CHAUTAUQUA LAKE STATUS OF FISHERIES 2014

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Abstract

The Region 9 fisheries unit conducted three surveys on Chautauqua Lake during 2014: a spring trap net survey for Muskellunge, a spring electrofishing survey targeting Centrarchids and a fall electrofishing survey targeting Walleye. The Muskellunge survey was done in cooperation with the Chautauqua Fish Hatchery during the hatchery egg take. We set six Oneida style trap nets for two weeks beginning April 28th. Three hundred and fifty three adult Muskellunge were caught for a catch rate of 4.2 fish/net night, which is the highest catch rate since the 1970s. The sex ratio was 0.86 males for each female. The sex ratio in Chautauqua Lake has been skewed heavily toward females in the past and this ratio is one of the best we have seen in recent years. The total length of all Muskellunge collected ranged from 660 mm to 1,304 mm with a mean of 933 mm. Twenty two percent of all Muskellunge collected did not possess a fin clip, indicating they are the result of fry stocking, or naturally produced fish. Spring electrofishing was done following the NYSDEC Centrarchid Sampling Manual. We collected a total of 2,503 fish representing 17 species, including 280 Largemouth Bass, 54 Smallmouth Bass and 135 Walleye. Catch rates were 26.8 Largemouth Bass/hour, 5.9 Smallmouth Bass/hour and 13.8 Walleye/hour. Catch rates for all three species indicate moderate population densities in Chautauqua Lake. Our fall electrofishing survey targeted Walleye only, and was done following the NYSDEC Percid Sampling Manual. We collected 342 Walleye during 7.5 hours of electrofishing for a catch rate of 10 adult Walleye/hour and 35.6 young-of-year Walleye/hour. The catch rate from the fall Walleye assessment also indicates a moderate density of adult Walleye and a high abundance of young-of-year Walleye. The size structure of Largemouth Bass and Smallmouth Bass was within the desired range for both species. The size structure of Walleye was skewed toward larger sized fish but the emergence of a strong 2014 year class should balance out the Walleye size distribution. Largemouth Bass and Smallmouth Bass both reached legal size (12 inches) by age 5. Walleye reached legal size (18 inches) by age 7. Overall the fish populations in Chautauqua Lake are doing very well and should continue to offer excellent angling opportunities for Walleye, black bass and Muskellunge.

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Introduction

Chautauqua Lake has a surface area of 13,156 acres and is the largest inland lake in western New York. The lake is divided into two main basins of nearly equal size. The north basin is deeper than the south basin, with an average depth of 25 feet (7.62 m) and a maximum depth of 75 feet (22.86 m). The deeper sections of the north basin stratify during the summer months, with near anoxic conditions below the thermocline. The south basin has an average depth of 11 feet, with a maximum depth of 19 feet, and generally shows no thermal stratification (Wagner and Legard 2014). Chautauqua Lake is a popular angling destination and is stocked annually with Muskellunge *Esox masquinongy* and Walleye *Sander vitreus* (Table 1). In 2007, Chautauqua Lake accounted for 414,000 angler days and was the fourth most fished lake in New York (Connelly and Brown 2009).

The Region 9 fisheries unit conducted three surveys on Chautauqua Lake during 2014: a spring trap net survey for Muskellunge, a spring electrofishing survey targeting Centrarchids and a fall electrofishing survey targeting Walleye. The purpose of this report is to summarize the data collected in these surveys and to compare the data with historical trends.

Methods

Spring Trap Netting

Six Oneida style trap nets with a six foot car depth were set for two weeks beginning April 28th, 2014. Site locations can be found in Legard (2014). The survey was done to collect Muskellunge brood stock eggs for the propagation program at the Chautauqua Fish Hatchery and to assess the Muskellunge spawning stock in Chautauqua Lake. All Muskellunge collected were measured for total length and checked for sex, spawning stage, and the presence of fin clips. Scale samples were collected from all Muskellunge less than 40 inches (1,016 mm) in total length.

Spring Electrofishing

The fish community in Chautauqua Lake was sampled at night, by boat electrofishing, from May 27th to June 5th, 2014, following methods in the NYSDEC Centrarchid Sampling Manual (Green 1989). Electrofishing was done using a Smith Root SR-18EH electrofishing boat that generated a pulsed DC electric field (8 A, 360 v, and a pulse frequency of 60) with 33 inch (838 mm) diameter, six dropper anodes and two scap netters. Sampling effort was divided into 23 separate electrofishing runs. Thirteen runs were completed in the north basin and 10 runs

were completed in the south basin. The 13 runs completed in the north basin were divided into four 15 minute runs in which all fish were collected and nine 30 minute runs in which only game fish were collected. The 10 electrofishing runs completed for the south basin were divided into four 15 minute runs in which all fish were collected and six 30 minute runs in which only game fish were collected. Specific information about site locations can be found in Wagner and Legard (2014). All fish were identified to species and measured to the nearest millimeter. Largemouth Bass *Micropterus salmoides* and Smallmouth Bass *Micropterus dolomieu* were weighed to the nearest gram. Scale samples were taken from a subsample of Largemouth Bass, Smallmouth Bass, Walleye, Pumpkinseed *Lepomis gibbosus* and Yellow Perch *Perca flavescens* for age determination. Catch per unit effort (CPUE) values were determined from electrofishing data and first order estimates of abundance (#/acre) were derived for Largemouth Bass and Smallmouth Bass using the regression equations reported by Green (1989).

Largemouth Bass ≥ 254 mm Y = 4.793 + 0.18X
Smallmouth Bass ≥ 254 mm Y = 0.531 + 0.132X
Where X = CPUE electrofishing

Proportional stock density (PSD) and relative stock density (RSD) were calculated for Largemouth Bass, Smallmouth Bass, Walleye, Pumpkinseed and Yellow Perch using the following values (mm) suggested by Gablehouse (1984).

Species	**Stock size**	**Quality size**	**Preferred size**
Largemouth Bass	200	300	380
Smallmouth Bass	180	280	350
Walleye	250	380	510
Pumpkinseed	80	150	200
Yellow Perch	130	200	250

$$\text{PSD} = \frac{\text{Number of fish } > \text{ quality length}}{\text{Number of fish } \geq \text{ stock length}} \text{ X } 100$$

$$\text{RSD} = \frac{\text{Number of fish } > \text{preferred length}}{\text{Number of fish } \geq \text{ stock length}} \text{ X } 100$$

Relative weight (Wr) was determined for Largemouth Bass and Smallmouth Bass using the formulas reported by Henson (1991) and Kolander et al. (1993).

Wr = (W/Ws) x 100
Where W = actual weight and Ws = standard weight
Largemouth bass Ws = 10((-5.528 + (3.273 x LogL)) (Henson 1991)
Smallmouth bass Ws = 10((-5.329 + (3.200 x LogL)) (Kolander et al. 1993)
Where L = length of fish in mm

Water quality measurements (pH, water color, secchi disk depth, temperature and dissolved oxygen profiles) were collected at the deepest locations in both the north and south basins. Water quality measurements were made at intervals of 5 feet, from the surface to the bottom. Zooplankton samples were taken at the same locations using a 0.5 meter diameter nylon net with 153 micron mesh following methodology described by Mills and Schiavone (1982). Samples were preserved in alcohol for laboratory analysis following methodology by Mills and Confer (1986).

Fall Electrofishing

Fall electrofishing was done from October 2nd to October 8th, 2014 following post-stocking methods outlined in the NYSDEC Percid Sampling Manual (Forney et al. 1994). Electrofishing was done using a Smith Root SR-18EH electrofishing boat that generated a pulsed DC electric field (6-8 A, 360 v, and a pulse frequency of 60) with 33 inch diameter, six dropper anodes and two scap netters. Fifteen reference locations were fished for 30 minutes (Legard 2014). Only Walleye were collected. All Walleye were measured for total length and scale samples were taken from a sub-sample for age determination. PSD and RSD were calculated using the values suggested by Gablehouse (1984).

Results

Spring Trap Netting

A total of 350 adult Muskellunge were collected during 84 nights of trap netting for a catch rate of 4.2 fish/net night. The total length of all Muskellunge collected ranged from 660 mm to 1,304 mm with a mean of 933 mm (*SD* = 123) . The total length of male Muskellunge ranged from 660 mm to 1,025 mm with a mean of 845 mm (*SD* = 66) and the total length of female Muskellunge ranged from 770 mm to 1,304 mm with a mean of 1,010 mm (*SD* = 110). The sex ratio of all Muskellunge collected was 0.86 males per female. One hundred and twenty

Muskellunge had at least one wound from red spot disease. One hundred and three fish had evidence of healed red spot wounds from previous years and 31 fish had fresh red spot wounds from the current year. Twenty two percent of all Muskellunge collected did not possess a fin clip, indicating they are the result of fry stocking, or naturally produced fish.

Spring electrofishing

A total of 2,503 fish, representing 17 species, were collected during 9.5 hours of electrofishing (Table 2). Pumpkinseed were the most abundant species collected and Largemouth Bass were the most abundant game fish collected.

Largemouth Bass

A total of 280 Largemouth Bass were collected for an average catch rate of 26.8 fish/hr (*SD* = 18.2). The average catch rate of Largemouth Bass ≥ 254 mm was 24.3 fish/hr (*SD* = 16.9) and the catch rate of Largemouth Bass < 254 mm was 1.6 fish/hr (*SD* = 3.4). The estimated population density of Largemouth Bass ≥ 254 in the entire lake was 9.2 fish/acre. Catch rates were similar in both the north and south basins. The total length of all Largemouth Bass collected ranged from 131 mm to 520 mm with a mean of 339 mm (*SD* = 71). In the north basin the total length ranged from 206 mm to 520 mm with a mean of 345 mm (*SD* = 73) and in the south basin the total length ranged from 131 mm to 518 mm with a mean of 331 mm (*SD* = 68). The PSD and RSD_{380} were 69 and 28 for the entire lake, 69 and 33 for the north basin and 68 and 23 for the south basin, respectively. The Wr of all Largemouth Bass collected ranged from 45 to 126 with a mean of 99 (*SD* = 10). Relative weight estimates were nearly identical for the north and south basins. Largemouth Bass reached legal size of 305 mm (12 inches) by age 5 in the north and south basins (Table 3).

Smallmouth Bass

Smallmouth Bass were less abundant than Largemouth Bass. We collected 54 Smallmouth Bass for an average catch rate of 5.9 fish/hr (*SD* = 5.8). The average catch rate of Smallmouth Bass ≥ 254 mm was 5 fish/hr (*SD* = 5.1) and the catch rate of Smallmouth Bass < 254 mm was 0.9 fish/hr (*SD* = 1.7). The estimated population density of Smallmouth Bass ≥ 254 mm in the entire lake was 1.2 fish/acre. Population densities in the north and south basin were nearly identical to that of the entire lake.

The total length of all Smallmouth Bass collected ranged from 113 mm to 530 mm with a mean of 330 mm (*SD* = 89). In the north basin the total length ranged from 183 mm to 530 mm with a mean of 334 (*SD* = 87) and in the south basin the total length ranged from 113 mm to

526 mm with a mean of 324 mm (*SD* = 93). The PSD and RSD_{350} were 68 and 36 for the entire lake, 71 and 32 for the north basin and 68 and 41 for the south basin, respectively. The Wr of all Smallmouth Bass collected ranged from 86 to 161 with a mean of 102 (*SD* = 13). In the north basin relative weight ranged from 87 to 128 with a mean of 102 (*SD* = 9) and in the south basin the relative weight ranged from 86 to 161 with a mean of 101 (*SD* = 17). Smallmouth Bass reached legal size of 305 mm (12 inches) by age 5 in the north and south basins (Table 4).

Walleye

A total of 135 Walleye were collected for an average catch rate of 13.8 fish/hr (*SD* = 7.4) in the entire lake. Catch rates were similar in both north and south basins. The total length of all Walleye collected ranged from 204 mm to 700 mm with a mean of 481 mm (*SD* = 106). In the north basin the total length ranged from 204 mm to 700 mm with a mean of 467 mm (*SD* = 120) and in the south basin the total length ranged from 258 mm to 663 mm with a mean of 500 mm (*SD* = 81). The PSD and RSD_{510} were 96 and 44 for the entire lake, 94 and 42 in the north basin and 98 and 47 in the south basin, respectively. Walleye reached legal size of 457 mm (18 inches) by age 7 in the north and south basins (Table 5).

Pumpkinseed

Pumpkinseed were the most abundant fish collected in 2014. We collected a total of 709 Pumpkinseed for an average catch rate of 354 fish/hr (*SD* = 160.2) in the entire lake. The catch rate in the north basin was 450/hr and the catch rate in the south basin was 259/hr. The total length of all Pumpkinseed collected ranged from 110 mm to 206 mm with a mean of 165 mm (*SD* = 14). In the north basin the total length ranged from 120 mm to 206 mm with a mean of 162 mm (*SD* = 15) and in the south basin the total length ranged from 110 mm to 200 mm with a mean of 168 mm (*SD* = 13). The PSD and RSD_{200} were 87 and 1 for the entire lake, 81 and 1 in the north basin and 94 and 1 in the south basin, respectively. Pumpkinseed reached quality size of 150 mm by age 5 in the north basin and by age 4 in the south basin (Table 6).

Yellow perch

A total of 681 Yellow Perch were collected for an average catch rate of 341 fish/hr (*SD* = 289) in the entire lake. In the north basin the catch rate was 257 fish/hr and in the south basin the catch rate was 424 fish/hr. Total length of all Yellow Perch collected ranged from 82 mm to 289 mm with a mean of 163 mm (*SD* = 26). In the north basin the total length ranged from 82 mm to 289 mm with a mean of 159 mm (*SD* = 30) and in the south basin the total length ranged

from 83 mm to 218 mm with a mean of 166 mm (*SD* = 22). The PSD and RSD_{250} were 3 and 0.5 for the entire lake, 3 and 1 in the north basin and 3 and zero in the south basin, respectively. Yellow perch did not reach quality size of 200 mm until age 7 in both basins (Table 7).

Water Quality

The deeper portions of the north basin of Chautauqua Lake had already begun to stratify by early June with a thermocline occurring around 25 – 30 feet (7.6 – 9.1 m). Mean dissolved oxygen from the surface to 30 feet (9.1 m) was 8.6 ppm (*SD* = 0.5) and 2.4 ppm (*SD* = 2) below 30 feet (9.1 m). Water temperature in the north basin ranged from 68 degrees (F) at the surface to 54 degrees (F) at a depth of 55 feet (16.8 m). The pH in the north basin ranged from 9.4 at the surface to 8.1 at 55 feet (16.8 m). The secchi depth in the north basin was 12 feet (3.7 m) in early June (Table 8).

By early September the thermocline was very weak but oxygen levels were still low below 30 feet which indicates the lake was likely just about to experience turn over. Water temperature in the north basin ranged from 73 degrees (F) at the surface to 67 degrees (F) at 45 feet (13.7 m). The pH in the north basin ranged from 9.4 to 8.6 and secchi depth was 6 feet (1.8 m) (Table 9).

The south basin did not stratify and water quality measures remained fairly constant throughout the water column in spring and fall. In late May the mean dissolved oxygen level was 7.2 ppm (*SD* = 1.4). Water temperature in the south basin ranged from 66.5 degrees (F) at the surface to 62 degrees (F) at 15 feet (4.6 m). The pH ranged 8.7 to 8.4 and the secchi depth was 10 feet (3.0 m) (Table 10). In early September the mean dissolved oxygen level in the south basin was 6.9 ppm (*SD* = 1.3). Water temperature ranged from 74.6 degrees (F) at the surface to 73 degrees (F) at 15 feet (4.6 m). The pH ranged from 9.1 to 8.9 and the secchi depth was 3 feet (0.9 m) (Table 11).

Zooplankton

In the north basin *Daphnia* spp. accounted for 57% of all zooplankton collected in June, 49% in July and 43% in September. The average length of Daphnia spp. collected in in the north basin was 1.2 mm (*SD* = 0.4) in June, 0.6 mm (*SD* = 0.3) in July and 0.7 mm (*SD* = 0.3) in September. In the south basin *Daphnia* spp. accounted for 80% of all zooplankton collected in June, 15% in July and 65% in September. The average length of Daphnia spp. collected in the south basin was 1.1 mm (*SD* = 0.6) in June, 0.6 mm (*SD* = 0.2) in July and 0.6 mm (*SD* = 0.2) in September.

Fall electrofishing

We collected 342 Walleye during 7.5 hours of electrofishing for an average catch rate 45.6 fish/hr (*SD* = 46.1). The average catch rate of adult Walleye was 10 fish/hr (*SD* = 7.1) and the average catch rate of young-of-year Walleye was 35.6 fish/hr (*SD* = 49.1). In the north basin the average catch rate was 11.6 adult fish/hr (*SD* = 7.2) and 14.7 young-of-year fish/hr (*SD* = 22.6). While the catch rate in the south basin was 7.7 adult fish/hr (*SD* = 7) and 67 young-of-year fish/hr (*SD* = 62.9). The total length of all Walleye collected ranged from 146 mm to 690 mm with a mean of 272 mm (*SD* = 143). The average length of adult Walleye was 530 mm (*SD* = 83) and the average length of young-of-year Walleye was 200 mm (*SD* = 21). The PSD and RSD_{510} were 91 and 61 for the entire lake, 96 and 67 in the north basin and 84 and 44 in the south basin, respectively. Walleye collected during fall electrofishing showed similar growth rates to those collected in the spring. Age 6 Walleye were just reaching legal size of 457 mm in both basins during October 2014 (Table 12).

Discussion

Muskellunge

Chautauqua Lake has served as the brood source for the New York State Muskellunge hatchery system since the late 1800s. However, the Muskellunge egg take was moved away from Chautauqua Lake from 2009 – 2012 (to the Cassadaga lakes) due to a sex ratio heavily skewed toward females and concerns about the health of the fish. When the egg take returned to Chautauqua Lake in 2013 the Muskellunge catch rate was approximately twice as high as the average from 2003 – 2008 (Legard 2014). The catch rate in 2014 was even higher, and is the highest catch rate on record since the 1970s (Figure 1). There was also an abundance of large Muskellunge in Chautauqua Lake during 2014. This year marks the second year in a row that fish over 50 inches have been collected during the egg take. We collected three fish greater than 50 inches and 25% of all Muskellunge collected were greater than 40 inches.

Another interesting note about the catch in 2014 is that 22% of all Muskellunge collected did not possess fin clips. This may be an indication that natural reproduction is occurring in the lake, but the lack of fin clips alone is not proof of natural reproduction due to a large number of Muskellunge fry that are stocked in the Lake (Table 1). Fry stocking occurs as a result of hatchery thinning during the fingerling production program. If fry stocking was halted in Chautauqua Lake we would be able to evaluate the level of natural reproduction within the Muskellunge population by examining the presence or absence of fin clips.

Largemouth Bass

The catch rate of Largemouth Bass ≥ 254 mm (24.3 fish/hr) was similar to the catch rate in 2012 (Wagner and Legard 2014) and was considerably higher than the statewide average of 17 fish/hr (Perry et al. 2014). For additional comparison, the electrofishing catch rate of Largemouth Bass in Chautauqua Lake was more than twice the catch rate in Oneida Lake (12 fish/hr) in 2014 (Jackson et al. 2015). The PSD and RSD_{380} were within the desired range for a moderate population density in a balanced fish community (Gablehouse 1984). The average total length and PSD of Largemouth Bass were higher than the values from 2012 (Wagner and Legard 2014). A larger average size and higher PSD indicate fewer small fish in the sample. However, all parameters are still within the desired range. Relative weight numbers were similar to the statewide average and within the desired range (Perry et al. 2014). The growth rate of Largemouth Bass in Chautauqua Lake continues to be below the statewide average (Perry et al. 2014) but was slightly faster than the growth rate reported in 2012 (Wagner and Legard 2014). Overall the Largemouth Bass population continues to thrive in Chautauqua Lake, and the lake remains one of the best Largemouth Bass fisheries in New York.

Smallmouth Bass

Smallmouth Bass catch rates in Chautauqua Lake were similar to previous years (Wagner and Legard 2014, Legard 2014) and were similar to the statewide average of 4 fish/hr (Perry et al. 2014). Smallmouth Bass catch rates were also similar to those reported from Oneida Lake in 2014 (Jackson et al. 2015). The PSD and RSD_{350} were both within the desired range for a moderate population density and were similar in both basins. However, PSD and RSD_{350} values should only be used as a general comment on size structure because the sample size of Smallmouth Bass was lower that recommended by Green (1989) for calculating PSD and RSD_{350}. The relative weight estimate for Smallmouth Bass was within the desired range and higher than the statewide average (Perry et al. 2014). Overall the Smallmouth Bass population appears to be similar to 2012 and should continue to support a quality recreational fishery.

Walleye

The catch rate of 13.8 Walleye/hr during spring electrofishing is indicative of a moderate population density (Forney et al. 1994). The spring time catch rate was greater in 2014 than in 2012 (Wagner and Legard 2014) and was almost twice as high as that reported from Oneida Lake in 2014 (Jackson et al. 2015). Catches were similar in both the north and

south basin, which was also the case in 2012 (Wagner and Legard 2014). The catch rate of adult Walleye during fall electrofishing also indicates a moderate population density in Chautauqua Lake. The fall catch rate of adult Walleye was down from previous years (Legard 2014) but the catch of young-of-year Walleye was one of the highest on record. PSD and RSD_{510} were very high during both spring and fall electrofishing. High values indicate that there is a lack of smaller sized Walleye in the population but these values should moderate when the 2014 year class fully recruits to the stock size of 250 mm.

The large year class of Walleye produced in 2014 will need to be monitored to determine cohort survival as they age. However, this year class could lead to a large increase in the Walleye population of Chautauqua Lake. The catch rate of Walleye has been increasing since 2005 and has shown a moderate to high population density since that time (Legard 2014). The increase in Walleye catch rates coincided with a Walleye stocking program in Chautauqua Lake. The lake has been stocked with pond fingerling Walleye since 2003 and was stocked with a combination of pond fingerlings and 50-day fingerlings since 2011. 2014 was the first year that only 50-day fingerlings were stocked. This provided an opportunity to assess the survival of 50-day fingerling Walleye because they are marked with oxytetracycline (OTC) prior to stocking. One hundred young-of-year Walleye were collected and sent to Cornell University for OTC mark analysis. The results of this analysis will be published along with an evaluation of the Walleye stocking program in Chautauqua Lake that is set to take place in 2016.

Pumpkinseed

The catch rate of Pumpkinseed was higher than that reported in 2012 (Wagner and Legard 2014) and represented the highest catch rate of any species collected in 2014. The PSD was above the desired range in both basins and the RSD_{200} below the desired range in both basins. The current values indicate that there is an abundance of quality size Pumpkinseed but few preferred size fish. However, this should not impact fishing opportunities and Pumpkinseed angling should remain good in the future.

Yellow Perch

Yellow Perch numbers were down considerably from 2012. The 2012 catch rate of Yellow Perch was an astounding 707.5 fish/hr (Wagner and Legard 2014). The 2014 catch rate of 341 fish/hr is less than half of the catch rate in 2012. However, it is still very high and indicates an extremely high population density of Yellow Perch in Chautauqua Lake. For comparison a catch rate of 50 fish/hr is considered a high population density of Yellow Perch (Forney et al. 1994). The size of Yellow Perch in Chautauqua Lake continues to be small. Of the

681 Yellow Perch collected, only 3 were greater than 200 mm. The small size of Yellow Perch in Chautauqua Lake is nothing new (Legard 2014 and Wagner and Legard 2014) but anglers willing to sort through smaller fish should find good fishing for Yellow Perch.

Other fishes

The White Perch *Morone americana* population in Chautauqua Lake has been declining since the early 2000s (Legard 2014) and the catch rate in 2014 indicates the decline is still ongoing. We collected a total of 118 White Perch for a catch rate of 59 fish/hr, which is greatly reduced from the catch rate of 117 fish/hr in 2012 (Wagner and Legard 2014). White Perch are not native to Chautauqua Lake and have never developed a large following among anglers. They are also known to prey upon larval fish, such as Walleye, and their decline may be related to the apparent increase in Walleye recruitment in recent years.

Brown Bullhead *Ameiurus nebulosus* catches were also remarkable in 2014. We collected 346 Brown Bullhead for a catch rate of 173 fish/hr. The total length of Brown Bullhead ranged from 218 mm to 404 mm with and average length of 305 mm (*SD* = 39). Bullhead fishing is very popular in the spring and anglers looking for some truly great Brown Bullhead fishing should consider Chautauqua Lake.

Management Recommendations

Muskellunge

1) The current regulations for Muskellunge of 1 fish/day and 40” minimum size should be maintained.

2) The current fingerling stocking rate of 13,000 fin clipped fingerling Muskellunge per year should be maintained. However, Muskellunge fry should not be stocked in Chautauqua Lake. Halting fry stocking will allow regional staff to evaluate the level of natural reproduction in Chautauqua Lake. All Muskellunge fry should be stocked in the Allegheny River or other suitable location.

Largemouth Bass and Smallmouth Bass

1) The relative abundance of the Largemouth Bass population continues to be above the statewide average and the relative abundance of the Smallmouth Bass population continues to be near the statewide average in Chautauqua Lake. Statewide regulations of 5 fish/day and 12” minimum size should be maintained.

2) The bass population should continue to be monitored every five years following the NYSDEC Centrarchid Sampling Manual (Green 1989).

Walleye

1) The special regulation for Walleye of 3 fish/day and 18” minimum size limit should be removed. The Walleye population in Chautauqua Lake has increased to the point that it no longer requires special protection. Walleye numbers in Chautauqua Lake have been increasing since 2004. Survey results have indicated a moderate abundance of Walleye since 2006 and a high abundance since 2013 (Legard 2014). Additionally, the 2014 year class has the potential to dramatically increase the adult Walleye population in near future. The statewide regulations of 5 fish/day and 15” minimum size should be used for Walleye in Chautauqua Lake.

2) The annual fall Walleye Survey should continue for at least five years to monitor the response of the Walleye population if the special regulation is changed.

3) Chautauqua Lake was experimentally stocked with 260,000 50-day fingerling Walleye through 2015. In 2016 an assessment of the Walleye population will be done to determine if Walleye stocking should continue in future years.

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Table 1. Species of fish stocked in Chautauqua Lake during 2014

Month	Species	Type	Number	Size (inches)
June	Walleye	50 day fingerling	260,000	1.5
June	Muskellunge	fry	438,000	0.5
October	Muskellunge	fingerling	16,400	8.5

Table 2. Number of fish sampled during spring electrofishing in Chautauqua Lake in 2014

Common Name	Scientific Name	Number Caught
Black Crappie	*Pomoxis nigromaculatus*	3
Bluegill	*Lepomis macrochirus*	65
Brook Silversides	*Labidesthes sicculus*	2
Brown Bullhead	*Ameiurus nebulosus*	346
Golden Redhorse	*Moxostoma erythrurum*	3
Golden Shiner	*Notemigomus crysoleucas*	3
Largemouth Bass	*Micropterus salmoides*	280
Logperch	*Percina caprodes*	27
Muskellunge	*Esox masquinongy*	9
Pumpkinseed	*Lepomis gibbosus*	709
Rock Bass	*Ambloplites rupestris*	36
Smallmouth Bass	*Micropterus dolomieu*	54
Spottail Shiner	*Notropis hudsonius*	4
Walleye	*Sander vitreus*	135
White Perch	*Morone americana*	118
White Sucker	*Catostomus commersonii*	28
Yellow Perch	*Perca flavescens*	681

Table 3. Length at age for Largemouth Bass collected from Chautauqua Lake during spring electrofishing, 2014

Largemouth Bass							
	Entire Lake			North Basin		South Basin	
Age	Average Length (mm)	SD	n	Average Length (mm)	n	Average Length (mm)	n
2	202	18	3	215	1	196	2
3	239	18	16	247	10	226	6
4	276	22	35	283	19	268	16
5	313	28	31	322	16	303	15
6	334	18	14	343	7	325	7
7	358	20	12	367	6	349	6
8	378	22	32	382	20	372	12
9	394	40	3	372	2	439	1
10	408	49	15	406	10	411	5
11	421	1	2	420	1	422	1
12	433	18	12	436	9	422	3
14	461	36	4	468	3	440	1
15	470	-	1	470	1	-	-
16	490	17	2	490	2	-	-

Table 4. Length at age for Smallmouth Bass collected from Chautauqua Lake during spring electrofishing, 2014

Smallmouth Bass							
	Entire Lake			North Basin		South Basin	
Age	Average Length (mm)	SD	n	Average Length (mm)	n	Average Length (mm)	n
2	211	10	2	211	2	-	-
3	213	13	4	226	1	209	3
4	271	11	3	282	1	266	2
5	314	-	1	-	-	314	1
6	333	17	16	333	11	334	5
7	360	32	4	392	1	349	3
8	399	27	3	414	1	392	2
9	396	53	2	396	2	-	-
10	453	35	4	480	2	427	2
12	488	54	2	-	-	488	2
13	503	-	1	503	1	-	-

Table 5. Length at age for Walleye collected from Chautauqua Lake during spring electrofishing, 2014

Walleye							
	Entire Lake			North Basin		South Basin	
Age	Average Length (mm)	SD	n	Average Length (mm)	n	Average Length (mm)	n
1	222	8	2	222	2	-	-
2	248	14	2	238	1	258	1
3	354	26	5	344	4	391	1
4	403	9	9	411	1	402	8
5	430	13	11	435	8	417	3
6	440	16	6	435	3	445	3
7	469	14	11	474	7	460	4
8	518	34	20	528	9	511	11
9	520	32	3	537	2	486	1
10	538	38	16	519	6	550	10
11	593	60	2	593	2	-	-
12	565	50	7	553	2	570	5
13	604	-	1	604	1	-	-
14	609	70	6	609	6	-	-
15	624	50	5	605	2	638	3

Table 6. Length at age for Pumpkinseed collected from Chautauqua Lake during spring electrofishing, 2014

Pumpkinseed							
	Entire Lake			North Basin		South Basin	
Age	Average Length (mm)	SD	n	Average Length (mm)	n	Average Length (mm)	n
3	129	12	6	131	4	126	2
4	149	11	14	143	6	153	8
5	159	8	16	157	10	162	6
6	181	6	18	180	9	183	9
7	196	4	3	-	-	196	3
8	187	9	3	187	3	-	-
10	206	-	1	206	1	-	-

Table 7. Length at age for Yellow Perch collected from Chautauqua Lake during spring electrofishing, 2014

Yellow Perch							
	Entire Lake			North Basin		South Basin	
Age	Average Length (mm)	SD	n	Average Length (mm)	n	Average Length (mm)	n
1	108	10	2	115	1	101	1
2	135	8	15	139	6	132	9
3	163	13	38	168	20	158	18
4	187	10	14	190	5	186	9
6	196	6	2	-	-	196	2
8	241	42	3	289	1	217	2

Table 8. Water quality measurements taken in the north basin of Chautauqua Lake during spring
2014

North Basin					
Date	**Depth_ft**	**Temperature**	**Dissolved Oxygen**	**pH**	**Conductivity**
6/2/2014	0	68.2	8.8	9.4	
6/2/2014	5	68.2	8.8	9.4	
6/2/2014	10	68.1	8.9	9.3	
6/2/2014	15	67.7	8.8	9.3	
6/2/2014	20	67.5	8.8	9.3	
6/2/2014	25	59.3	8.6	8.9	
6/2/2014	30	57.5	7.5	8.7	
6/2/2014	35	56.3	5.3	8.4	
6/2/2014	40	55.7	1.4	8.2	
6/2/2014	45	55	1.4	8.2	
6/2/2014	50	55	1.6	8.2	
6/2/2014	55	54.4	< 1	8.1	

Table 9. Water quality measurements taken from the north basin of Chautauqua Lake during fall
2014

North Basin					
Date	**Depth_ft**	**Temperature**	**Dissolved Oxygen**	**pH**	**Conductivity**
9/5/2014	0	73	9.1	9.2	
9/5/2014	5	72.9	9	9.4	
9/5/2014	10	72.9	9	9.4	
9/5/2014	15	72.9	9	9.4	
9/5/2014	20	72.8	8.8	9.4	
9/5/2014	25	72.7	8.7	9.3	
9/5/2014	30	70.7	4.6	8.9	
9/5/2014	35	69.1	0.5	8.6	
9/5/2014	40	68.3	0.5	8.6	
9/5/2014	45	67.5	0.3	8.6	

Table 10. Water quality measurements taken in the south basin of Chautauqua Lake during spring
2014

South Basin					
Date	**Depth_ft**	**Temperature**	**Dissolved Oxygen**	**pH**	**Conductivity**
5/28/2014	0	66.5	7.8	8.7	
5/28/2014	5	66.6	7.9	8.7	
5/28/2014	10	66.5	7.9	8.7	
5/28/2014	15	62	5.1	8.4	

Table 11. Water quality measurements taken from the south basin of Chautauqua Lake during fall 2014

South Basin					
Date	**Depth_ft**	**Temperature**	**Dissolved Oxygen**	**pH**	**Conductivity**
9/5/2014	0	74.6	8.7	9.1	
9/5/2014	5	73.4	7	9	
9/5/2014	10	73.2	6.4	9	
9/5/2014	15	73	5.6	8.9	

Table 12. Length at age for Walleye collected from Chautauqua Lake during fall electrofishing, 2014

Walleye							
	Entire Lake			North Basin		South Basin	
Age	Average Length (mm)	SD	n	Average Length (mm)	n	Average Length (mm)	n
0	212	13	31	211	23	216	8
1	242	9	3	-	-	242	3
2	329	-	1	-	-	329	1
3	350	7	3	345	1	353	2
4	401	-	1	401	1	-	-
5	435	13	2	426	1	444	1
6	455	21	3	455	3	-	-
7	505	21	17	507	16	487	1
8	529	91	11	558	7	478	4
9	547	-	1	547	1	-	-
10	582	24	6	580	5	595	1
11	596	-	1	-	-	596	1
12	632	37	9	632	9	-	-
14	614	41	6	613	5	617	1

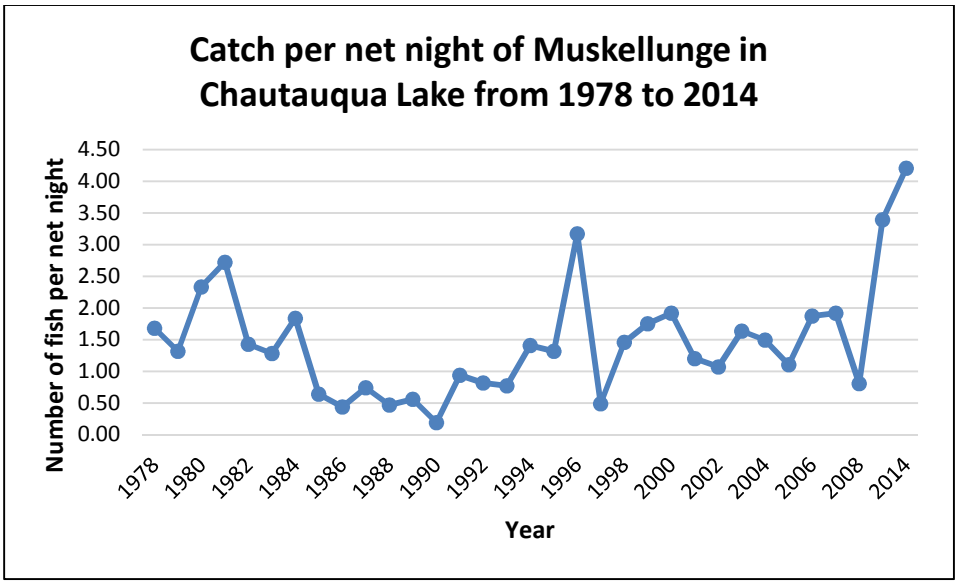

Figure 1. Catch/net night of Muskellunge in Chautauqua Lake from 1978 – 2014

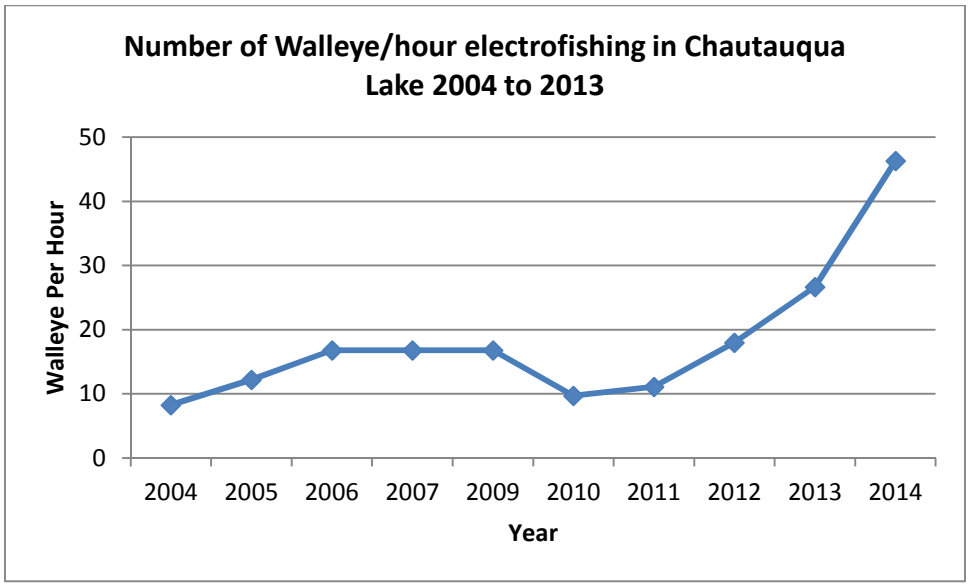

Figure 2. Number of Walleye/hour electrofishing during fall electrofishing in Chautauqua Lake