for Coho salmon are unclear.

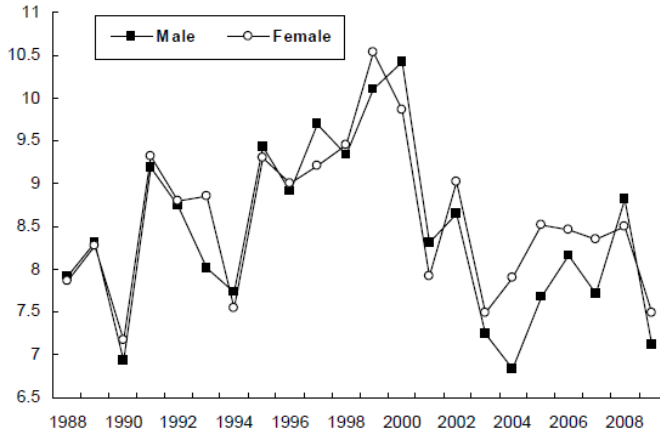


Fig 2 - Mean weights of age-2 Coho salmon at Salmon River Hatchery, 1988-2009

Washington Steelhead

Age 3 females were not significantly heavier than those sampled in any of the previous 21 years but were significantly lighter than those from 9 of the years. Age 3 males were significantly heavier than those sampled in 1995 and significantly lighter than those sampled in 11 of the previous years. Age 4 fish of both sexes were in the lightest grouping in the multiple range test. Males and females were significantly lighter than those sampled in 8 and 9 of the previous years sampled, respectively. Similar to age structures observed in recent years, age-3 and age-4 steelhead dominated the run again in 2009. The age

structure of the fish sampled was 45% age-3, 49.5% age-4, and 5% age-5 and .05% older.

Cooperative Trout and Salmon Pen-Rearing Projects

In 1998, concerns over post-stocking survival and imprinting of steelhead and Chinook salmon to stocking sites led to the formation of several cooperative sportsmen's groups interested in pen rearing. Pen rearing for 2009 was conducted at ten different sites along New York's coastline of Lake Ontario in 2009. The project sites, along with a description of site locations and project sponsors, are listed in **Table 1.**

A total of 94,060 steelhead, Washington and Skamania strains combined, were raised at nine pen sites comprising 14% of NY's rainbow trout/steelhead stocking allotment in 2009. Observed mortalities at the steelhead rearing sites ranged from 0 to 0.26%. Six pen-rearing sites raised a total of 313,600 Chinook salmon, representing 18% of NYSDEC's 2009 Chinook salmon stocking allotment. At the six sites where Chinook were penned, mortality estimates ranged from 0.030 to 0.11%.

Pen Site	Location	Project Sponsors
Little Salmon River	Salmon Country Marina	Salmon Country Marina
Oswego Harbor	Oswego Marina	Oswego Marina Oswego Harbor Charter Captains
Little Sodus Bay	Anchor Resort and Marina	Anchor Resort and Marina Jim Jared
Sodus Bay	Sodus Bay near First Creek	Arney's Marina Lake Ontario Charter Boat Association Prime Time Storage Wayne County Tourism Wayne County Pro-Am
Genesee River	Shumway Marina	Genesee Charter Association Irondequoit Bay Fish and Game Club Shumway Marina Greater Rochester Sportfishing Association
Sandy Creek	Sandy Creek Marina	Sandy Creek Marina S.U.N.Y. at Brockport Boy Scout Troop 99 Charter Captains
Oak Orchard Creek	Lake Breeze Marina	Oak Orchard Business Association Lake Breeze Marina Orleans County Department of Tourism
Olcott Harbor	Town of Newfane Marina and adjacent private docks	Lake Ontario Trout and Salmon Association Town of Newfane (including Town Marina) Niagara County Fisheries Development Board Niagara County "Skip Hartman" Pro Am Tournament Slippery Sinker Bait and Tackle
Wilson Harbor	Wilson Boatyard Marina	Central Niagara County Rotary Niagara Cerebral Palsy Association Town of Wilson Wilson Boat House Restaurant Wilson Boatyard Marina
Lower Niagara River	Constitution Park, Youngstown	Niagara River Anglers Association

Table 1. Description of 2009 Lake Ontario pen project sites

Of the nine locations where steelhead were penned, target weights (12-15 fish per lb) were reached at only four sites in 2009. Final weight of steelhead at Oak Orchard Creek is not available. Unusually high variability in size of delivered steelhead, including many smaller individuals, contributed negatively to final weight. Chinook target weights (90 fish per lb) were substantially exceeded at all six pen sites where they were raised. It is likely that a large percentage of the penned Chinook salmon imprinted to water at their respective pen sites. This increases the likelihood that salmon will return as spawning adults to their respective pen site tributaries.

The modified water management system used at Salmon River Hatchery in recent years to prepare Chinooks for pen-rearing projects has been associated with healthy, robust, uniform sized fingerlings that have performed very well in pens. Pen project coordinators and DEC fishery management staff have been very pleased with Salmon River Hatchery efforts to affect the improvements in water management. The twelfth year of pen-rearing steelhead and Chinook salmon along the New York shoreline of Lake Ontario was notably successful due to very low fish mortality at all sites, a substantial percentage of fish reaching target weights, and the goodwill generated through partnerships in the projects.

Status of Important Prey Fishes in the U.S. Waters of Lake Ontario

In 2009, the number of trawl hauls made for assessment of alewife, rainbow smelt, and slimy sculpin totaled 258 ─ 96 during April 20 – May 4 (5 additional tows were made to maintain a long-term record of the fish community in southeastern Lake Ontario), 104 during May 26 - June 4, and 58 during October 14 – October 26. The number of trawl tows made to assess alewife was about 10% below the 1978-2005average due to adoption of informed allocation of sampling effort in 2006**.** In 2007, the Great Lakes Science Center purchased a wireless trawl monitoring system for use in Lakes Erie and Ontario. The system was used on the Lake Ontario slimy sculpin assessment in 2007, on the alewife and juvenile lake trout assessments in 2008, and on the alewife, smelt, and juvenile lake trout assessments in 2009 to further evaluate performance of the trawl net.

Alewife

Adult alewife abundance index in 2009 was similar to that in 2008, while the biomass index increased from last year. Abundance and biomass indices were 68% and 86% of long term means, respectively. Condition of adult alewives remained high and was similar to condition during 2004 - 2007. Abundance of age-1 alewife was 34% of the long term mean, a decrease from 2008 despite a similar number of spawners, likely due to an unusually long winter duration in 2008 - 2009. In 2010, adult alewife abundance and biomass may decrease due to a small 2006 year class recruiting as age-4 fish, and will be highly influenced by survival of the large 2005 year class which will be age 5. Spawner biomass has increased from the extremely low levels in 2006 and 2007, but spring - summer conditions were below average this year which could lead to a below average 2009 year class, particularly if winter conditions are severe.

In April – May 2009, adult alewife abundance (age-2 and older) in U.S. waters was very similar to the index observed in 2008, and higher than during 2004 – 2007 **(Fig 2).** The 2009 biomass index increased from 2008 and was equal to 86% of the long term mean, 35% of the record high of 1981, and 655% of the record low of 2006. The 2009 abundance index was similar to that observed in 2008 and was equal to 68% of the long-term mean, 34% of the record high of 1989, and 608% of the record low of 2006. In the adult population, we anticipate a moderate percentage of

age-2 fish from the 2007 year class, a low percentage of age-3 fish from the weak 2006 year class, and that the population will be dominated by age-4 fish from the large 2005 year class. Increasing size and weight of this cohort is likely the factor contributing to the observed increase in the biomass index without a concurrent increase in the abundance index.

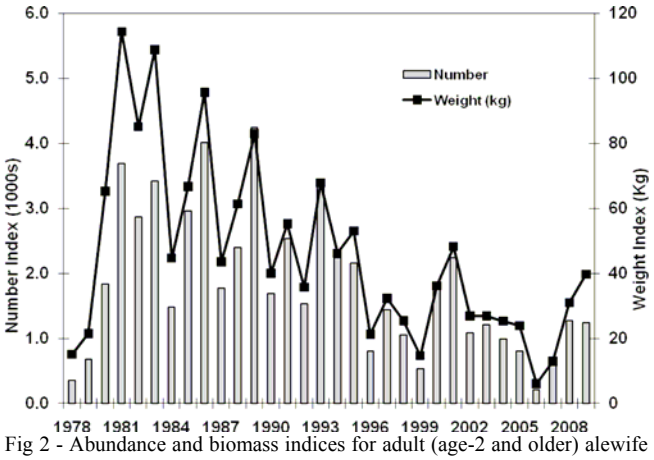


Fig 2 - Abundance and biomass indices for adult (age-2 and older) alewife in U.S. waters April – early May, 1978 - 2009 (1 kg = 2.205 lbs)

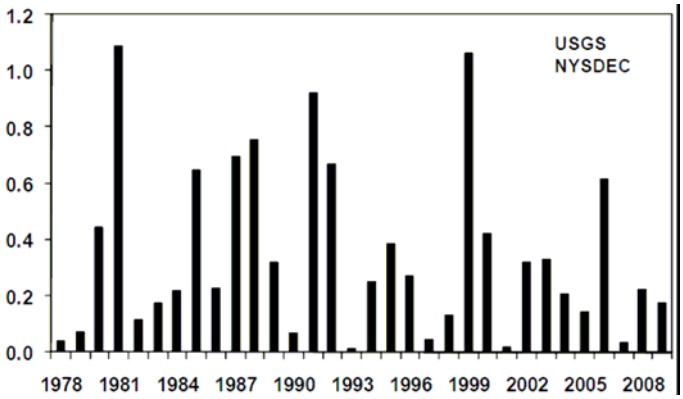


Fig 3. Abundance indices for yearling alewife in U.S. waters, April – early May, 1978 – 2009

Despite moderate year classes in 2007 and 2008, abundance and biomass indices of adults will remain heavily influenced by the survival of the large 2005 year class which will be age 5 in 2010. The predicted weight in fall 2009 was the heaviest since 1979. During 2004 - 2009, condition in spring and fall has been higher than in any other period since the late 1970's. Elevated condition during 2004 - 2009 suggests that the alewife population is not expanding to a level at which it would depress food resources, and that the comparatively low alewife population in recent years is more in balance with production from Lake Ontario's lower food web than at any time during 1981 - 2002. Analyses are ongoing to evaluate environmental influences on alewife condition. Strength of alewife year classes at age 1 is positively linked to nearshore water temperatures during May − July and negatively linked to the number of days nearshore water is < 4° C (39° F) during the first winter after hatch.

Rainbow Smelt

The abundance and biomass indices for age-1 and older rainbow smelt in 2009 increased from the historic lows recorded in 2008. The number of age-1 rainbow smelt caught in 2009 was more than twice that observed in 2008, but still only 14% of the previous high point in 2004. Sixty five percent of the catch of rainbow smelt in 2009 was yearlings. An unusually large 2003 year class followed by a relatively small 2004 year class appeared to signal a resumption of the alternating pattern in year class strength that had been intact during 1984 - 2000, but four small year classes in succession in 2004 -2007 indicate another breakdown in the pattern. Larger and older rainbow smelt remain scarce in Lake Ontario. Although the rainbow smelt population has demonstrated considerable resiliency in the past and showed signs this year of increasing, it is unclear if it will be able to rebound from these low levels of spawners and recruits as it did in 2003.

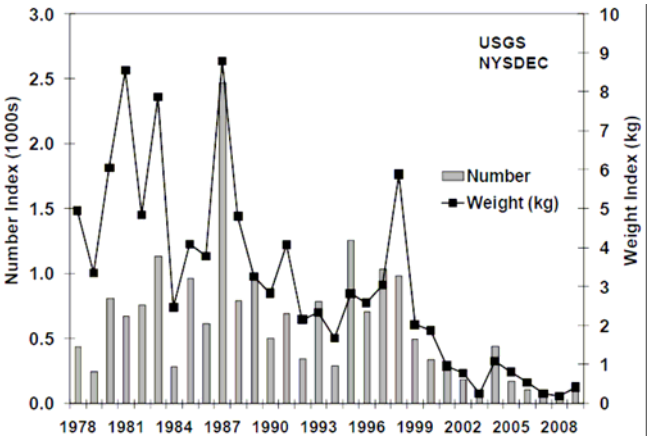


Fig 1 Stratified mean catch of rainbow smelt (age-1 and older) with bottom trawls in U.S. waters shoreward of the 140-m (459-ft) bottom contour, 1978 – 2009 For the weight index, 1 kg = 2.2 lb

Sculpins and Round Goby

Slimy Sculpin

In both 2008 and 2009, slimy sculpins were more abundant at depths greater than 70 m at all lake areas, and more abundant at eastern transects than at central or western transects (Figure 1). However, in 2009, abundance of sculpins at depths greater than 70 m increased slightly at the western transects, and decreased substantially at eastern transects. We hope we will continue to successfully use the new net design and establish a new time series to better understand slimy sculpin population dynamics in upcoming years.

Deepwater Sculpins

Deepwater sculpin were abundant in Lake Ontario in the 1920s and at least common into the 1940s. During 2009 assessment sampling, we caught 66 deepwater sculpins (46 - 155 mm [1.8 – 6.1 in]), more than double the number of individuals we collected in 2008. This continues the recent trend of increased catches of this species, once thought to

be extirpated from Lake Ontario. In 2009, both the abundance and biomass indices for round goby decreased considerably from 2008 values.

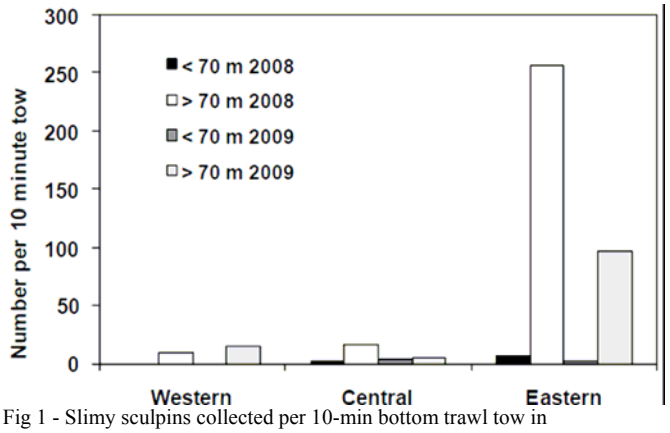


Fig 1 - Slimy sculpins collected per 10-min bottom trawl tow in U.S. waters, fall 2009

Round Goby

In 2009 we saw a dramatic decrease in both the abundance and weight indices **(Fig 2).** This pattern of exponential growth followed by a population crash is characteristic of expanding populations, and may indicate that the round goby population exceeded available resources. Round goby can also be affected by botulism and VHS, so it is also possible that diseases impacted the species more as its density increased. We believe that the round goby population will rebound following the observed population crash, but that levels observed in 2008 may be the maximum population the lake can support. Because round goby colonized the south shore of the lake from west to east, causing uneven spatial distribution, the relative standard error of the abundance indices was initially high. No round gobies were caught prior to 2002.

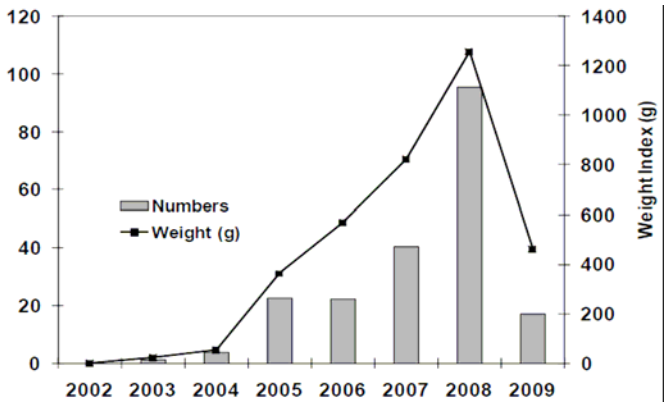


Fig 2 - Stratified mean catch of round goby with bottom trawls in U.S. waters shoreward of the 160-m (525 ft) bottom contour, 2002 - 2009
For weight index, 454 g = 1 lb

Cormorant Management Activities in Eastern Basin

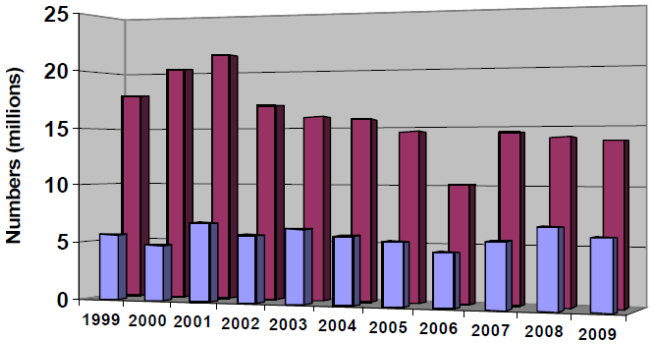
Since 2007 greatly increased landowner activity on Bass Island has prevented significant water-bird production and made active cormorant management unnecessary. In 2009 cormorant nests were removed from Gull Island and Calf Island between April and June. On Gull Island, a total 741 nests were removed over five visits; no birds were culled. Calf Island was visited twice, with 161 cormorant nests removed or disrupted and two birds culled.

Egg oiling treatment at Little Galloo Island was conducted four times between May and July 2009. The peak number of nests oiled on Little Galloo Island was 2,166**.** Peak nest count was 2,751, including control sub-colonies, tree nests and empty nests **(Table 1**). Hatching success (number of chicks hatched per eggs counted) for oiled nests was less than 1%. This meets the objective of reducing the number of successful cormorant nests on Little Galloo Island by 90%. This year 798 cormorants were culled, mostly late arriving birds which might have established a new sub-colony. Because last year's feeding day estimate was near the target level, some nests were deliberately left unoiled in 2009. We estimate that approximately 600 cormorants fledged on Little Galloo Island this year, mostly from control sub-colonies, but a few from incidentally untreated ground and tree nests

Double-Crested Cormorant Studies at Little Galloo Island

For almost two decades Little Galloo Island (LGI) has supported the largest colony of double-crested cormorants in the eastern basin of Lake Ontario. Cormorant nest counts on the island since the early 1990's have averaged about 5,000 per year, reaching a high of 8,400 in 1996. Researchers estimate that cormorants from LGI alone have consumed 414 million fish since 1992. The proliferation of cormorants in the eastern basin of Lake Ontario has coincided with declines in two important recreational fish species, smallmouth bass and yellow perch. Studies provide convincing evidence linking cormorant population increases to declining eastern basin smallmouth bass and yellow perch stocks. Decline of these fish stocks is evident only in the eastern basin, suggesting a localized problem, which is consistent with the halo effect where large piscivorous waterbird colonies may deplete local fish stocks.

Round goby (91.6%) were the major prey of LGI cormorants in 2009 and dominated the diet during all feeding periods. Alewife (2.6%) and yellow perch (2.6%) were the next most abundant species in the diet. Rock bass and pumpkinseed contributed 1.2% and 0.8%, respectively of the diet of LGI cormorants.



Estimated numbers of fish consumed by double-crested cormorant chicks and number of fish "saved" by cormorant reproductive suppression since 1999 on Little Galloo Island

Species	Island	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Double-crested Cormorant	Little Galloo Isl	5,681	5,119	5,440	4,780	4,251	3,967	3,401	2,692	2,959	2,492	2,751
	Gull Island	0	0	0	0	0	1	0	0	0	0	0
	Bass Island	0	0	0	0	35	12	5	5	5	0	0
	Calf Island	-	-	-	-	-	0	-	-	-	0	0
Ring-billed Gull	Little Galloo Isl	53,000	-	-	-	60,000	-	-	-	-	37,500	-
	Gull Island	0	-	-	-	0	-	-	-	-	0	-
	Bass Island	2,300	-	-	-	2,500	-	-	-	-	0	-
Herring Gull	Little Galloo Isl	275	-	-	-	313	-	-	367	0	375	356
	Gull Island	45	-	-	-	42	-	-	40	67	58	42
	Bass Island	10	-	-	-	10	-	-	10	16	0	0
Great Black-backed Gull	Little Galloo Isl	8	-	19	15	12	-	-	4	1	1	0
	Gull Island	0	-	0	1	0	-	-	0	0	9	0
	Bass Island	0	-	0	0	0	-	-	0	0	9	0
Caspian Tern	Little Galloo Isl	1,445	1,350	1,590	1,585	1,658	1,560	1,788	1,589	1,580	1,376	1,499
Black-crowned Night Heron	Little Galloo	1	1	1	1	3	3	4	0	0	1	0
	Gull Island	41	20	50	24	35	78	81	77	127	78	78
	Bass Island	9	36	13	36	47	17	46	32	0	0	0
	Calf Island	6	-	0	-	-	0	-	-	-	-	13

Table 1 - Estimated breeding pair numbers for colonial waterbirds on eastern basin Lake Ontario islands. Numbers for cormorants are for active nests after management activity

A peak count of 2,800 cormorant nests was observed on LGI in 2009 and chick productivity was estimated at about 0.25 chicks per nest. On June 4 and 8, 2009, 798 cormorants (mainly adults) were shot at LGI as part of NYSDEC management programs. We estimate about 0.93 million cormorant feeding days for the LGI colony in 2009 and about 0.93 million pounds of fish consumed.

Numbers of fish consumed by feeding period in 2009 included 3.98 million during the pre-chick feeding period, 2.45 million during the chick feeding period, and 7.35 million during the post-chick feeding period. In 2009, LGI cormorants consumed 13.11 million forage fish including 12.70 million round goby and 0.36 million alewife. Since the egg oiling program was initiated in 1999 the number of cormorant nests at LGI has decreased from 5,681 (1999) to 2,492 (2008).

Double-Crested Cormorants from Three St. Lawrence River Colonies

Round gobies were the primary prey of cormorants at Griswold Island (52.4%) and yellow perch (27.7%) were the second ranked prey. Round goby (50.7%), pumpkinseed (16.5%), yellow perch (18.7%), and rock bass (10.9%) were the dominant prey in the diet of cormorants at McNair Island, and Round goby (75.4%) and yellow perch (14.6%) were the main prey of Strachan Island cormorants.

Fish consumption for the Griswold Island colony was estimated at 4.00 million fish and 0.23 million pounds, for the McNair Island colony at 5.83 million fish and 0.36 million pounds, and for the Strachan Island colony at 4.07 million fish and 0.12 million pounds

Muskie and Nearshore Fish Community of Lower Niagara River

Sampling efforts targeting muskie, specifically those populations in the Buffalo Harbor, Lake Erie, and the upper Niagara River during 2007 were in response to concerns about declining angler catch rates. This was the first time sampling efforts were conducted in the lower Niagara River since 1995. We electrofished along the shoreline of the lower Niagara River, resulting in catches of 12 adult muskellunge and one tiger muskellunge during spring, two young-of-year during summer, and 10 young-of-year during fall. Data was also collected on the fish community at muskellunge nursery sites during summer.

The average length of the 12 adult male muskellunge captured from the lower Niagara River was longer than the average length of 17 males captured from the upper Niagara River during spring 2009 (average length 35.0". Most muskellunge were collected in shallow water < 4 ft deep, in close proximity to the shoreline, and frequently associated

with submerged tree trunks and other woody debris in the water.

We captured 3,557 fish in four seine hauls; two of those fish were YOY muskellunge. The five most common age classes/species captured were emerald shiner, YOY largemouth bass, YOY rock bass, YOY spottail shiner, and YOY yellow perch. During the fall, nine of the 10 YOY muskellunge were captured in Ontario waters. In addition to the YOY muskellunge, we also collected a grass pickerel, which are considered rare in the lower Niagara River.

The catch rate of YOY muskellunge from the lower Niagara River during 2009 was greater than the catch rate obtained from the Buffalo Harbor (2.23 / hr); but less than the upper Niagara River (5.93 / hr. The catch rate of YOY muskellunge from the lower Niagara River during 2009 was also much lower than that observed during 1992. ✧

Sea Lampreys in Lake Ontario 2009

Sea lamprey abundance in Lake Ontario was greater than the target level during 2009. The estimated population of spawning-phase sea lampreys in Lake Ontario for 2009 was 38,473, which remains greater than the fish-community objective target of 31,000. The spawning population increased to greater than target numbers beginning in 2004, however, sea lamprey population estimates were at or less than the target range for 9 of the 10 years prior to 2004.

All streams considered regular sea lamprey producers have been treated in recent years. Beginning in 2001, the Commission increased stream treatment effort compared to levels in the latter 1990s to improve suppression in all lakes. Enhanced treatment strategies to improve the efficacy of lampricide treatments were added to several treatments this year. These strategies included: targeting lampricide concentrations greater than minimum lethal concentration; extending lampricide treatment blocks by one or two hours; conducting secondary applications of lampricide to treat backwaters, springs and small feeder streams. Enhanced treatment strategies were used in 6 of 13 treatments during 2009.

Tributary Information

Lake Ontario has 659 tributaries (405 Canada, 254 U.S.). Sixty-six tributaries (31 Canada, 35 U.S.) have historical records of larval sea lamprey production, and of these, 41 tributaries (21 Canada, 20 U.S.) have been treated with lampricides at least once during 2000-2009. Twenty-nine tributaries (13 Canada, 16 U.S.) are treated on a regular cycle.

Lampricide Control

Treatments were completed in 13 tributaries (8 Canada, 5 U.S.) and the area of the Moira River. Orwell Brook was treated for the third consecutive year due to concerns regarding residual populations in beaver impoundment areas. The stream is being treated annually until the proposed sea lamprey barrier is in place. Construction of the barrier is expected to be completed in the summer of 2010. The TFM treatment of the Moira River was cancelled due to high spring flow conditions.

Alternative Control

Barriers

Presently, there are 15 sea lamprey barriers on Lake Ontario. Repairs or improvements were conducted on 7 Canadian barriers. An intensive effort to inventory and ground truth the information contained in the National Inventory of Dams (NID) has been undertaken for barriers located on U.S. tributaries to the Great Lakes. During 2009, 29 additional barriers were inventoried totaling 114 in the Lake Ontario basin.

Assessment

► Larval assessment surveys were conducted on a total of 69 tributaries (31 Canada, 38 U.S.).

► Surveys to estimate the abundance of larval sea lampreys were conducted in 11 tributaries (3 Canada, 8 U.S.).

► Surveys to detect the presence of new larval sea lamprey populations were conducted in 24 tributaries (8 Canada, 16 U.S.). One new population was detected in Forest Lawn Creek, NY. This stream was subsequently evaluated for treatment, but its low larval population did not rank for treatment in 2010.

► Post-treatment assessments were conducted in 15 tributaries (10 Canada, 5 U.S.) to determine the effectiveness of lampricide treatments conducted during 2008 and 2009.

Spawning-phase

8,354 spawning-phase sea lampreys were trapped at 11 sites on 10 tributaries during 2009. The estimated population of spawning-phase sea lampreys in Lake Ontario for 2009 was 38,473, which remains greater than the fish-community objective target of 31,000. A total of 1,925 spawning-phase male sea lampreys were delivered to the sterilization facility from trapping operations on the Duffins (583) and Humber (1,342) rivers. A number of males and females from these two streams and Cobourg Brook were allocated to research.

Parasitic-phase

The target rate for sea lamprey marking on lake trout in Lake Ontario is 2 AI wounds per 100 fish. ✧

End

Other Breaking News Items:

(Click on title or URL to read full article)

Cox, others: Efforts against carp inadequate
On the eve of a planned poisoning of waters around a Chicago-area lock to see if any Asian carp turn up, Attorney General Mike Cox and the attorneys general of four other states criticized federal officials for not taking more comprehensive emergency action.

Would you eat Asian carp? What if it was called silverfin?
Feared and reviled, Asian carp could devastate the fishing industry in the Great Lakes. But you probably knew that. Did you also know that they taste like a cross between scallops and crabmeat?

Lamprey control efforts under way in Delta Co.
A team from the Great Lakes Fishery Commission is putting trace amounts of a pesticide in a 100-mile stretch of the Ford River in Delta County, Mich., to kill thousands of lampreys.

Salmon decline opens up lake
It was Aristotle who told us that "nature abhors a vacuum." Nowhere is that better illustrated than Lake Huron, where the loss of salmon has resulted in a population explosion of big walleyes, steelhead and lake trout.

House bill would allow Lake Erie waters to be leased for wind farms
Penn. Rep. John Hornaman, with the support of Erie County's other state House members, has introduced a bill that would allow Pennsylvania to lease land beneath Lake Erie for the development of wind farms.

Waukesha mayor says city may not pursue Lake Michigan water
Waukesha, Wis., is looking at alternatives to purchasing water from Lake Michigan. The city's current water supply is drawn from well water, but there are major concerns with radium pollution in that supply. By law, the city will have to find a way to eliminate radium from the water within eight years.

Invasive species measure will hurt shippers: official
New York State requirements for cleaning invasive species from ballast water could shut down the entire Seaway shipping industry in 2012, an official says.

Salmon decline opens up Lake Huron
Lake Huron is a lake where the loss of salmon has resulted in a population explosion of big walleyes, steelhead and lake trout. Jim Johnson, who runs the DNRE research lab at Alpena, said walleye fishing in Saginaw Bay and much of the rest of Lake Huron probably is as good today as it ever has been.

Chemical in Illinois Fox River killed fish and wildlife
Illinois Conservation Police are investigating the dumping of chemicals into the Fox River that left fish and wildlife dead. Witnesses called South Elgin police after seeing bubbles floating downstream and fish popping up from the water. Officers and fire officials followed the bubbles to their source; there, he says they found two people putting substances into the water.

Asian carp fight moves closer to Lake Michigan
The Little Calumet River became the latest battleground against Asian carp as workers dumped barrels of a deadly fish toxin in a desperate attempt to locate the elusive invasive species in Chicago's waterways.

Slimy lawyer fish complicates lake trout restoration in Great Lakes
Burbot – slimy fish with a habit of wrapping themselves around anglers' arms – have never been a popular commercial or sport fish.

End