Stoney Pond Fisheries Survey 2017

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Abstract

A nighttime boat electrofishing survey was conducted on Stoney Pond, in Madison County, on June 12, 2017. The lake was chosen because there had been no recent fishery survey; the last survey took place in June 1979. The purpose of this survey was to evaluate age, growth, and relative abundance of the reservoir's sportfish community. Overall, 729 fish were caught, representing 9 species. Bluegill were the most numerous with 299 caught (44% of catch) followed by pumpkinseed (n=194, 27% of catch). Though bluegill were abundant, there were few of preferred length (8 in) with a RSD_8 of 2. Largemouth bass (n=49, 7% of catch) and chain pickerel (n=31, 4% of catch) were the only two gamefish caught. The mean catch rate for largemouth bass ≥12 inches was 22 per hour, which was well above the statewide average of 14 per hour. The current statewide angling regulations are appropriate to maintain the fishery.

Introduction

Stoney Pond (SR-44-82-P163-3-1-P5882), also often spelled as Stony, is a 28 acre waterbody located in the Town of Nelson, Madison County. Stoney Pond is part of the New York State Department of Environmental Conservation (DEC) 1,469 acre Stony Pond State Forest Area. Besides fishing, other recreational opportunities on this state forest are primitive camping, cross-country skiing, snowshoeing, horseback riding, hunting, and trapping. Stoney Pond was constructed in the 1960s using Federal wildlife funds (Tioughnioga Unit Management Plan 2007) and has a maximum depth of 11 ft and a mean depth of 3.9 ft.

Stoney Pond is not stocked and statewide angling regulations apply. A DEC hand-launch provides public access for open water, shore and ice fishing. Water craft are restricted to electric motors only. As the pond is surrounded by state forest, there is also some shore access around the pond.

The survey was conducted because there was a need for current fish population information to help inform management of the pond; last survey took place in June 1979. The objectives of this survey were to evaluate age, growth, and relative abundance of the reservoir's sportfish community.

Methods

Water Chemistry

Surface water temperature, air temperature, pH, dissolved oxygen (DO) and conductivity were recorded on June 12, 2017, prior to electrofishing; a Professional Plus model YSI meter was used.

Electrofishing

Stoney Pond was electrofished on the night of June 12th following the protocol outlined in the Centrarchid sampling manual (Green 1989). Four sites (Figure 1) covering the entire shoreline were fished for a total of one hour of “on-time.” The boat used was a Smith-Root model SR-17 cataraft electrofishing boat with an array of cables

on the front of the boat serving as the cathode and two umbrella arrays extending 5 ft in front of the boat as anode. Direct current half-wave (120 pulses per second) with 6 amps and 720 volts was used. Shocking started half an hour before sunset and sampling was conducted along the shoreline in 1 to 5 ft of water. The crew consisted of a driver and two netters. Four 15 minute “all-fish” runs were conducted; attempts (within reason) were made to collect every fish that was shocked.

Collected fish were identified to species and lengths (mm) and weights (gm) were recorded. Scale samples were collected for age determination from five individual fish per 10 mm size increments of largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis machrochirus*), pumpkinseed (*Lepomis gibbosus*), rock bass (*Ambloplotes rupestris*), black crappie (*Pomoxis nigromculatus*), and yellow perch (*Perca flavescens*). No scales were collected from chain pickerel *(Esox niger)* as scale analysis for chain pickerel is generally unreliable. Age structure of the unaged sample of fish was estimated based on the frequency of known age fish in each 10 mm size increment.

Fish Indices

Indices used to assess the status of the fish populations in Stoney Pond included electrofishing catch rates, growth rates, proportional stock density (PSD), relative stock density (RSD), and relative weight (Wr). Growth was assessed by determining mean length at age. PSD is expressed as the percentage of the stock that is of “quality” size; and RSD is expressed as the percentage of the stock that is of “preferred” size (Anderson 1980). Lengths used for stock, quality, preferred, memorable, and trophy sizes for all species are from Gablehouse (1984) and can be found in Appendix 1. Wr is an index of condition that compares the actual weight with a standard weight for fish of the same length (Anderson 1980). Abundance estimates for largemouth bass were derived from regression equations based on spring nighttime electrofishing catch rates from Green (1989). Abundance estimates for yellow perch were derived from electrofishing catch rates, and mean length at age-4 from Forney et al. (1994).

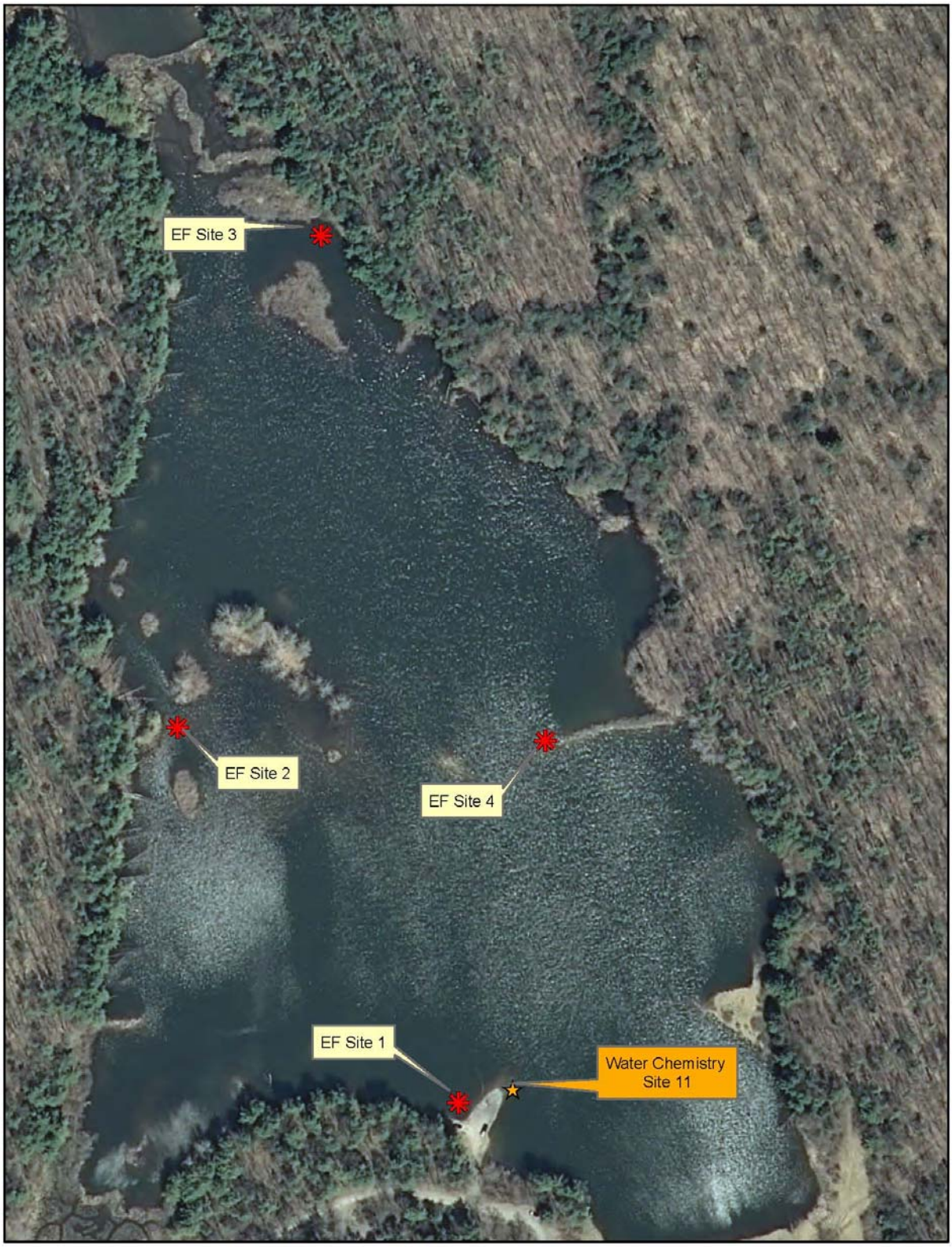

Figure 1. Site locations for the starting point of electrofishing (EF) runs and water chemistry for Stoney Pond on June 12, 2017.

Results

Water Chemistry

During the June 12th electrofishing survey, the surface water temperature was 79° F, DO was 5.8 ppm, pH was 8.3 and conductivity was 85 umho/cm3

Species Collected

Overall, 729 fish were caught, representing 9 species (Table 1). Bluegill were the most numerous with 299 caught (41% of catch; Table 2). The next most numerous species was pumpkinseed (n=194, 27% of catch), followed by yellow perch (n= 115, 16% of catch). Gamefish caught were largemouth bass (n=49, 7% of catch) and chain pickerel (n=31, 4% of catch).

Gamefish

Largemouth Bass

A total of 49 largemouth bass were collected. The electrofishing catch per unit effort (CPUE) ranged from 4 fish per hour (fish/h) to 96/h with an average of 49/h (21 standard error, SE) for all size largemouth bass (Table 2). Largemouth bass lengths ranged from 8 to 18 in, with 8 in bass being most frequent (Figure 2). The resulting PSD for largemouth bass was 48 and the RSD_{15} (bass ≥15 in) was 10 (Table 3). No memorable (≥20 in) or trophy (≥25 in) length bass were collected (Table 3). The largemouth bass mean Wr was 100 (SE = 2; Table 4). Largemouth bass had average growth rates by NYS standards (Brooking et al. 2018), with the mean age to reach legal size (≥12 in) falling between age-4 and 5; the NYS mean is age-4 (Figure 3). Age-4 largemouth bass were the most frequently collected age group (Figure 4).

Chain Pickerel

A total of 31 chain pickerel were collected. The electrofishing CPUE ranged from 20/h to 48/h with an average of 31/h (SE = 7; Table 2). Lengths ranged from 11 to 19 in, with 14 in chain pickerel being most frequent (Figure 5). The resulting PSD was 32 and the RSD_{20} was zero (Table 3). No memorable (≥25 in), or trophy (≥30 in) length pickerel were collected (Table 3). The chain pickerel mean Wr was 83 (SE = 7; Table 4).

Table 1. Fish species collected by the DEC in recent sampling efforts on Madison County waters and year sampled. Cazenovia Lake (CL), Eaton Brook Reservoir (EBR), Lake Moraine (LM), Upper and Lower Leland Ponds (LP), Lebanon Reservoir (LR) and Stoney Pond (SP).

Species	CL 2012[1]	EBR 2013[1]	LM 2014[2]	LP 2015[2]	LR 2016[2]	SP 2017[3]
Alewive				X		
Brown Trout				X		
Rainbow Trout		X			X	
Chain Pickerel	X	X	X	X		X
Common Carp				X		
Golden Shiner	X	X	X	X	X	X
Emerald Shiner		X				
Spottail Shiner	X	X		X		
Spotfin Shiner	X					
White Sucker	X	X	X	X	X	
Creek Chubsucker			X	X		
Yellow Bullhead	X		X	X		
Brown Bullhead	X	X	X	X	X	X
Banded Killifish	X					
Rock Bass	X	X	X	X	X	X
Redbreast Sunfish			X	X		
Pumpkinseed	X	X	X	X	X	X
Bluegill	X	X	X	X	X	X
Smallmouth Bass	X	X	X	X		
Largemouth Bass	X	X	X	X	X	X
Black Crappie	X	X	X	X	X	X
Tessellated Darter	X	X				
Yellow Perch	X	X	X	X	X	X
Walleye	X	X	X		X	
Species	**17**	**16**	**15**	**18**	**11**	**9**

[1] Boat electrofishing and gill net

[2] Boat electrofishing, gill net, and fyke net

[3] Boat electrofishing

Table 2. Spring night-time boat electrofishing catch from Stoney Pond on June 12, 2017.

Species	Scientific Name	Total Catch	CPUE (fish/h; Standard Error) All	≥Stock	≥Quality	≥Preferred
Chain Pickerel	*Esox niger*	31	31 (7)	31 (7)	10 (3)	0 (0)
Golden Shiner	*Notemigonus crysoleucas*	24	24 (9)	-	-	-
Brown Bullhead	*Ameirus nebulosis*	14	14 (4)	14 (4)	13 (4)	11 (4)
Rock Bass	*Ambloplities rupestris*	1	1 (1)	1 (1)	1 (1)	1 (1)
Pumpkinseed	*Lepomis gibbosus*	194	194 (54)	189 (50)	33 (12)	0 (0)
Bluegill	*Lepomis macrochirus*	299	299 (118)	231 (99)	40 (20)	5 (3)
Largemouth Bass	*Micropterus salmoides*	49	49 (21)	46 (19)	22 (10)	8 (4)
Black Crappie	*Pomoxis nigromaculatus*	2	2 (1)	1 (1)	1 (1)	1 (1)
Yellow Perch	*Perca flavescens*	115	114 (17)	17 (8)	12 (6)	8 (4)
Total		**729**				

Table 3. Number of fish of stock, quality, preferred (Pref), memorable (Mem), and trophy lengths and resulting PSD and RSDp on June 12, 2017 on Stoney Pond.

Species	Stock	Quality	Pref	Mem	Trophy	PSD	RSDp	RSDm
Chain Pickerel	31	10	0	0	0	32	0	0
Brown Bullhead	14	13	11	0	0	93	79	0
Rock Bass	1	1	1	0	0	100	100	0
Pumpkinseed	189	33	0	0	0	17	0	0
Bluegill	231	40	5	0	0	17	2	0
Largemouth Bass	46	22	8	0	0	48	17	0
Black Crappie	1	1	1	0	0	100	100	0
Yellow Perch	17	12	8	1	0	71	47	6

Table 4. Mean Relative Weight (Wr) by standard size categories for fish sampled in Stoney Pond on June 12, 2017. Standard error is in ( ). Preferred (Pref), memorable (Mem)

Species	All	Wr Stock-Quality	Quality-Pref	Pref-Mem	Mem-Trophy
Chain Pickerel	83 (2)	86 (1)	77 (2)	-	-
Brown Bullhead	87 (3)	76	99 (5)	86 (4)	-
Rock Bass	111	-	-	111	-
Pumpkinseed	102 (7)	103 (8)	98 (1)	-	-
Bluegill	97 (1)	97 (2)	97 (2)	93 (3)	-
Largemouth Bass	100 (2)	105 (2)	94 (4)	92 (2)	-
Black Crappie	80 (1)	-	-	79	-
Yellow Perch	93 (1)	93 (4)	91 (3)	90 (3)	85

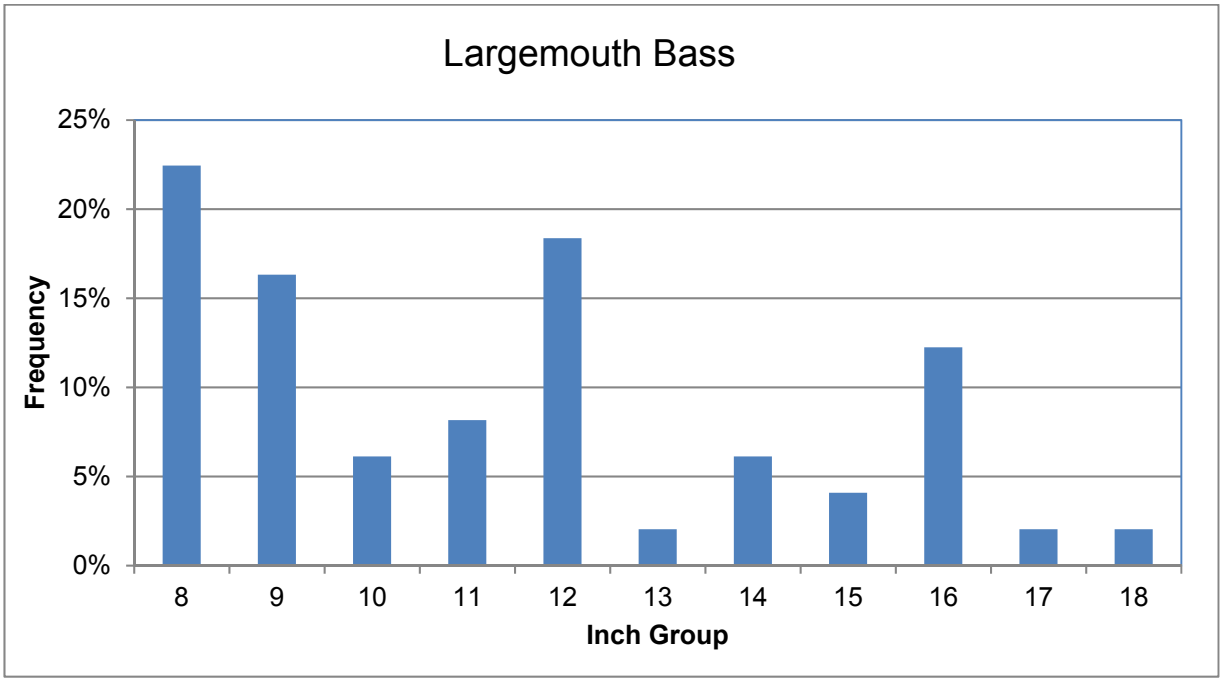

Figure 2. Length frequency distributions of largemouth bass sampled in Stoney Pond on June 12, 2017.

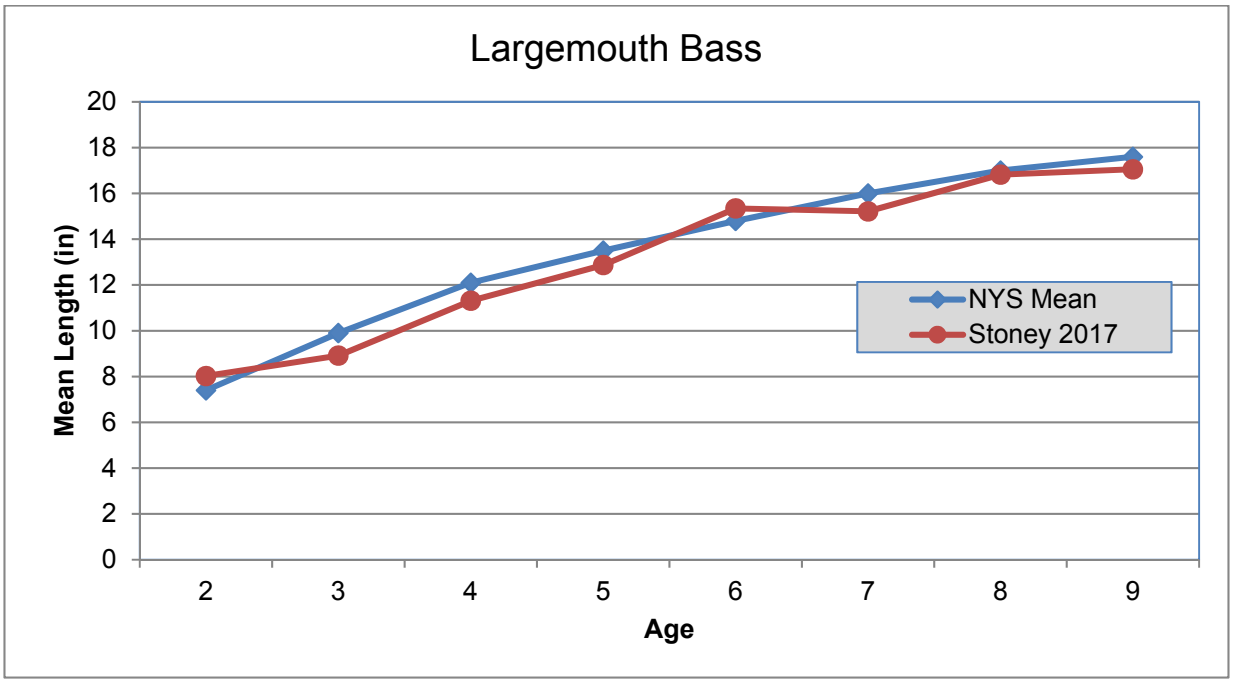

Figure 3. Observed mean length at age for largemouth bass sampled in Stoney Pond on June 12, 2017 and the New York State mean (Brooking et al. 2018).

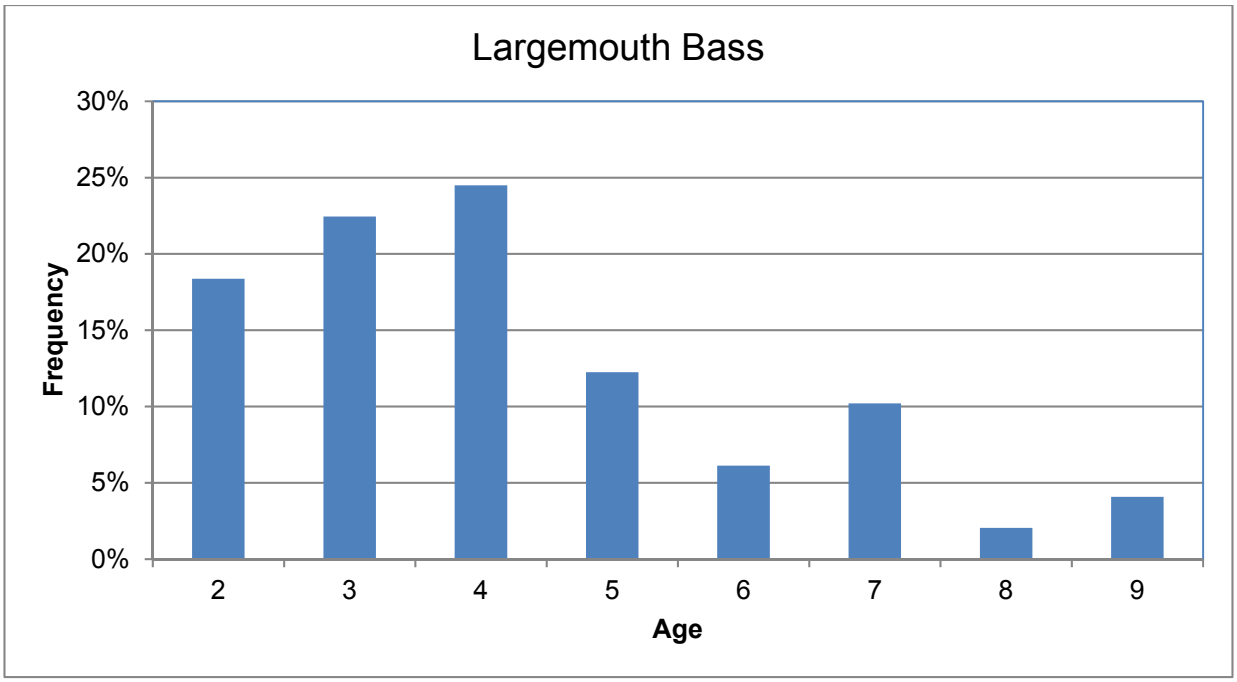

Figure 4. Age frequency distributions of largemouth bass sampled in Stoney Pond on June 12, 2017.

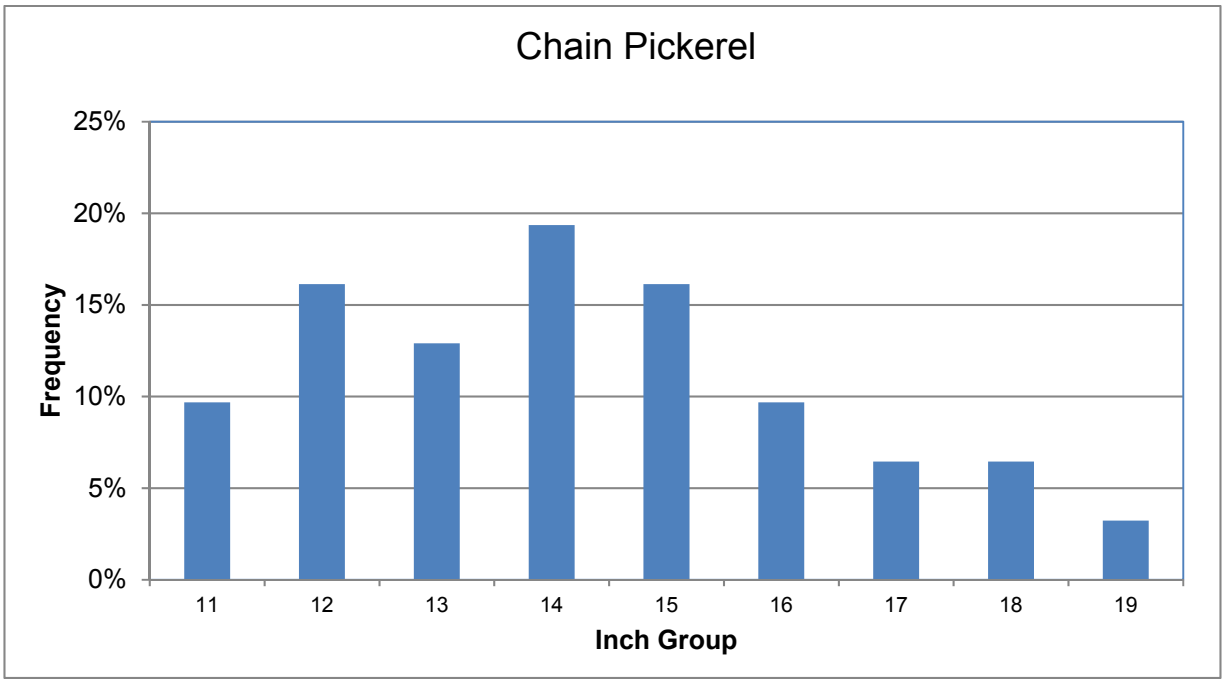

Figure 5. Length frequency distributions of chain pickerel sampled in Stoney Pond on June 12, 2017.

Panfish

Bluegill

A total of 299 bluegill were collected. The electrofishing CPUE for all size bluegill ranged from 56/h to 580 /h with an average of 299/h (SE = 118; Table 2). Bluegill lengths ranged from 1.5 to 8.5 in with fish in the 4.5 in size range being most frequent (Figure 6). Bluegill PSD was 17 and RSD_8 was 2 (Table 3). No memorable (≥10 in) or trophy (≥12 in) length bluegill were collected (Table 3). Bluegill had a mean Wr of 97 (SE = 1; Table 4). Bluegill mean length at age was just below the statewide spring night-time electrofishing mean (Brooking et al. 2018) for most ages, except for age-2, age-8, and age-9 (Figure 7). Age-1 bluegill were the most frequently collected age group (Figure 8).

Pumpkinseed

A total of 194 pumpkinseed were collected. The electrofishing CPUE ranged from 108/h to 344/h with an average of 194/h (SE = 54; Table 2). Pumpkinseed lengths ranged from 2.0 to 7.5 in with fish in the 5.0 in size range being most frequent (Figure 9). Pumpkinseed PSD was 17 and RSD_8 was zero (Table 3). No memorable (≥10 in) or trophy (≥12 in) length pumpkinseed were collected (Table 3). Pumpkinseed had a mean Wr of 102 (SE = 7; Table 4). Pumpkinseed mean length at age was just below the spring night-time electrofishing mean (Brooking et al. 2018) for all ages (Figure 10). Age-4 pumpkinseed were most frequently collected age group (Figure 11)

Yellow Perch

A total of 115 yellow perch were collected. The electrofishing CPUE ranged from 84/h to 156/h with an average of 115/h (SE = 34; Table 2). Yellow perch lengths ranged from 3.0 to 12.0 in with fish in the 4.0 in size range being most frequent (Figure 12). Yellow perch PSD was 71 and RSD_{10} was 47 (Table 3). One yellow perch was of memorable length (≥12 in) but no trophy (≥15 in) length were collected (Table 3). Yellow perch had a mean Wr of 93 (SE = 1; Table 4). Yellow perch mean length at age was above the NYS mean (Forney et al. 1993) for some ages and below for others (Figure 13). Age-1 yellow perch were most frequently collected age group (Figure 14)

Black Crappie and Rock Bass

Only two black crappie were collected, 5.1 and 10.2 in and both had a Wr of 80. Only one rock bass was collected, it was 9.1 in with a Wr of 111.

Other Fishes

Fourteen brown bullhead (*Amerius nebulosis*) were collected with a mean length of 12.0 in (SE = 1). The 24 golden shiner (*Notemingonus crysoleucas*) collected had a mean length of 5.3 in (SE = 0).

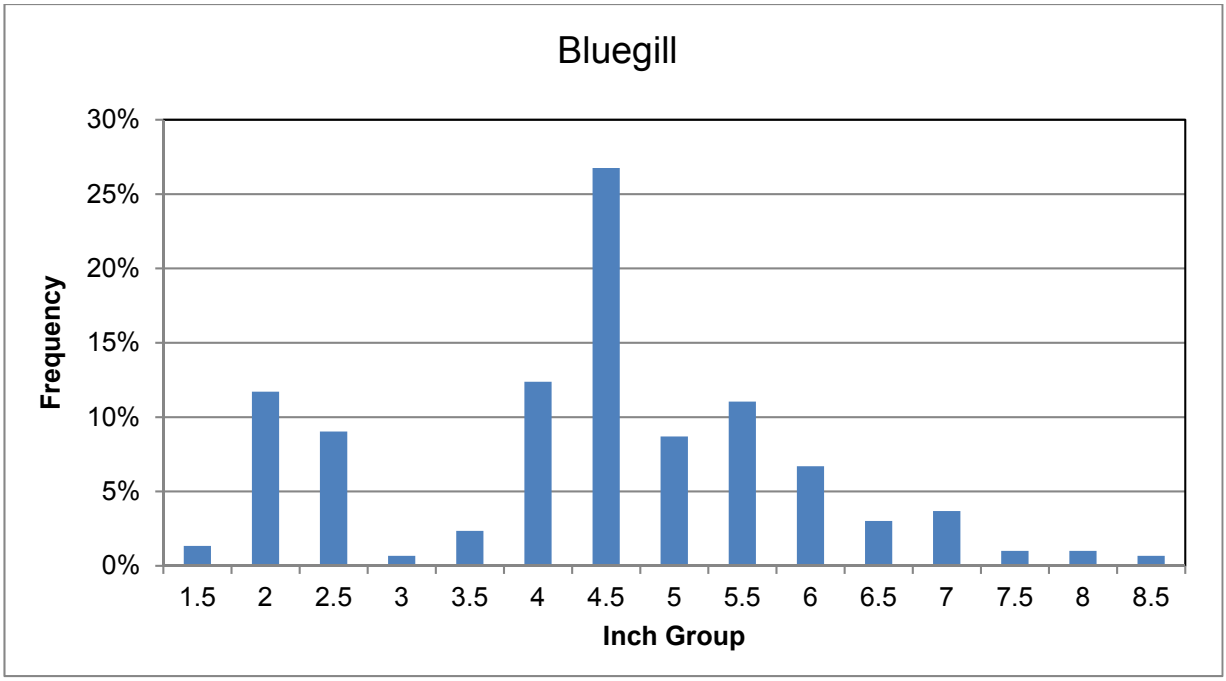

Figure 6. Length frequency distributions of bluegill sampled in Stoney Pond on June 12, 2017.

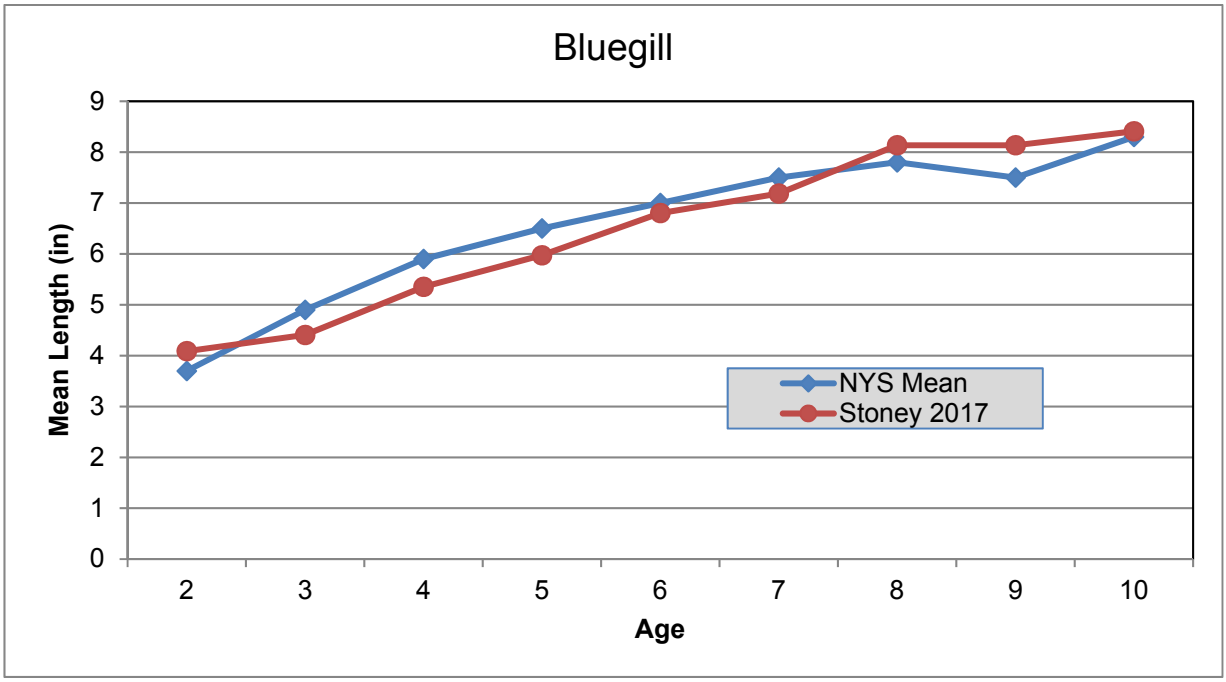

Figure 7. Observed mean length at age for bluegill sampled in Stoney Pond on June 12, 2017 and the New York State mean (Brooking et al. 2018).

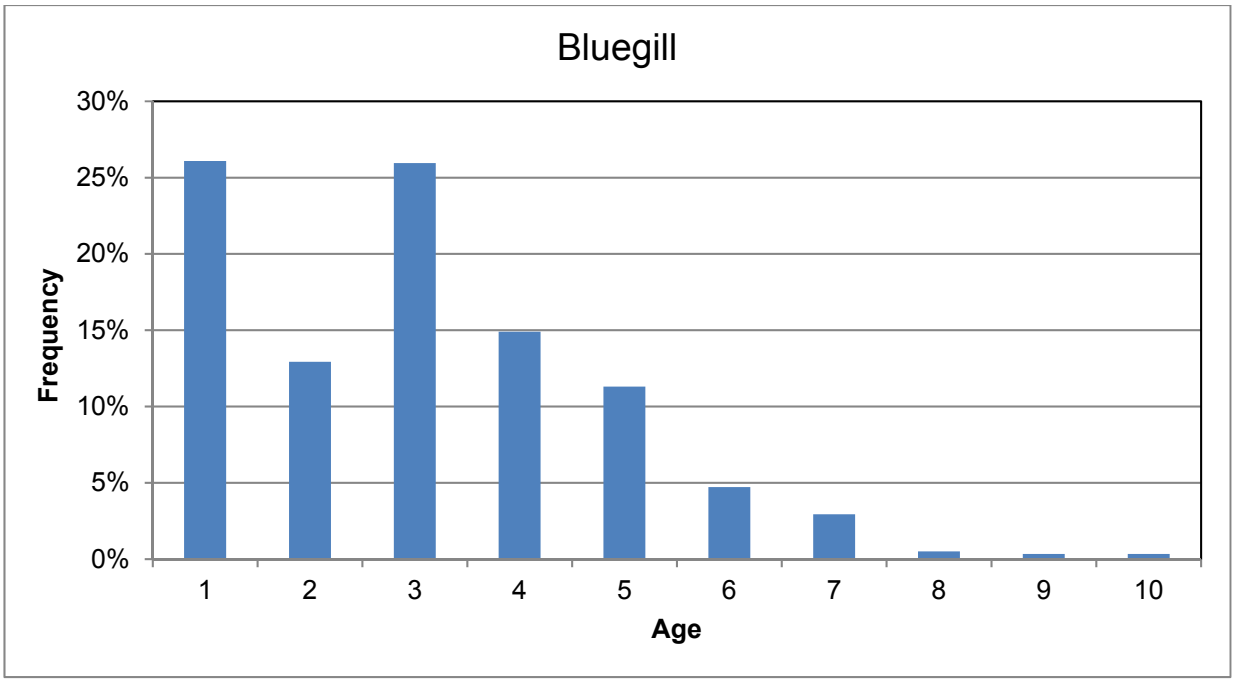

Figure 8. Age frequency distributions of bluegill sampled in Stoney Pond on June 12, 2017.

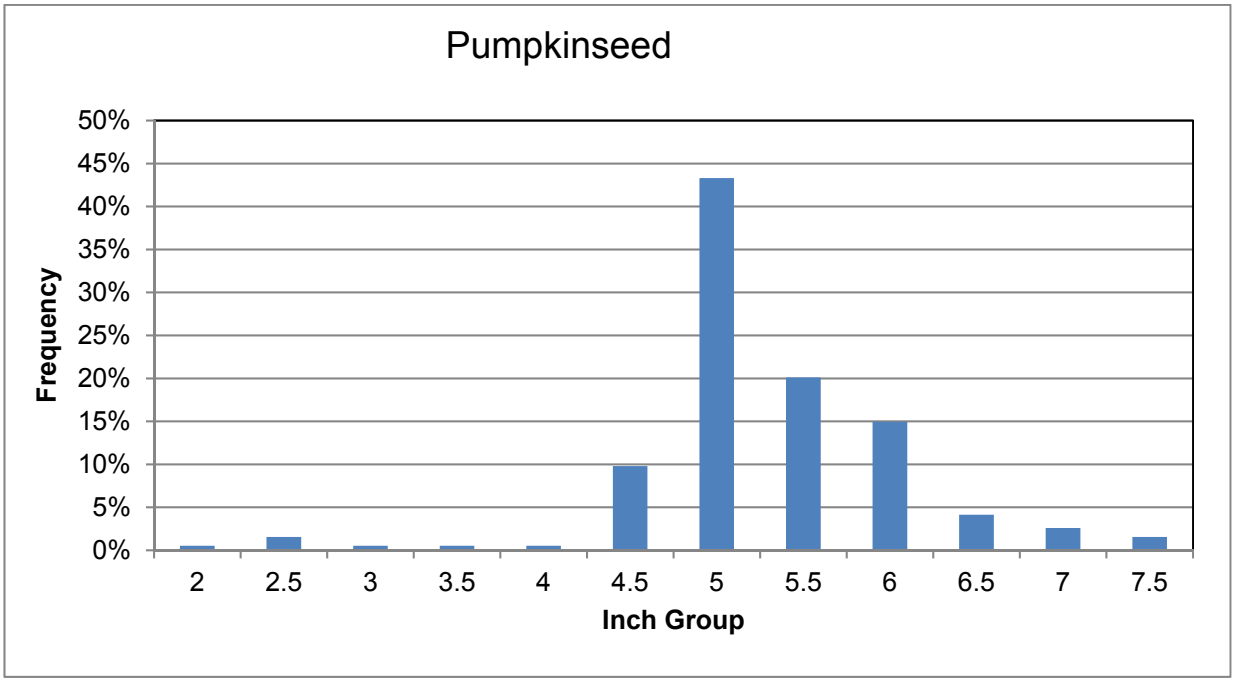

Figure 9. Length frequency distributions of pumpkinseed sampled in Stoney Pond on June 12, 2017.

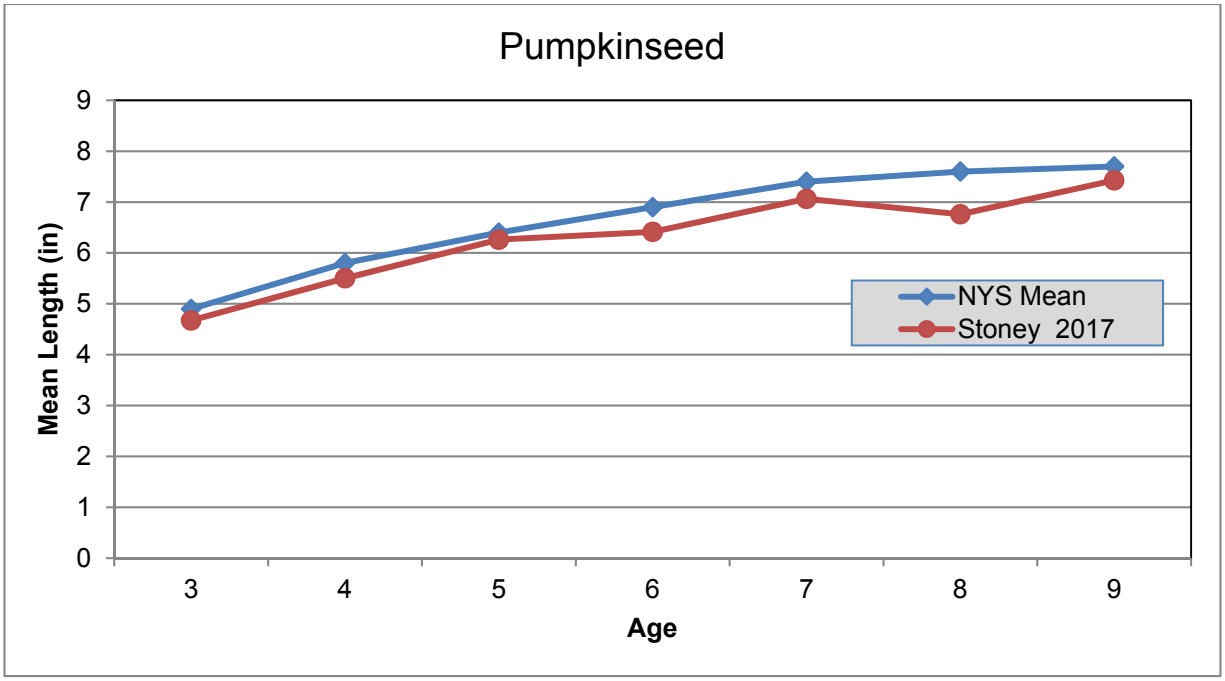

Figure 10. Observed mean length at age for pumpkinseed sampled in Stoney Pond on June 12, 2017 and the New York State mean (Brooking et al. 2018).

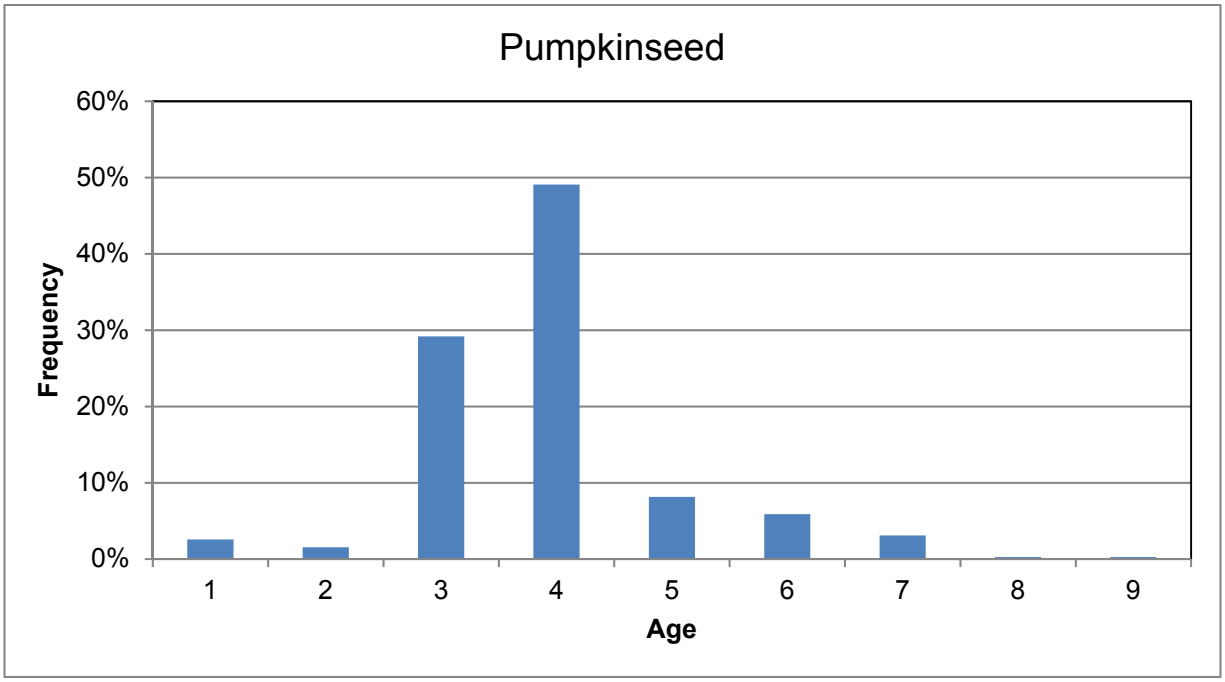

Figure 11. Age frequency distributions of pumpkinseed sampled in Stoney Pond on June 12, 2017.

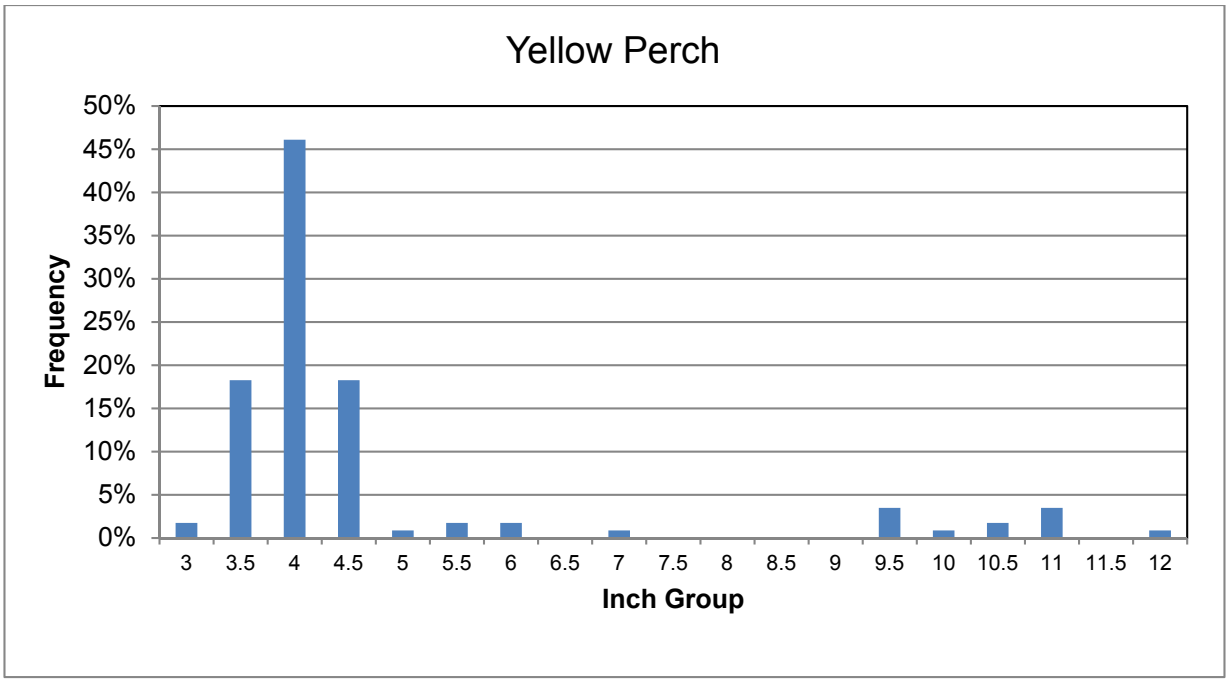

Figure 12. Length frequency distributions of yellow perch sampled in Stoney Pond on June 12, 2017.

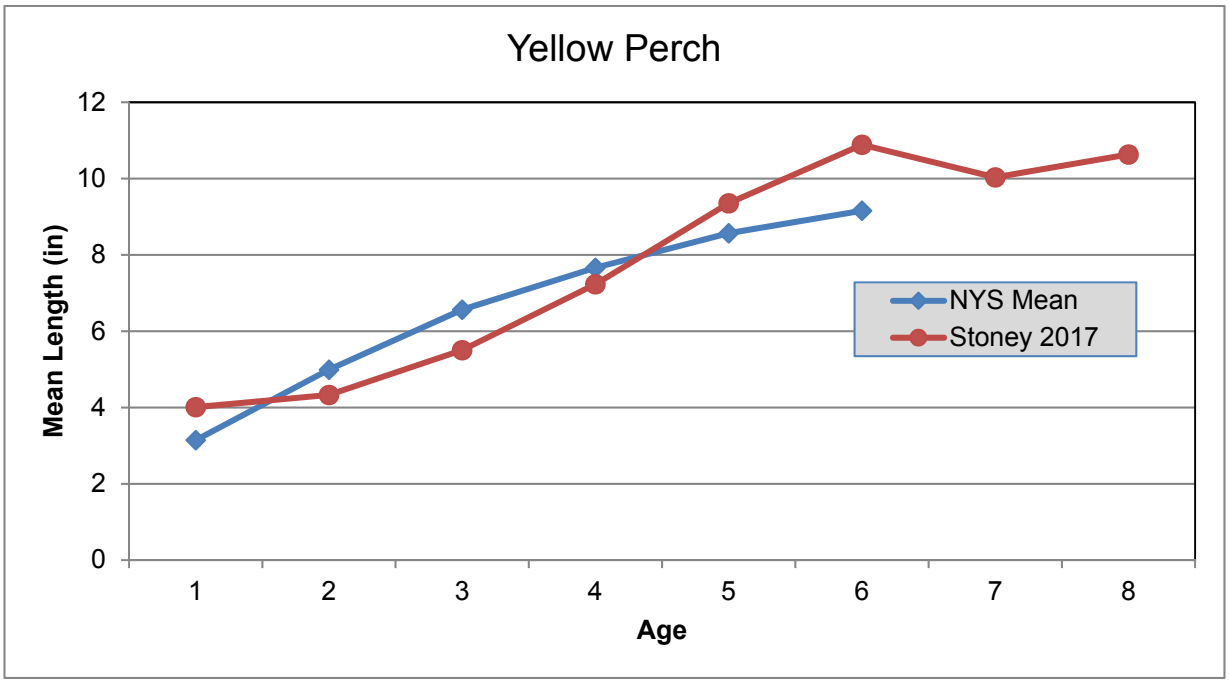

Figure 13. Observed mean length at age for yellow perch sampled in Stoney Pond on June 12, 2017 and the New York State mean (Forney et al. 1994).

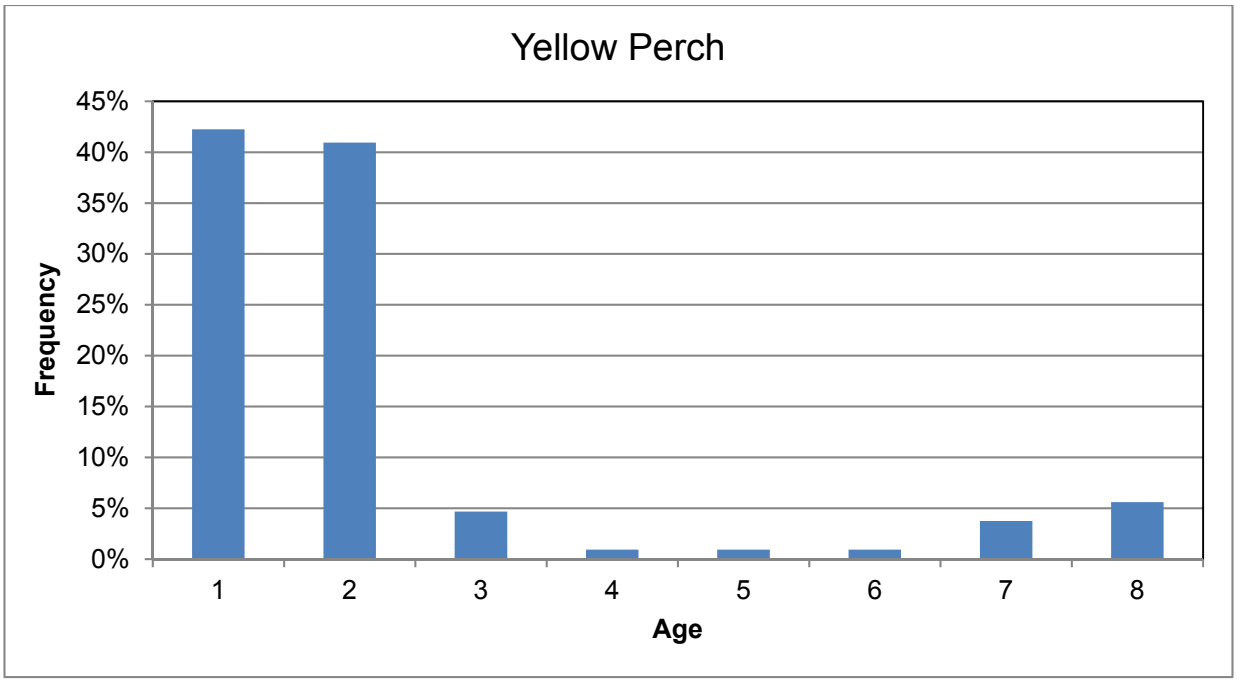

Figure 14. Age frequency distributions of yellow perch sampled in Stoney Pond on June 12, 2017.

Discussion

Water Chemistry

During the June 12th electrofishing survey, the surface water temperature was above the maximum of 77° F suggested in the Centrarchid Sampling Manual (Green 1989), and was 79° F. This was, most likely, due to consecutive days of above normal temperatures with daytime temperatures getting into the 90's. Most waters in the area were in the low to mid-60-degree range just days before (Erieville Reservoir was 64° F on June 10, and Cazenovia Lake was 64° F on June 11). Because of that I do not feel that this slightly higher temperature altered the survey results and therefore the survey data is reliable.

Species Collected

The 9 species observed in Stoney Pond is the lowest number of species collected thus far for Madison County waters surveyed in recent years (Table 1). It should be noted, however, that Stoney Pond is also the smallest water surveyed and that the only gear used was boat electrofishing. Seventeen species were collected in Cazenovia Lake (Everard 2013), 16 in Eaton Brook Reservoir (Everard 2016), 15 in Lake Moraine (Everard 2015), 18 in Upper and Lower Leland Ponds (Everard 2017) and 11 in Lebanon Reservoir (Table 1; Everard in press). However, four more species were collected in 2017 than in the 1979 survey (Appendix 2).

<u>Gamefish</u>

Largemouth Bass

The mean electrofishing CPUE of 22/h (SE = 10) for largemouth bass ≥ 12 in was well above the spring statewide mean of 14/h (SE = 1; Brooking et al. 2018). The electrofishing CPUE of 30/h (SE = 14) for largemouth bass ≥10 in was also well above the statewide average of 17/h (19 Standard Deviation, SD; Perry et al. 2014). According to Green (1989), this catch rate yields a first order density estimate of 10.2 largemouth bass ≥10 in per acre, which indicates a moderate bass population density. Anderson (1980) suggests a balanced bass population has a PSD range of 40 to 70, and RSD_{15} of 10 to 40. So, the Stoney Pond largemouth bass PSD of 48 and RSD_{15} of 10, just falls within the balanced population range. The length frequency distribution also indicates a well-balanced population. The largemouth bass mean Wr of 100 (SE = 2), was just above the spring statewide Wr average of 98 (SD = 7; Perry et al. 2014). The Wr index uses a range of 95 to 105 as the benchmark for fish in good condition (Pope and Kruse 2007). For its small size, Stoney Pond should provide a good angling experience for anglers targeting largemouth bass based on catch rates and size structure of the population.

Chain Pickerel

Chain pickerel comprise a major component of the Stoney Pond fish community. The CPUE of 10 (SE = 3) for quality size chain pickerel is comparable to nearby Lake Moraine [CPUE = 11 (SD= 3; Everard 2015)], which is considered a good chain pickerel angling destination. These quality size pickerel can offer a good angling opportunity but are most likely an underutilized resource by local anglers.

<u>Panfish</u>

Bluegill

The mean CPUE of 231/h (SE = 99) for stock size bluegill was well above the statewide mean of 91 (SE = 9; Brooking et al. 2018). And though few preferred size bluegills were collected, the resulting CPUE of 5/h (SE = 3) was just below the statewide mean of 6/h (SE = 2; Brooking et al. 2018). Anderson (1985) suggests a balanced bluegill population should have a PSD range of 20 to 60, and a RSD_8 of 5 to 20. Both the Stoney Pond bluegill PSD and RSD_8 fall below those suggested ranges and would indicate an unbalanced population with few bluegill ≥8 in. Bluegill had slow growth rates for some ages, by NY standards, but it's safe to assume "stunting" is not an issue as growth rates were slow, but not "drastically" so. Many definitions of stunting exist, but Heath and Roff (1987) define stunting as a population with "drastically" reduced growth rates. Bluegill were also in good condition with the mean Wr for stock size bluegills (97) was just below the NYS mean of 102 (SE = 0; Brooking et al. 2018). The data suggest that the lack of larger size bluegill is most likely related to angler harvest, and not an overabundant population.

Pumpkinseed

The mean CPUE of 189/h (SE = 50) for stock size pumpkinseed was well above the statewide mean of 70 (SE = 9; Brooking et al. 2018). If we assume pumpkinseed stock density ranges are similar to bluegill, the PSD of 17 and RSD_8 of zero would also

indicate an unbalanced population. The pumpkinseed mean Wr (103) for stock size was equal to the NYS mean of 103 (SE = 0; Brooking et al. 2018). The lack of memorable and trophy sized pumpkinseeds, as with bluegill, is most likely due to angler harvest.

Yellow Perch

Electrofishing catch rates of ≥50 yellow perch/h would suggest high abundance (Forney et al. 1994). Yellow perch mean length at age-4 can also be used to estimate abundance with a mean length of 8.5 in (215 mm) suggesting low abundance, while a mean length of 7 in (180 mm) suggesting high abundance. The Stoney Pond yellow perch mean length at age-4 of 7.2 in (184 mm) suggest high abundance which corresponds with the electrofishing CPUE. Like some of the other species, growth rates were slow compared to NY standards, but not drastically so. The yellow perch PSD of 71, is above the accepted range of 30 to 60 (Anderson and Weithman 1978) for a balanced population. Currently the population seems to be made up of young fish (age-1 and 2) and old (age-7 and 8) with few fish in the mid-age ranges. Indicating that recruitment is likely highly variable for yellow perch on Stoney Pond.

Black Crappie

It should be noted that black crappie can often be difficult to collect by electrofishing. Black crappie recruitment can also be highly variable from year to year. Black crappie are therefore, more than likely, more abundant than the sampling indicates

Recommendations

Management recommendations based on the results of this survey are:

- Continue with statewide angling regulations for all species.

Acknowledgement

I would like to thank Ian Blackburn (Aquatic Biologist), and Greg Cocquyt (Fisheries and Wildlife Technician), for their hard work during fish sampling efforts on Stoney Pond in 2017. I would also like to thank Scott Prindle (Aquatic Biologist), David Lemon (Region 7 Fisheries Manager, retired) and Jeff Loukmas (Warmwater Unit Leader) for their careful review and comments on early drafts of this report. And a special thanks to Region 8 Fisheries staff for use of their cataraft electrofishing boat for this survey.

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Appendix 1. Lengths used for stock, quality, preferred, memorable, and trophy sizes for species collected from Stoney Pond, NY on June 12, 2017.

	Stock		Quality		Preferred		Memorable		Trophy	
Species	**mm**	**in**	**mm**	**in**	**mm**	**in**	**mm**	**in**	**mm**	**in**
Chain Pickerel	250	10	380	15	510	20	630	25	760	30
Brown Bullhead	130	5	200	8	280	11	360	14	430	17
Rock Bass	100	4	180	7	230	9	280	11	330	13
Pumpkinseed	80	3	150	6	200	8	250	10	300	12
Bluegill	80	3	150	6	200	8	250	10	300	12
Largemouth Bass	200	8	300	12	380	15	510	20	630	25
Black Crappie	130	5	200	8	250	10	300	12	380	15
Yellow Perch	130	5	200	8	250	10	300	12	380	15

Appendix 2. Fish species collected in 1979 and 2017 electrofishing surveys on Stoney Pond, NY. X indicates that species was collected.

Species	**Scientific Name**	**1979**	**2017**
Chain Pickerel	*Esox niger*	X	X
Golden Shiner	*Notemigonus crysoleucas*		X
Brown Bullhead	*Ameirus nebulosis*	X	X
Rock Bass	*Ambloplities rupestris*	X	X
Pumpkinseed	*Lepomis gibbosus*	X	X
Bluegill	*Lepomis macrochirus*		X
Largemouth Bass	*Micropterus salmoides*	X	X
Black Crappie	*Pomoxis nigromaculatus*		X
Yellow Perch	*Perca flavescens*		X
Species		5	9