



Fall 2019

Introduction:

Historically, Lake Summerset Association (LSA) has been able to utilize the assistance of the Illinois Department of Natural Resources (IDNR) for fisheries surveys. Currently, the IDNR is not providing aid to private lake communities regarding fisheries. However, there is an understanding for the need to collect data at Lake Summerset to effectively manage the fishery and to maintain a level of fishing expected by the membership. JadEco was contacted to assist with the data collection and to provide recommendations on the path forward for the fishery at Lake Summerset.

This report provides information on the data collected by JadEco as well as comparisons to previous IDNR reports that were available.

Daytime DC Electrofishing was conducted for a total of 70 minutes in various areas around the lake on October 25, 2019. Water clarity readings were 4 feet the day of the survey, and water temperature was at 49.1°F. The air temperature was at 37.2°F and conditions were unseasonably cooler. The weather turned cold much earlier than normal this fall, but we still observed a good survey on Lake Summerset.

We had a lot of help with volunteers observing and assisting with the survey. There were two netters in the main survey boat, and there were several follow boats either picking up fish the main boat missed or floated up late as well as just observing the fishery first hand. A total of 1,006 fish were collected during the survey, with an overall CPUE effort of 14.36 fish / minute. Our objective is 6 or more fish per minute. We had a very high collection of young bass that increased the overall CPUE and if that year class was omitted from the calculation, we collected approximately 7.67 fish per minute.

A total of 11 species of fish were observed during this survey. Seven species comprised valuable sport fish, consisting of largemouth and smallmouth bass, bluegill, black crappie, yellow perch, muskie, and northern pike. The remaining 4 species were white suckers, bullhead, bluntnose minnows, and silversides. The entire collection was desirable species with only 1 bullhead being collected as undesirable. Three white suckers represented non-game fish, and aren't necessarily considered undesirable.

To effectively evaluate the fishery, we utilize several standards established in scientific literature. These consist of analysis for catch per unit effort (CPUE) per species, total catch per unit effort, proportional stock density (PSD) on important



game species, and relative weight (Wr) were analyzed. These metrics provide information on the gamefish population density and potential trends in the fishery. They also provide an understanding of the size structure of game species within the lake and provide information on length to weight relationships to better understand if your game fish are relatively fat, or relatively thin. Potential changes in the predator / prey relationships and available forage can be interpreted through these metrics.

Summary of Fisheries Data:

Overall, the fishery at Lake Summerset is maintaining an abundant population of largemouth bass, while still allowing quality pan fishing experiences. There was a high collection rate of younger largemouth bass due to very successful spawning in 2019. We've observed this in several lakes in Northern Illinois this fall. Largemouth bass comprised nearly 62% of the entire collection due to the biomass of young of the year bass. We subsampled bass under 8" for the first 20 minutes of the survey due to their density. The largemouth bass population structure is quite good right now in Lake Summerset with a good distribution of bass in all size categories. However, there were no bass collected between 9" and 9.9". The bass had very good relative weights, indicating the opportunity for growth and for anglers to catch relatively fat largemouth bass during their angling outings.

We also observed a high collection of black crappie that were in good condition with relative weights averaging 103. The crappie were collected at a rate of 1.31 fish per minute with 92 fish collected.

Bluegill relative weights were good at 99 and there was decent distribution of larger bluegill in the survey. Bluegill were collected up to 8.7" in length.

We observed 15 smallmouth bass with a CPUE of 0.21 and excellent relative weights. Size ranges of smallmouth bass collected indicate decent spawning is occurring, unless small bass were recently stocked.

We also collected one muskie and 3 northern pike during the survey along with three species of forage (bluntnose minnows, silversides, and white suckers).

Largemouth Bass:

The fall 2019 survey had a very high collection rate for largemouth bass at 8.86 fish per minute. This was due to a strong year class of bass in 2018/2019 seasons. Nearly 65% of the bass collection was under 8" in length, and that size range was subsampled the first 20 minutes of the survey. Even with the high collection of bass, relative weights were good with an average at 101 and a range from 80 to 120. The objective range is between 90 and 110. These are excellent, and represent a



population that is likely having good growth rates. This can only be verified through an age and growth study.

We utilized a fisheries management tool known as the PSD or 'proportional stock density' metric to analyze the size structure of the bass population. This is a comparison of the stock (>8") to quality (>12") size bass in the sample. The objective range for largemouth bass PSD is 40-70. The PSD for fall 2019 bass was at 76 and is slightly above our objective range. RSD 14 (comparison of the stock size to bass greater than 14") was at 32, above the objective range of 10 to 20. This means that 32% of all bass collected larger than 8" were over 14" in length. I anticipate anglers are enjoying relatively good fishing at Lake Summerset for fat, healthy bass.

Average bass lengths were at 6.5" with a range from 2.6" young of the year to 19.4" adults.

Bluegill:

Catch per unit effort for bluegill was at 2.9 fish per minute with a total of 203 fish collected in 70 minutes of electrofishing. This is within our objective range of 2.0 - 4.5 fish / minute. The 203 bluegills ranged in size from 1.4" to 8.7" with an average of 3.9". Bluegill larger than 8" averaged ½ pound in weight. Bluegill average relative weight was good at 99 for fall 2019. The average Wr was within our objective range of 90-110 for bluegill with a range of 61 to 145.

As with largemouth bass, we use the proportional stock density (PSD) metric to evaluate the size structure of the population. The PSD for bluegill evaluates all bluegill over 3" compared to the bluegill over 6". The bluegill PSD was at 15 and was under our objective range of 20 to 40. This is likely due to a high collection of bluegill between 3" and 4.9" in length. The RSD7 for bluegill was at 12, and RSD 8 was at 6.

When comparing data to the 2015 IDNR report, Wr for bluegill has dropped since the 2015 survey but is still within our objective range. The PSD has also improved since the 2011, and 2015 surveys from 5 to 15. The upper limit of the size range for bluegill has increased with the largest bluegill collected in 2019 at 8.7", 2015 at 8.0" and for 2011 at 7.5".

Smallmouth Bass:

Smallmouth bass were well represented in the survey with 15 fish collected at a rate of 0.21 fish per minute. Smallmouth ranged in size from 4.1" young of the year to 16.7" adults. The average bass collected was 8.8". The largest bass was 2.4 pounds and relative weights for smallmouth bass were excellent at 129 average. Relative weights ranged from 110 to 149.



The smaller sizes indicate good natural spawning and recruitment for smallmouth bass. This is excellent since most impoundments in this area do not exhibit good smallmouth recruitment with the presence of a dense largemouth bass fishery that is represented at Lake Summerset.

Black Crappie:

We observed a high collection of black crappies this fall with 92 individual fish collected with a CPUE of 1.31 fish per minute. There is good representation for multiple year classes of crappie. Crappie were collected from 2.2” to 12” with an average size of 5.5”. Nearly 33% of the crappie collected were larger than 9”, and 13% were greater than 10”. This indicates some excellent fishing for black crappie at Lake Summerset in the near future. The gap in the middle range of crappie may provide a temporary lull in the fishing in a couple years, but strong recruitment of smaller crappie will provide another strong year class shortly after. Relative weights ranged from 91 to 135 with an average of 103.

Muskie and Northern Pike:

One muskie was collected at 33.9”. We collected 3 northern pike, and saw a few more that the netters were not able to capture. The northern captured ranged from 13.1” to 29.1” and averaged 18.7”. The relative weights for northern were within objective range at 95.

Yellow Perch:

We collected 11 yellow perch at a rate of 0.16 fish per minute. They ranged in size from 4.4” to 11.5” with an average size of 7.7”. Relative weights for yellow perch were very low with an average of 81 and ranging from 76 to 86. The largest perch had a weight of 0.71 pounds and a low relative weight at 86. Perch that length should weigh around 0.82 pounds.

Recommendations:

Continue to conduct electrofishing fish surveys to follow trends in the fish population. By performing annual surveys, any changes in trends or concerns with the fishery can be rectified more quickly through creel and size limits changes and stocking programs. Previous data collection was too sparse to actively manage the fishery.

The largemouth bass fishery is doing well, and monitoring the abundance of bass in the 12” to 13.9” size range is needed. There was a high collection of this size range and is likely influencing the higher than objective PSD for bass. If this trend continues, changes to the daily creel limits may be needed to reduce the biomass in this range.



The bluegill PSD and size ranges have improved since the previous surveys performed by IDNR. No changes are currently recommended to the bluegill fishery.

Fish Habitat:

The Lake Summerset Association should work to place quality fish habitat throughout the lake. Placement of both shallow and deep structure would benefit the fishery, and in particular the bass fishery. Many association lakes require structure be placed only in deep water due to swimming and boating concerns so any volunteers should be working with the Association prior to placement of any structures in the lake.

Along with placement of structure, the aquatic plant management program is important to the fishery. Aquatic plants provide oxygen to living organisms, nurseries to young fish, and a food supply of aquatic invertebrates to bolster the food chain for these growing fish. An aquatic plant management program is needed to ensure the establishment of quality native aquatic plants. Developing a plant management program or strategy would benefit the fishery to ensure the plants are managed to improve the fishery while maintaining recreational use of the lake.

The management plan should consider treatments for non-native invasive species such as Curly leaf Pondweed. Curly leaf pondweed can grow in dense beds, which outcompete native aquatic plants. They can also cause an increase in phosphorous concentrations, in turn, possibly cause an increase in algae blooms when the plants die during the mid-summer. Aquatic plant species diversity is better for overall fishery health as well. By conducting early spring chemical treatments, curly leaf pondweed can be controlled while still allowing the natives to grow. The Lake Summerset Association is currently working on a plant management program.

Size and creel limits:

Current creel limits should remain as they are, and changes may be needed based on future fish surveys.

The Association should encourage the release of larger bluegill by anglers to improve the size distribution of bluegill. By harvesting no more than five bluegills over 8" per day, the bluegill fishery can be improved. At this time, we recommend an educational effort to the membership on why this is beneficial. We can assist by providing articles for publication, if requested. By starting an educational program, a level of acceptance can be created in the event it is needed to mandate this change.

Stocking:

Stocking is always subjective to budgetary constraints, and all recommendations may not be able to be met. Stocking recommendations should always be re-evaluated based on subsequent fish population sampling.



- 1) If walleye are a desired species for the anglers, annual (or every other year) stockings of walleye can be done to ensure fishing opportunities for walleye continue. These should be stocked in the fall of the year at 6"-8" in size. Stocking densities should be no more than 10 per acre.
- 2) If channel catfish are desired by the membership, an annual, or every other year, stocking can be done at an 8"-10" size range. The larger the catfish, the better their stock survival. Please note that a MINIMUM of 8" stocking size is required. Fish smaller than 8" are more likely to be consumed by other sport species as prey. Stocking densities of 10 fish per acre is a good guideline. We are not seeing catfish in our surveys at this time.
- 3) Periodic stocking of muskie is necessary to maintain a muskie fishery. Previous recommendations were to stock 140 muskie every third year. While this recommendation is fine, I prefer to stock annually or every other year to reduce the gaps in size structure. Stocking 90 every other year would be recommended.
- 4) ***If there is a requested to perform any stocking beyond these recommendations between this report and any future surveys, JadEco should be contacted for discussion and opinion.***

If budgetary constraints are a problem, stocking every other year may be an option, keeping in mind limited year-class strength and size gaps in the fish that may be observed by fisherman and their creel.



Table 1: Catch Per Unit Effort (CPUE) by species

Species:	Number			Fish/Minute			Objective
	2019f	('15f**)	('11f**)	2019f	('15f**)	('11f**)	
Largemouth Bass:	620*	(218)	(112)	8.86*	(3.63)	(1.9)	1.0 - 2.5
Bluegill:	203	(209)	(143)	2.9	(1.6)	(3.48)	2.0 - 4.5
Smallmouth Bass:	15	(18)	(3)	0.21	(0.30)	(0.05)	-----
Black Crappie:	92	(---)	(---)	1.31	(---)	(---)	0.2 - 0.8
Yellow Perch:	11	(---)	(---)	0.16	(---)	(---)	-----
Muskie:	1	(---)	(---)	0.01	(---)	(---)	-----
Northern Pike:	3	(---)	(---)	0.04	(---)	(---)	-----
Walleye:	---	(1)	(5)	---	(0.02)	(0.08)	-----
Channel Catfish:	---	(1)	(1)	---	(0.02)	(0.02)	-----
White Sucker:	3	(---)	(---)	0.04	(---)	(---)	-----
Bullhead:	1	(---)	(---)	0.01	(---)	(---)	-----
Carp:	---	(9)	(10)	---	(0.15)	(0.17)	> 0.25
Bluntnose Minnow:	2	(---)	(---)	0.03	(---)	(---)	-----
Silverside:	55	(---)	(---)	0.79	(---)	(---)	-----
Total	1,006	(456)	(271)	14.36	(5.72)	(5.67)	6.00 +

* Under 7" sampled only first run. Very high numbers of bass under 7" fall 2019. Excluding all bass under 8" from CPUE would provide a CPUE for largemouth bass at 2.17 fish per minute, and a total CPUE of all fish at 7.67 fish per minute

** 2015 and 2011 are from IDNR fisheries reports.

Table 2: Proportional Stock Density (PSD)

Species:	2019f	('15f**)	('11f**)	Objective
Largemouth Bass:	76	(57)	(79)	40-70
Bluegill:	15	(5)	(5)	20-60
Black Crappie:	100	(---)	(---)	30-60
Smallmouth Bass:	83	(63)	(33)	30-60
Yellow Perch:	63	(---)	(---)	30-60
Walleye:	---	(---)	(80)	30-60

** 2015 and 2011 are from IDNR fisheries reports.

Table 3: Relative Weight (Wr)

Species:	Wr (Ave)			Range			Objective (90-110)
	2019f	('15f**)	('11f**)	2019f	('15f**)	('11f**)	
Largemouth Bass:	101	(105)	(94)	80-120	(n/a)	(n/a)	
Bluegill:	99	(109)	(88)	61-145	(n/a)	(n/a)	
Black Crappie:	103	(n/a)	(n/a)	91-135	(n/a)	(n/a)	
Smallmouth Bass:	129	(93)	(95)	110-149	(n/a)	(n/a)	
Yellow Perch:	81	(n/a)	(n/a)	76-86	(n/a)	(n/a)	
Northern Pike:	95	(97)	(n/a)	91-97	(n/a)	(n/a)	
Walleye:	---	(86)	(80)	---	(n/a)	(n/a)	

** 2015 and 2011 are from IDNR fisheries reports.



Table 4: Length Ranges by Species

Species:	Length:			Average		
	<i>2019f</i>	<i>('15**f)</i>	<i>('11f**)</i>	<i>2019f</i>	<i>('15f**)</i>	<i>('11f**)</i>
LM Bass:	2.6-19.4"	(2.5-19.5")	(2.4-19.3")	6.5"	(n/a)	(n/a)
Bluegill:	1.4-8.7"	(0.75-8")	(1.2-7.5")	3.9"	(n/a)	(n/a)
Smallmouth Bass:	4.1-16.7"	(3-18.1")	(n/a)	8.8"	(n/a)	(n/a)
Black Crappie:	2.2-12"	(n/a)	(n/a)	5.5"	(n/a)	(n/a)
Yellow Perch:	4.4-11.5"	(n/a)	(n/a)	7.7"	(n/a)	(n/a)
Muskie:	33.9"	(2.6-4.4")	(n/a)	33.9"	(n/a)	(n/a)
White Sucker:	16-19.1"	(2.6-4.4")	(n/a)	17.9"	(n/a)	(n/a)
Walleye:	- - -"	(12")	(9.4-24.8")	- - -"	(n/a)	(n/a)
Northern Pike:	13.1-29.1"	(n/a)	(n/a)	18.7"	(n/a)	(n/a)
Bluntnose Minnow:	2.4-3.3"	(n/a)	(n/a)	2.9"	(n/a)	(n/a)
Silverside:	2-3.6"	(n/a)	(n/a)	2.9"	(n/a)	(n/a)
Bullhead	10"	(n/a)	(n/a)	10"	(n/a)	(n/a)

** 2015 and 2011 are from IDNR fisheries reports.











