

# Comprehensive Fisheries Survey of Sawyer Lake, Langlade County Wisconsin During 2010

Waterbody Identification Code: 198100



Dave Seibel  
Fisheries Biologist  
Antigo  
November 2012



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## EXECUTIVE SUMMARY

A comprehensive fisheries survey was conducted on 149-acre Sawyer Lake in spring, summer, and fall 2010. All gamefish and panfish populations are maintained through natural reproduction and are in good condition in terms of numbers and size quality at this time. Largemouth bass were the most abundant gamefish, followed by walleye, northern pike, and smallmouth bass in decreasing order of abundance. The population estimate (PE) for 8 inch and larger largemouth bass (adults) was 12.6 per acre. Forty-eight percent of largemouth bass adults were within the 12–16 inch protected slot with 47 percent below the slot and 5 percent above the slot. The adult walleye PE was 2.6 per acre. The walleye had excellent size structure with 89 percent of 10 inch and larger fish also greater than the one fish over 14 inch size limit. Seventeen percent were over 20 inches. Northern pike adults (12 inches and greater) were estimated at 1.3 per acre. Pike had good size structure with 32 percent of adults over 21 inches. The population estimate (PE) for 8 inch and larger smallmouth bass (adults) was 1.2 per acre. Thirty-two percent of smallmouth bass adults were within the 12–16 inch protected slot with 68 percent below the slot and 0 percent above.

Panfish abundance was led by yellow perch and followed by rock bass, black crappie, bluegill, pumpkinseed sunfish, and yellow bullhead in decreasing order of abundance. Panfish growth rates are above average for this part of the state which is also reflected in better than average panfish size structures. There are good percentages of quality sized panfish present.

Nongame forage species found in decreasing order of abundance were white sucker, blackchin shiner, and bluntnose minnow. These species are native to this part of the state and lakes of this type and provide important forage and other ecological functions.

I recommend continuing to manage Sawyer Lake primarily for walleye, bass, and panfish. No changes in fishing regulations (length limits, bag limits, etc.) are urgently needed at this time. The walleye population may benefit from a regulation change from the 1 fish over 14 inch current regulation, to either a 15 or 18 inch minimum length limit. This potential regulation change proposal should be discussed with anglers and lake association members to see if there is support for such a change. If so, this proposal should be initiated and proceed to the Conservation Congress/Wisconsin DNR Spring Hearing process. Stocking of any species is not necessary, nor recommended at this time.

### Lake and Location:

Sawyer Lake (T32N R14E Sec. 12) is located in eastern Langlade County in the Town of Wolf River and lies partially within the Chequamegon-Nicolet National Forest. It is 4 miles north of Langlade and the crossroads of state highways 64 and 55 and 20 miles northeast of Antigo. Sawyer Lake is classified as a deep seepage lake and is in the Wolf River drainage which ultimately flows to Lake Michigan. It is connected to Jessie Lake, which is classified as a shallow headwater drainage lake, via a connecting stream. We would have liked to survey Jessie Lake at the same time as this survey but drought and low water levels prevented us from being able to use the connecting channel to access Jessie Lake. There are no other inlets to Sawyer Lake and there are no outlets.

### Physical and Chemical Attributes (Steuck, Andrews, and Carlson 1977):

**Morphometry:** 149.1 acres, 31 feet maximum depth, and 5.23 miles of shoreline (1970 WDNR map)

**Watershed:** 0.8 square miles including 53 acres of adjoining wetlands (Jessie Lake area)

**Lake Type:** Seepage

**Basic Water Chemistry:** Medium hard water – alkalinity 85 mg/l, conductance – 198  $\mu$ mhos, pH – 7.9

**Water Clarity:** Clear water of high transparency; Secchi disk readings were measured each day of the 2010 surveys and averaged 16.1 feet (14 measurements); the deepest reading (19.0 feet) was found on April 2 and the shallowest (7.5 feet) on October 6 when an algal bloom was noted

**Littoral Substrate:** 35% gravel, 35% sand, 20% muck, and 10% rubble

**Aquatic Vegetation:** Sparse as a whole but moderate in the northern basins

**Winterkill:** None

**Boat Landing:** One concrete ramp with parking for 6 vehicles with trailers and 2 unimproved accesses with roadside parking

**Other Features:** Shoreline is surrounded by hardwood upland with a small portion of the bordered by bog and meadow wetlands

Purpose of Survey: Assess status of gamefish and panfish populations and develop management recommendations.

Dates of Fieldwork: Ice-Out Fyke Netting (target gamefish): April 2–8, 2010  
Boom Electrofishing (entire shoreline; target varies): April 9 (target gamefish), April 29 (target all species), and October 6, 2010 (target gamefish)  
Panfish Fyke Netting (target panfish): May 24–27, 2010

## BACKGROUND

The first record of any type of fish management work on Sawyer Lake is stocking done starting in 1938. A complete fish stocking history for Sawyer Lake is summarized in Table 1. Stocking was the only form of fish management type work documented in the file prior to 1961.

Key data from all fish population surveys done to date at Sawyer Lake are summarized in Tables 2 and 3. Table 2 summarizes fish population survey catch rates and Table 3 summarizes fish population quality size structure indices. Unless otherwise noted in

Table 1. Sawyer Lake fish stocking history.

<b>Year/Date</b>	<b>Species</b>	<b>Number Stocked</b>	<b>Size Stocked</b>	<b>Remarks</b>
1938	Bluegill	18,000	Fingerling	
1938	Bullhead	5,000	Fingerling	
1938	Largemouth Bass	15,000	Fry	
1938	Yellow Perch	500	Adult	
1938	Yellow Perch	23,000	Fingerling	
1938	Smallmouth Bass	75	Adult	
1938	Sunfish (Pumpkinseed?)	2,000	Adult	
1939	Bluegill	1,200	Adult	
1939	Bluegill	5,000	Fingerling	
1939	Largemouth Bass	2,000	Fingerling	
1939	Yellow Perch	600	Fingerling	
1940	Bluegill	500	Adult	
1940	Bluegill	3,000	Fingerling	
1940	Largemouth Bass	25	Adult	
1941	Bluegill	1,500	Adult	
1942	Largemouth Bass	1,000	Fingerling	
1942	?	2,550	Fingerling	
1942	Northern Pike	18,990	Fry	
1943	Largemouth Bass	820	Fingerling	
1944	Northern Pike	15,000	Fry	
1945	Largemouth Bass	200	Fingerling	
1946	Northern Pike	40,000	Fry	
1947	Largemouth Bass	1,500	Fingerling	
1949	Northern Pike	164	Adult	
1949	Northern Pike	200	Fingerling	
1952	Largemouth Bass	845	Fry	
1954	Northern Pike	34	Fry	
1962	Walleye	16,900	Fingerling	
1964	Walleye	17,000	Fingerling	
1965	Walleye	17,000	Fingerling	
08/07/1973	Walleye	17,000	5"	
08/10/1977	Walleye	17,000	3"	
08/20/1982	Walleye	8,450	3"	
08/22/1984	Walleye	7,500	3"	
08/12/1986	Walleye	8,450	3"	
10/30/1997	Smallmouth Bass	500	2-4"	Private Stocking (Lake Association)
Oct. 1998	Smallmouth Bass	250	2-4"	Private Stocking (Lake Association)
Oct. 1999	Smallmouth Bass	250	2-4"	Private Stocking (Lake Association)

Table 2. Sawyer Lake fish survey catch rate history.

Year	Survey Dates	Survey Gear	Catch Rate <sup>1</sup>							
			WE	NP	LMB	SMB	YP	BC	BG	PS
1961	May 24	EF	0.0	0.2	14.3	0.0	12.4	4.2	7.1	1.9
1964	August 14	EF	0.6 <sup>2</sup>	2.7 <sup>2</sup>	13.4 <sup>2</sup>	0.0 <sup>2</sup>	1.3 <sup>2</sup>	0.8 <sup>2</sup>	-	-
1970	July 21	Seine	-	-	28.3	-	-	-	-	-
1972	May 8–11	FN	2.1	2.1	0.3	0.0	69.3	20.5	34.6	5.9
1972	May 5 and September 12	EF	5.3 <sup>3</sup>	0.6 <sup>3</sup>	15.1 <sup>3</sup>	0.0 <sup>3</sup>	67.0 <sup>4</sup>	1.8 <sup>3</sup>	134.0 <sup>4</sup>	1.0 <sup>3</sup>
1976	October 12	EF	2.1 <sup>5</sup>	0.4 <sup>5</sup>	19.1 <sup>5</sup>	0.0 <sup>5</sup>	0.7 <sup>5</sup>	1.7 <sup>5</sup>	-	-
1983	June 21–24	FN	N/A <sup>6</sup>	-	-	-	-	-	-	-
1983	June - August	EF	N/A <sup>6</sup>	-	-	-	-	-	-	-
1987	June 23–26	FN	N/A <sup>6</sup>	-	-	-	-	-	-	-
1987	July - August	EF	N/A <sup>6</sup>	-	-	-	-	-	-	-
1993	June 22	EF	22.9 <sup>5</sup>	0.4 <sup>5</sup>	5.4 <sup>5</sup>	0.0 <sup>5</sup>	1.9 <sup>5</sup>	1.7 <sup>5</sup>	2.7 <sup>5</sup>	-
1993	July 12	EF	18.0	0.4	3.8	0.0	4.4	1.7	1.7	-
1993	September 1	EF	14.3	0.2	4.4	0.0	1.0	1.1	2.1	-
1993	September 30	EF	14.3	0.6	5.5	0.0	-	0.6	1.7	-
1996	October 2	EF	45.6	1.2	6.3	0.0	-	-	-	-
2001	October 2	EF	21.4	0.8	24.7	4.2	6.6	5.3	181.6	0.0
2004	August 23–25	MFN	0.1	0.0	8.0	0.0	0.5	0.5	18.0	0.0
2004	September 27	EF	4.8	1.3	13.3	3.0	1.0	0.0	21.0	0.0
2008	April 27 & 29	EF <sup>7</sup>	N/A <sup>6</sup>	-	-	-	-	-	-	-
2008	May 2	EF <sup>7</sup>	26.4	-	-	-	-	-	-	-

EF = electrofishing, FN = fyke netting, MFN = mini-fyke netting, WE = walleye, NP = northern pike, LMB = largemouth bass, SMB = smallmouth bass, YP = yellow perch, BC = black crappie, BG = bluegill, PS = pumpkinseed sunfish

<sup>1</sup> – EF surveys = number per mile; Seine surveys = number per haul; FN & MFN = number per net per night (net-nights = NN)

<sup>2</sup> – report did not say it was an electrofishing survey but since it was a 1-day survey it was assumed; assumed entire shoreline was surveyed

<sup>3</sup> – catch rates combined for these surveys; ~4.87 miles shoreline surveyed each time

<sup>4</sup> – catch rate is number per hour based on 1 hour of electrofishing

<sup>5</sup> – assumed entire shoreline was surveyed

<sup>6</sup> – walleye only survey; no effort recorded

<sup>7</sup> – Great Lakes Indian Fish and Wildlife Commission walleye population estimate surveys; April 27 and 29 were marking runs on a portion of the southern shoreline (multiple passes of the same shoreline where walleye were concentrated); May 2 was the recapture run and included the entire shoreline

Table 3. Sawyer Lake fish population stock density index history.

Year	Survey Dates	Survey Gear	Stock Density Indices (SD's) <sup>1</sup>							
			WE SD14	NP SD21	LMB SD14	SMB SD14	YP SD8	BC SD8	BG SD8	PS SD6
1961	May 24	EF	-	0	27	-	31	45	11	20
1964	August 14	EF	33	8	28	-	14	75	-	-
1970	July 21	Seine	Method and gear used to target YOY <sup>2</sup> LMB							
1972	May 8–11	FN	100	45	0	-	65	48	11	0
1972	May 5 and September 12	EF	79 <sup>3</sup>	50 <sup>3</sup>	27 <sup>3</sup>	-	48 <sup>3</sup>	59 <sup>3</sup>	2 <sup>3</sup>	0 <sup>3</sup>
1976	October 12	EF	100	50	14	-	50	88	-	-
1983	June 21–24	FN	48	-	-	-	-	-	-	-
1983	June - August	EF	46	-	-	-	-	-	-	-
1987	June 23–26	FN	40	-	-	-	-	-	-	-
1987	July - August	EF	41	-	-	-	-	-	-	-
1993	June 22	EF	40	0	54	-	38	56	38	-
1993	July 12	EF	50	50	53	-	25	33	11	-
1993	September 1	EF	45	100	40	-	20	17	9	-
1993	September 30	EF	32	0	29	-	-	0	0	-
1996	October 2	EF	16	100	31	-	-	-	-	-
2001	October 2	EF	92	50	32	6	0	50	0	-
2004	August 23–25	MFN	Method & gear used to target YOY <sup>2</sup> fish and small nongame fish							
2004	September 27	EF	88	80	21	0	0	-	0	-
2008	April 27 & 29	EF <sup>4</sup>	96	-	-	-	-	-	-	-
2008	May 2	EF <sup>4</sup>	99	-	-	-	-	-	-	-

EF = electrofishing, FN = fyke netting, MFN = mini-fyke netting, WE = walleye, NP = northern pike, LMB = largemouth bass, SMB = smallmouth bass, YP = yellow perch, BC = black crappie, BG = bluegill, PS = pumpkinseed sunfish

<sup>1</sup> – SD = percentages of fish that meet a minimum stock size (varies by species) that are also over a quality size for that species; For example, stock size for walleye is 10 inches therefore SD14 is the percentage of walleyes captured in the survey that are 14 inches and longer out of all walleyes captured that were at least 10 inches long; Stock size inch length cutoffs for fish species are as follows: WE – 10, NP – 14, LMB – 8, SMB – 7, YP – 5, BC – 5, BG – 3, PS – 3

<sup>2</sup> – YOY = young-of-the-year fish

<sup>3</sup> – survey data combined for these 2 dates

<sup>4</sup> – Great Lakes Indian Fish and Wildlife Commission walleye population estimate surveys; April 27 and 29 were marking runs on a portion of the southern shoreline and data were combined (multiple passes of the same shoreline where walleye were concentrated); May 2 was the recapture run and included the entire shoreline

Table 2, catch rate units for electrofishing surveys are number caught per mile of shoreline surveyed. Fyke and mini-fyke netting surveys list the number of fish caught per net per night (net-nights = NN). Table 3 lists percentages of fish that meet a minimum stock size (varies by species) that are also over a quality size for that species. These are known as stock density indices (SD's). For example, stock size for walleye is 10 inches, therefore SD14 is the percentage of walleyes captured in the survey that are 14 inches and longer out of all walleyes captured that were at least 10 inches long. The bottom of Table 3 lists stock size inch length cutoffs for each species in the table.

On May 24, 1961 an evening and nighttime electrofishing survey of the entire shoreline was done. The following species and size ranges were captured: northern pike (1; 14.2 inches), largemouth bass (75 and many more seen; 5.0–23.5 inches), crappie (common; 6.8–11.5 inches), bluegill (abundant; 4.8–8.6 inches), yellow perch (common; 4.6–10.0 inches), pumpkinseed sunfish (common; 4.8–6.3 inches), suckers (common), golden shiners (common), bullheads (common; 6.0–12.4 inches), and walleye were noted as present but none were captured.

On August 14, 1964 a survey was completed to determine the results of the first ever walleye stocking in Sawyer Lake done by the WDNR in 1962. Since this was apparently a one-day survey, it most likely was an electrofishing survey. Captured were 3 walleye (13.5–14.5 inches), 14 northern pike (10.4–24.0 inches), 70 largemouth bass (3.0–25.5 inches), 7 yellow perch (5.6–8.5 inches), and 4 crappie (6.1–12.0 inches). In an intra-department memo, biologist Richard Wendt wrote "Sawyer Lake has one of the most outstanding natural largemouth bass populations ever observed" (Wendt 1964).

On July 21, 1970 four shoreline sites were seined to assess the potential effects an earlier opening season would have on largemouth bass reproduction. A total of 107 young-of-the-year (YOY) largemouth bass were captured. Biologist Max Johnson's opinion was that the earlier season on bass that year had little effect on bass reproduction (Johnson 1970).

In 1972 the most comprehensive survey up to that time was done. Electrofishing surveys were done on two nights: May 8 and September 12. Data from these nights were combined. Yellow perch and bluegill were collected for a total of 1 hour only. All other species were collected the entire time. Fifty-two walleye, 6 northern pike, 147 largemouth bass, 67 yellow perch, 18 black crappie, 134 bluegill, and 10 pumpkinseed sunfish were captured. A total of 15 net-nights (NN) of fyke netting were done from May 8-11. A total of 32 walleye, 31 northern pike, 5 largemouth bass, 1,041 yellow perch, 308 black crappie, 519 bluegill, 88 pumpkinseed sunfish, 28 brown bullhead, and 25 white suckers were captured. As a note of interest, brown bullheads were found in this survey but not in any surveys before or since. This could either be a case of misidentification or the loss of the species from the Sawyer Lake fish community. Yellow bullheads were the only bullhead species found in the most recent survey (2010). It seems more likely a case of misidentification from the 1972 survey as brown bullheads have never been identified in any other Sawyer Lake surveys to date. One yellow and one black bullhead were captured during the 2004 survey, black bullheads were noted as common in the 1964 survey, and bullheads (no mention of species) were noted as common in the 1961 survey. Also of interest, in 1938, 5,000 bullhead fingerlings were stocked in Sawyer Lake. No species of bullhead was reported.

The 1972 the walleye population was estimated at 1–2 adults per acre (no confidence intervals or coefficient of variation, CV, were noted and the raw data were no longer

available to recalculate the PE). Walleye reproduction was occurring most years as evidenced by the catch of walleye under about 17 inches (about age 6) since no stocking occurred between 1965 and 1972. Management recommendations based on the 1972 survey were to manage for walleye, largemouth bass, and panfish. The report mentioned a “great public demand” for stocking walleye but biologist Max Johnson had reservations about doing this due to the excellent largemouth bass population and probable walleye competition with them. It was decided to continue with periodic walleye stocking since a walleye population had already been established and the largemouth bass population did not show signs of being negatively impacted. Walleye were stocked in 5 years from 1973 to 1986 following this survey.

On October 12, 1976 an electrofishing survey was completed. Captured were 11 walleye, 2 northern pike, 100 largemouth bass, 4 yellow perch, and 9 black crappie. The data sheet noted that young-of-the-year (YOY) largemouth bass were abundant. Also noted were several year classes (ages) of bluegill present but they didn't survey them.

In 1983, fyke netting and electrofishing surveys were done to calculate a walleye population estimate (PE). Fyke netting was used to mark walleye and was done from June 21–24. Multiple electrofishing runs were done to recapture marked and unmarked walleye to calculate a PE. Five nights of electrofishing were done from June 28 to August 23. The total walleye population was estimated at 2,559 (90% Confidence Interval, CI, 1,140–3,978) or 17.2 per acre. The PE for 15 inch and larger walleye was 466 or 3.1 per acre. Recaptures were low for these surveys: 9 fish for the total PE and 4 for the 15 inch plus PE.

In 1987, another walleye PE survey was done. Gear, timing, and methods were basically the same as in 1983. Fyke nets were used to mark walleye in June and five electrofishing runs from early July through mid-August were used as the recapture method. The total walleye population was estimated at 2,378 (90% Confidence Interval, CI, = 1,466–3,290) or 15.9 per acre. The PE for 15 inch and larger walleye was 243 or 1.6 per acre. Recaptures were also low for these surveys: 12 fish for the total PE and 1 for the 15 inch plus PE.

Four electrofishing surveys were done in 1993. The dates of these surveys were June 22, July 12, September 1, and September 30. The purposes of these surveys were to evaluate the slot size limit bass regulation in effect since 1984. The regulation being evaluated was a 12–16 inch **protected** slot and daily bag limit of 5 bass. No report or summaries were in the file, but based on the fact that the regulation was never changed and is still in effect, it can be assumed that the regulation was meeting management objectives. Walleye and largemouth bass were given top caudal fin clips during the first and third surveys, and possibly the second. I calculated Schnabel method PE's (Ricker 1975) assuming all unmarked fish were marked during the first 3 surveys. Small numbers of recaptures resulted in high CV's and wide confidence intervals for both species. Nine walleye were recaptured out of 288 individuals marked resulting in a total walleye PE of 4,965 or 33.3 per acre (95% CI = 18.4–65.1 per acre; CV = 0.30). Only 3 out of 71 marked fish were recaptured for a total largemouth bass PE of 931 or 6.2 per acre (95% CI = 2.6–15.4 per acre; CV = 0.43). Walleye scales for age and growth information were taken from the September 1 survey from 19 fish ranging in size from 5.0–14.3 inches. Walleye were assigned a completed summer of growth age. Three age 1 walleye averaged 5.8 inches which was just 0.2 inches below the current regional average. This average growth would have likely equaled or exceeded regional

averages if fall growth in the months of September through November would have been included. Eleven age 2 walleye averaged 9.2 inches which was 0.1 inch above the regional average. Five age 3 walleye averaged 13.1 inches which was 1.9 inches above the regional average. Largemouth bass scales were also taken from all four electrofishing surveys (June 22 through September 30). Largemouth bass were also assigned a completed summer of growth age. Age 2 largemouth were 1.4 inches below the current regional average growth but the sample size was only 3 fish. From ages 3 through 10, largemouth bass grew from 0.7 to 2.4 inches faster per age than regional averages.

A fall electrofishing survey was conducted on October 2, 1996 to assess walleye natural reproduction and recruitment. Recent good natural reproduction of walleye was documented by a capture of 30 YOY (7.0 per mile) and 72 one-and-a-half year olds (16.7 per mile). Ninety four age 2 and older walleye were also captured and no gaps in the size structure were found, documenting that natural reproduction was adequate to sustain the fishery. Since walleye stocking had not occurred since 1986, the vast majority of the 196 walleye captured could only be the result of natural reproduction.

The next fish survey occurred on October 2, 2001. It was another walleye recruitment survey aimed at assessing recent walleye reproduction. A total of 112 walleye were captured, including 86 YOY (16.5 per mile). No age 1.5 walleye were captured indicating little or no successful walleye recruitment from spawning in spring 2000. This is not a concern as one moderate to strong year class of walleye every 3–4 years will sustain a fishable population. As a rule of thumb, a moderate to strong year class of walleye is characterized by a fall electrofishing catch rate of at least 10 YOY or 3 age 1.5 walleye per mile of shoreline. Two new species were documented for the first time as a result of this survey: smallmouth bass and rock bass. The lake associated stocked smallmouth bass three consecutive years from 1997–1999. This was done at the recommendation of the fisheries biologist Steve AveLallemant to help control the invasive rusty crayfish that had become well established in Sawyer Lake. The stockings were successful at establishing a population as 22 smallmouth bass from 2.5–14.4 inches were captured. Several YOY and age 1.5 smallmouth bass were captured, documenting that they had established a naturally reproducing population. Rock bass may have been stocked unintentionally along with smallmouth bass. They were never mentioned or documented prior to the 2001 survey. If they did get unintentionally introduced to Sawyer Lake in this manner, it is a potential risk of stocking that lake users, riparian landowners, and biologists should know about and be aware of so that they can make informed decisions. Exotic invasive species and fish diseases (rusty crayfish, common carp, Chinese mystery snails, Eurasian water milfoil, curly leaf pondweed, spiny water flea, viral hemorrhagic septicemia (VHS), etc., as well as unwanted native fish species like rock bass, green sunfish, golden shiners, and fathead minnows can be introduced through fish stockings. Some can be fairly benign, but others can forever disrupt the natural ecological order and food web interactions. Some like Eurasian water milfoil and curly leaf pondweed are very costly to treat and can be almost impossible to eradicate. Care and much thought should go into any decision to introduce a new species to a lake. And every stocking of a desirable species should be monitored to ensure that unwanted species are not also inadvertently part of the shipment.

In 2004 a baseline survey consisting of two days of mini-fyke netting (with turtle excluders) in summer and one night of electrofishing in fall were done. The objective was to get a snapshot of the fish community present along with catch per unit effort

(CPUE) and size quality data. Four mini-fyke nets were set on August 23 and ran on the 24<sup>th</sup> and 25<sup>th</sup>. A total of 469 fish and 9 species were captured (58.6 per NN). Bluntnose minnow (210; 26.3 per NN), bluegill (165; 18.0 per NN), largemouth bass (117; 8.0 per NN), and rock bass (48; 4.4 per NN) made up the majority of the catch. Six Johnny darter, 4 yellow perch, 4 black crappie, 1 black bullhead, and 1 walleye were caught consisting of only 3.4% of the total catch rate (2.0 per NN). This survey documented good reproduction of largemouth bass, bluegill, and bluntnose minnow. Largemouth bass YOY averaged 1.7 inches. On September 27, an electrofishing survey of 4 miles of the shoreline was done. Data were kept separate in 4 survey stations. In two 0.5-mile stations, all fish were captured, and in two 1.5-mile stations, only gamefish (walleye, northern pike, largemouth bass, and smallmouth bass) were captured. A total of 131 fish in 9 species were captured in these 4 stations. Largemouth bass (53) led the way, followed by bluegill (21), walleye (19), rock bass (13), smallmouth bass (12), white sucker (6), and northern pike (5). A single yellow perch and yellow bullhead were captured.

In 2008, an electrofishing mark-recapture walleye population estimate (PE) was done by the Great Lakes Indian Fish and Wildlife Commission (GLIFWC), Mole Lake Office. The adult walleye PE was 515 or 3.46 per acre with a coefficient of variation (CV) of 6.05%. This estimate is almost identical to the predicted density value of 3.64 per acre (95% CI = 1.20–11.05 per acre) for a 149-acre lake supported entirely through natural reproduction and well within the 95% CI limits.

## METHODS

Eight standard fyke nets (4 foot high X 6 foot wide frames, 0.75-inch bar measure white braided nylon mesh) were set on April 2, the day after the ice went out. These nets were set on substrates and in locations targeting spawning and moving walleye and northern pike. One of these nets was moved to a different location on April 5. Four nets were pulled from the lake on April 7 and the last 4 nets were pulled on April 8. Nets were checked once each day and effort totaled 44 net-nights (NN).

Two standard fyke nets were set on May 24 targeting spawning bluegill and pumpkinseed sunfish. These nets were moved each day to a new location for better spatial coverage of the lake and spawning sunfish locations. Nets were checked once each day May 25–27 for a total effort of 6 NN.

Electrofishing surveys of the entire shoreline were done on April 9, April 29, and October 6. Only gamefish (walleye, northern pike, largemouth bass, and smallmouth bass) were captured on the April 9 and October 6 surveys. The April 29 survey included two 0.5-mile stations where all fish were captured and two 1.5-mile and one 1.2-mile gamefish stations. Electrofishing surveys commence at dark and finish sometimes after midnight and in the early morning hours.

Every fish captured was counted and recorded to the species level. All gamefish captured were measured to the nearest half-inch and recorded. All fish captured during the electrofishing and panfish fyke netting surveys were measured to the nearest half-inch and recorded. During the ice-out fyke netting time period, if we had large catches of panfish, a subsample of 25–50 individuals of each species per net were measured to the nearest half-inch and recorded. Those not measured were still counted for accurate

catch rate information. All adult gamefish captured were given a left-ventral fin clip and juveniles were given a top-tail clip for use in mark-recapture population estimates. Aging structures (scales) were removed from panfish (bluegill, black crappie, pumpkinseed, yellow perch, and rock bass). For panfish, one scale sample was taken for each species for each tenth-inch group (10 per inch per species). For walleye and northern pike, scale samples were taken from 5 fish per half-inch group for males and females each. Scales were also taken from five fish per half-inch group for unknown sex walleyes for aging. Largemouth and smallmouth bass scale samples were taken from five fish per half-inch group (10 per inch per species) regardless of sex.

## RESULTS AND DISCUSSION

### Walleye

A total of 494 walleye, including 157 recaptures, were caught in our netting and electrofishing surveys. We captured a total of 331 walleye in 6 nights of ice-out fyke netting, 148 in 3 nights of electrofishing (17.5 per hour), and 15 in 3 nights of panfish fyke netting. Table 4 shows CPUE rates for the fish species captured during each of our survey periods. Lymphocystis, a chronic viral disease and seldom fatal, was noted as present in less than 10% of the walleye population. The virus attacks the connective tissue cells of the fish, stimulating the cells to undergo rapid and abnormal growth. External lymphocystis outbreaks appear as whitish or pinkish, warty-like projections/lesions which can be anywhere on the skin or fins of the infected fish. This virus is easily transmitted between fish and between species. Lymphocystis virus particles are released when infected cells burst. It can be spread from lake to lake by infected fish that are illegally moved or through infected gear (landing nets, survey nets, live wells, etc.). If gear is used in lakes with infected fish, it should be disinfected or completely dried for a minimum of 5 days before being used in another body of water.

Adult walleye showed a very good size structure with the majority of fish from 15 to 21 inches (Figure 1; recaptures not included). Of walleye 10 inches and larger (stock size) 89% were over 14 inches, 85% were over 15 inches, 37% were over 18 inches, and 17% were over 20 inches (Figure 1). The largest walleye captured was 25.4 inches long. The adult walleye population was estimated at 383 or 2.6 per acre. The precision of this estimate was good as reflected in the low CV (7.26%) and tight 95% CI's (329-438; 2.2–2.9 per acre). The mark-recapture population estimate of 383 adult walleye is below the predicted value of 3.6 per acre for a 149-acre lake supported by natural reproduction. However, it is within the 95% CI's of 1.2 to 11.1 per acre.

Electrofishing surveys done in early fall at water temperatures between 55 and 65°F provide an index of successful walleye reproduction and recruitment to the population. Young-of-the-year (YOY) and age 1.5 walleye are in the shallows at this time of year and are vulnerable to our electrofishing sampling method. Our fall survey on October 6, 2010 resulted in a catch of only 12 walleye, and nothing smaller than 14.5 inches. This result could have been due to weather or other variables. Sometimes weather and other factors may influence our sampling catch rates in ways we cannot predict and don't fully understand. It may have been due to the water temperature of 55°F that night, and being at the lower end of the sampling "window". But it could have been a fairly accurate index of recent walleye recruitment too. From the other surveys done in 2010 on Sawyer Lake, we did find good numbers of 10–12 inch walleye (2 year olds spawned in spring 2008) and one 6 inch walleye (a one year old spawned in spring

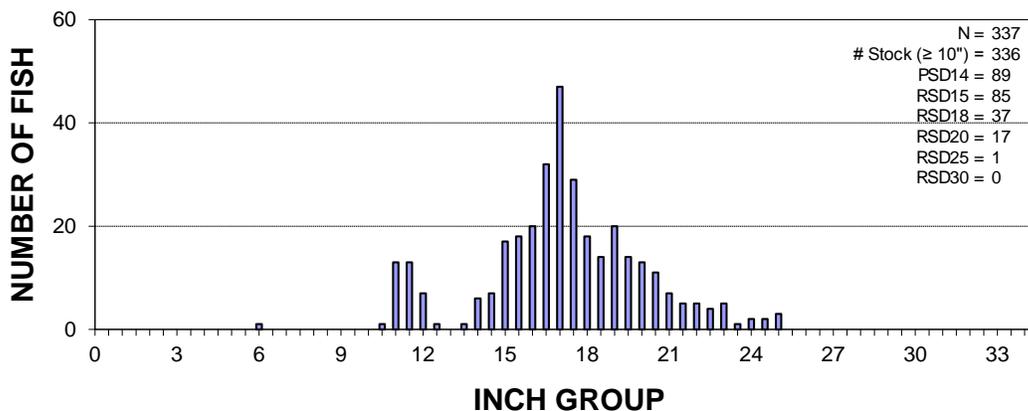
Table 4. Catch per unit effort during a 2010 survey of Sawyer Lake, Langlade County WI. Netting catch rates are reported as number of fish per net per night (net-nights = NN), while electrofishing catch rates are number of fish per mile of shoreline. Blank cells during shocking runs indicate a species was not targeted.

<b>Species</b>	<b>Ice-Out Fyke Netting</b>	<b>April 9 EF</b>	<b>April 29 EF</b>	<b>Panfish Fyke Netting</b>	<b>October 6 EF</b>
Walleye	7.5	18.0	8.0	2.5	2.3
Northern Pike	2.1	1.5	0.6	1.0	1.3
Smallmouth Bass	0.0	3.1	5.7	0.0	5.9
Largemouth Bass	0.3	35.4	32.3	0.3	47.4
Yellow Perch	63.0	-	9.0	0.7	-
Black Crappie	16.4	-	1.0	3.2	-
Bluegill	5.5	-	30.0	62.8	-
Pumpkinseed	1.9	-	4.0	1.7	-
Hybrid Bluegill <sup>1</sup>	0.0	-	0.0	0.7	-
Rock Bass	10.8	-	65.0	33.8	-
Yellow Bullhead	2.0	-	0.0	1.5	-
Black Bullhead	0.0	-	0.0	0.0	-
White Sucker	7.7	-	31.0	0.0	-
Blackchin Shiner	0.0	-	1.0	0.0	-
Bluntnose Minnow	0.0	-	1.0	0.0	-

EF = Electrofishing

<sup>1</sup> – Hybrid Bluegill = Bluegill X Pumpkinseed (natural cross)

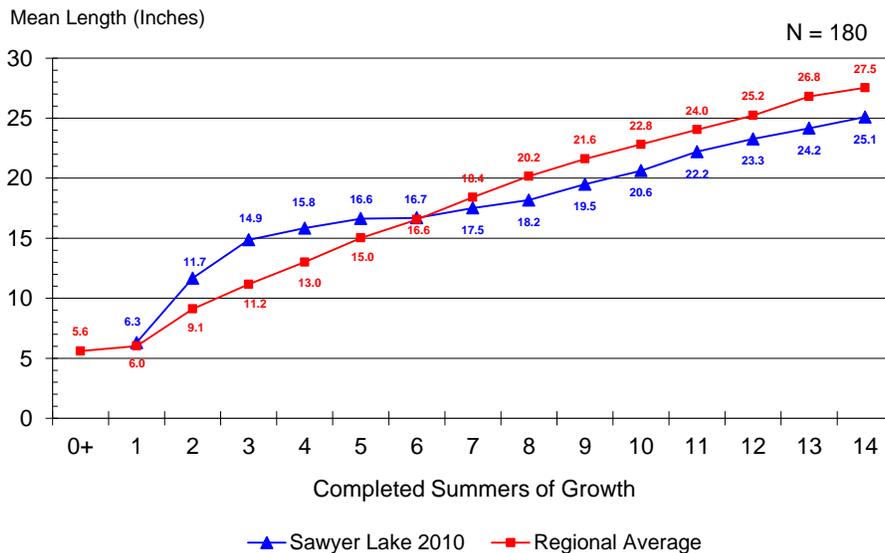
Figure 1. Walleye Length Frequency  
Sawyer Lake - 2010



2009). The length frequency (Figure 1) also shows a strong walleye population and size structure without missing year classes, other than possibly 2010, as evidenced by the bell shaped curve without gaps. One moderate to strong year class of walleye every 3–4 years will sustain a fishable population and is indicated by around 10 YOY or 3 1.5-year-old walleye per mile of fall electrofishing.

A total of 180 walleye, ranging in size from 6.3 to 25.4 inches were aged using scales (Figure 2). Sawyer Lake walleye grew faster than regional averages for ages 1–6 (up through about 17 inches) and slower than regional averages from ages 7–14 (above about 18 inches).

**Figure 2. Walleye Growth Rates  
Sawyer Lake - 2010**



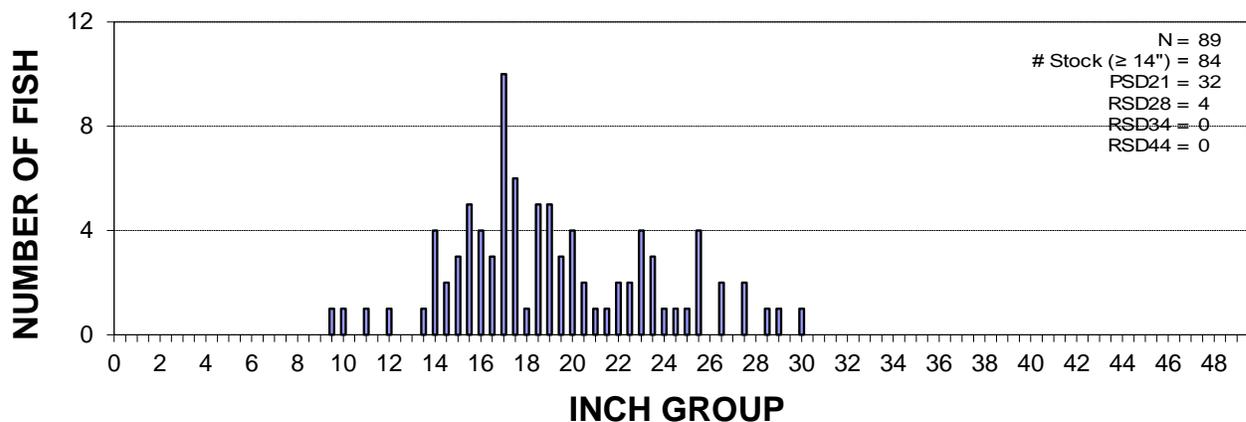
Since 1997 there has been no minimum length limit for walleye on Sawyer Lake, but only one fish could be larger than 14 inches in the daily bag limit (2–5 fish depending on tribal declarations and harvest). This regulation is intended for high-density walleye populations with slower than average growth of especially smaller, younger fish. These factors don't appear to apply to Sawyer Lake anymore, and it may be time to consider changing to the statewide 15 inch minimum size limit or even the 18 inch minimum size limit which would better protect females at least through their first or second spawning event. The smallest mature females we captured in our survey were in the 16.5 to 16.9 half-inch grouping. Therefore the 18 inch minimum length limit may be the better option to consider. The length frequency does not suggest this to be an urgent need at this time, but it should be discussed with anglers and the lake association to see what action, if any, they would like to take. The current state of the walleye population could be one where it may be better to be proactive, and one of looking down the road and trying to maintain a good population into the foreseeable future by proposing a regulation change tweak, rather than waiting and being reactive if or when the population takes a turn for the worse. Sometimes waiting until a population is in trouble before making a regulation change that will hopefully correct the situation, can be a real uphill battle. Sometimes too much has changed, balance is lost, and it is difficult to bring a good fishery back. It may be better to make a tweak while the fishery is still good and when the population will respond quickly to the new regulation. The worst case I can foresee happening by switching the walleye regulation to either a 15 or 18

inch minimum size limit, is a potential buildup of fish under the size limit to the point where their growth rates slow down and they become stunted. If this would happen, we could return to the one over 14 inch regulation or go to the 14 to 18 inch protected slot option, both of which are appropriate for lakes with good natural reproduction and slow growth of small fish. This scenario would be much easier and quicker to address than one where the spawning stock and population has crashed.

### Northern Pike

We captured 115 northern pike, including 23 recaptures, in our netting and electrofishing surveys. Ninety one were captured in 6 nights of ice-out fyke netting, 18 in 3 nights of electrofishing (2.1 per hour), and 6 in 3 nights of panfish fyke netting (Table 4). Northern pike had a good size structure with the majority of fish from 14 to 28 inches (Figure 3; recaptures not included). The largest northern captured was a 30.4 inch female. Of pike 14 inches and larger (stock size) 32% were over 21 inches and 4% were over 28 inches (Figure 3). The adult northern pike population (12 inches and greater) was estimated at 187 or 1.3 per acre using the Schnabel PE method (Ricker 1975). The precision of this estimate was decent for a pike PE as they are a difficult species to get a precise PE on (CV = 19.98%; 95% CI = 127–288 or 0.8–1.9 per acre).

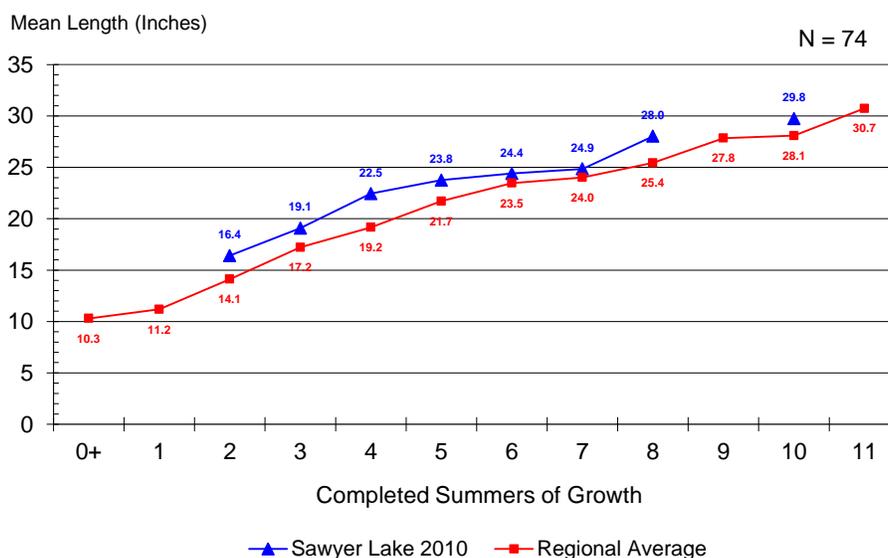
**Figure 3. Northern Pike Length Frequency Sawyer Lake - 2010**



Growth of northern pike was estimated by taking some scales from a subsample of 74 fish (Figure 4). Growth of pike was very good and is above the regional average for all ages and sizes. There is no minimum length limit on northern pike in Sawyer Lake and anglers are allowed 5 fish per day.

Lymphosarcoma, a disease (most likely viral) of northern pike and muskellunge, was not seen on any northern pike in Sawyer Lake. Lymphosarcoma, is expressed by red or pussy skin sores/lesions or brain like raised tumors on the flank, fins, or head. Northern pike can recover from this disease, but it is more likely to be fatal in muskellunge. Studies indicate that lymphosarcoma is a contact-transmitted virus spread from fish to fish during the spawning act. It can also be spread from lake to lake by infected fish that are illegally moved or through infected gear (landing nets, survey nets, live wells, etc.). If gear is used in lakes with infected fish, it should be disinfected or completely dried for a minimum of 5 days before being used in another body of water.

**Figure 4. Northern Pike Growth Rates  
Sawyer Lake - 2010**

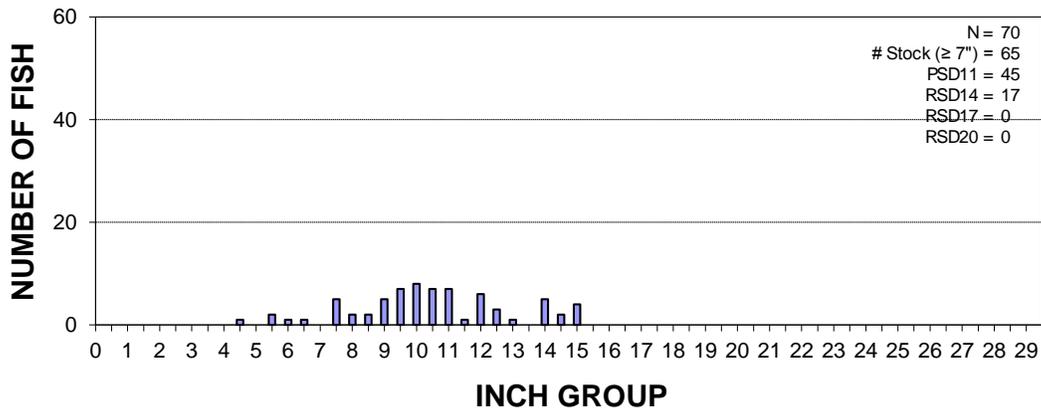


### Smallmouth and Largemouth Bass

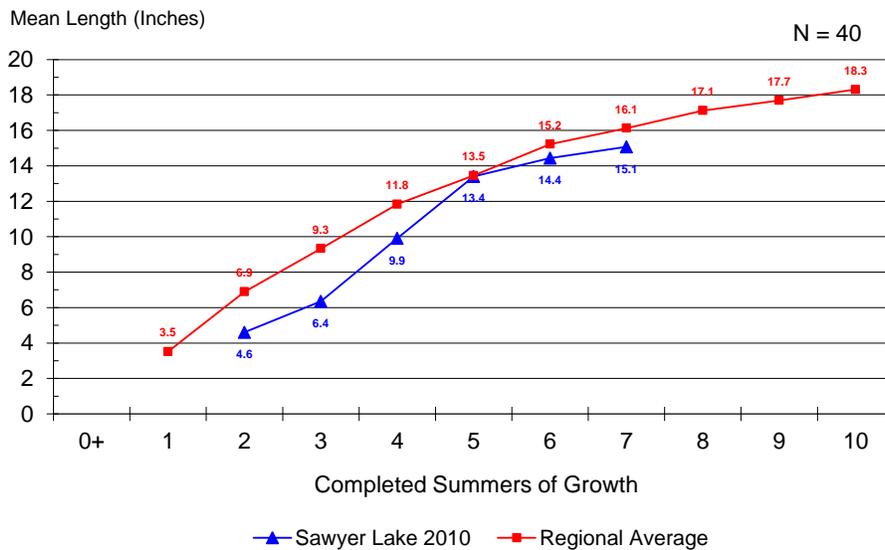
Seventy-seven smallmouth bass, including 7 recaptures, were captured, all of them during the 3 electrofishing surveys. Sixteen were captured on April 9 (5.3 per hour), 30 on April 29 (11.3 per hour), and 31 on October 6 (11.1 per hour; Table 4). The smallmouth length frequency (Figure 5; recaptures not included) shows a population of mostly small to medium sized fish with the majority in the 7–15 inch range. The largest smallmouth captured was 15.3 inches. Forty-five percent of smallmouth bass 7 inches and larger (stock size) were over 11 inches and 17% were over 14 inches (Figure 5). The smallmouth bass population (8 inches and greater) was estimated at 172 or 1.2 per acre using the Schnabel PE method (Ricker 1975). This was not as precise an estimate as we would have liked to get as shown by the high CV (33.1%) and wide 95% CI's (89–361 or 0.6–2.4 per acre), but it does give a ballpark estimate. Growth of smallmouth bass was estimated with scales taken from a subsample of 40 fish (Figure 6). Growth rates were below the regional average for all ages and sizes.

The largemouth bass population in Sawyer Lake is significantly larger than the smallmouth population by every method of measure. Their population (8 inches and greater) was estimated at 1,873 or 12.6 per acre using the Schnabel PE method (Ricker 1975). This estimate is 10.8 times higher than the smallmouth bass population estimate and is a pretty precise estimate with a CV = 15.1% and 95% CI's = 1,394–2,576 or 9.4–17.3 per acre. This is a moderate to high density population of largemouth bass. A total of 617 largemouth bass were captured in our surveys, including 44 recaptures. All but 15 largemouth were captured during the 3 electrofishing surveys; 13 in the ice-out fyke netting and 2 in the panfish netting (Table 4). Of the three electrofishing surveys, the fall run had the largest catch with 248 (88.6 per hour). Next best was the first run in April with 185 fish (61.7 per hour) with the late April run getting 169 (63.4 per hour). The largemouth catch rates were 5.6–11.6 times higher than the smallmouth catch rates and averaged 8.4 times higher. This is another validation that the PE's for both species are in the ballpark and are consistent and in-line with the other data we collected.

**Figure 5. Smallmouth Bass Length Frequency  
Sawyer Lake - 2010**

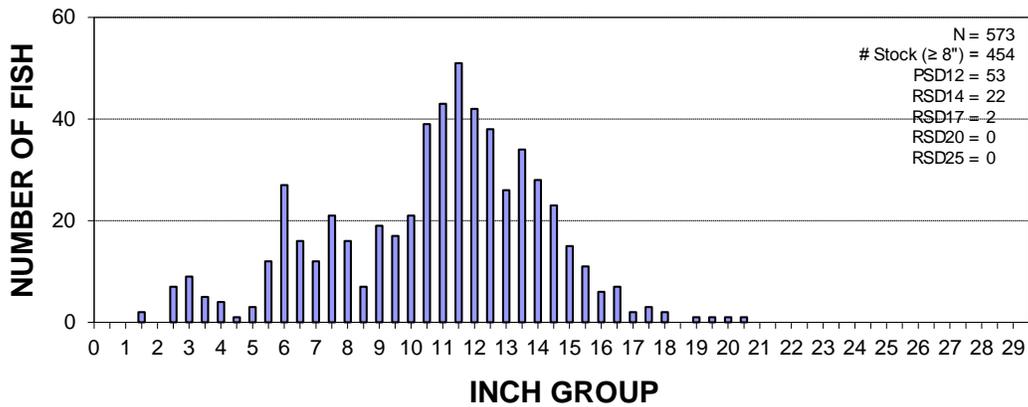


**Figure 6. Smallmouth Bass Growth Rates  
Sawyer Lake - 2010**

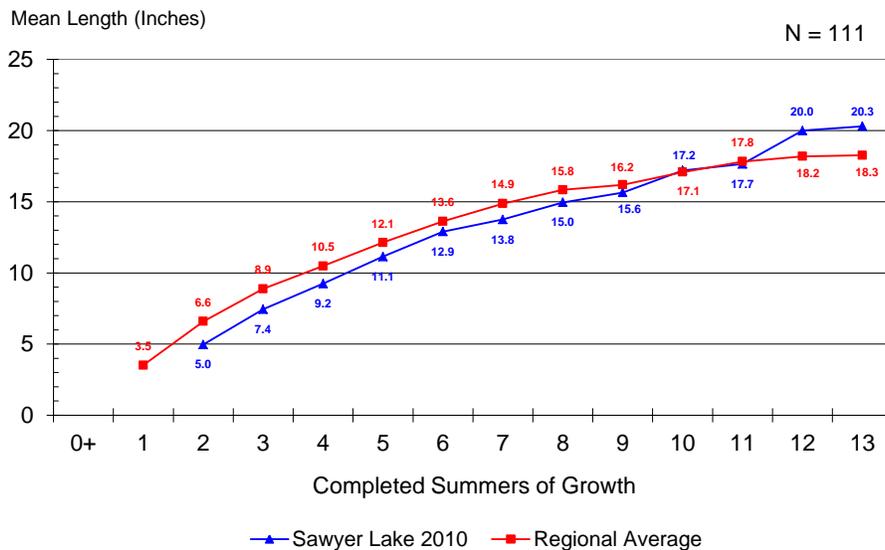


The largemouth bass length frequency (Figure 7; recaptures not included) shows a strong population with the majority of fish in the 6–15 inch range. The largest largemouth captured was 20.7 inches. Of the largemouth bass 8 inches and larger (stock size), 53% were over 12 inches, 22% were over 14 inches, and 2% were over 17 inches (Figure 7). Growth of largemouth bass was estimated with scales taken from a subsample of 111 fish (Figure 8). Growth rates were below the regional average for all but age 10 and older fish.

**Figure 7. Largemouth Bass Length Frequency  
Sawyer Lake - 2010**



**Figure 8. Largemouth Bass Growth Rates  
Sawyer Lake - 2010**



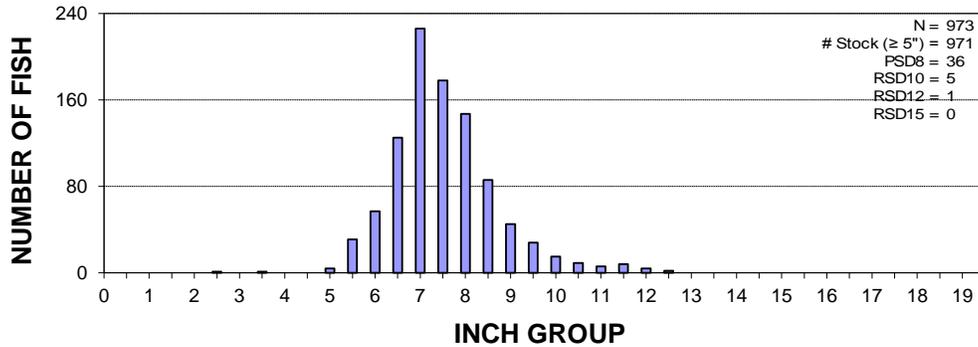
### Yellow Perch

A total of 2,783 yellow perch were captured and all but 13 of them were from the ice-out fyke netting survey. Panfish (perch, crappie, bluegill, pumpkinseed, rock bass, bullhead, etc.) and nongame fish (sucker, redhorse, minnows, shiners, darters, etc.) are not marked with a fin clip for a PE so we don't know how many are recaptures throughout the survey. The ice-out fyke netting capture of 2,770 perch was 63.0 per NN (Table 4) indicating a high density population. Panfish were only targeted for 1.0 mile (0.5 hours) of electrofishing and this occurred on the night of April 29. Nine perch were captured in that electrofishing survey (18.0 per hour; Table 4). Only 4 perch (0.7 per NN) were captured in the panfish fyke netting period.

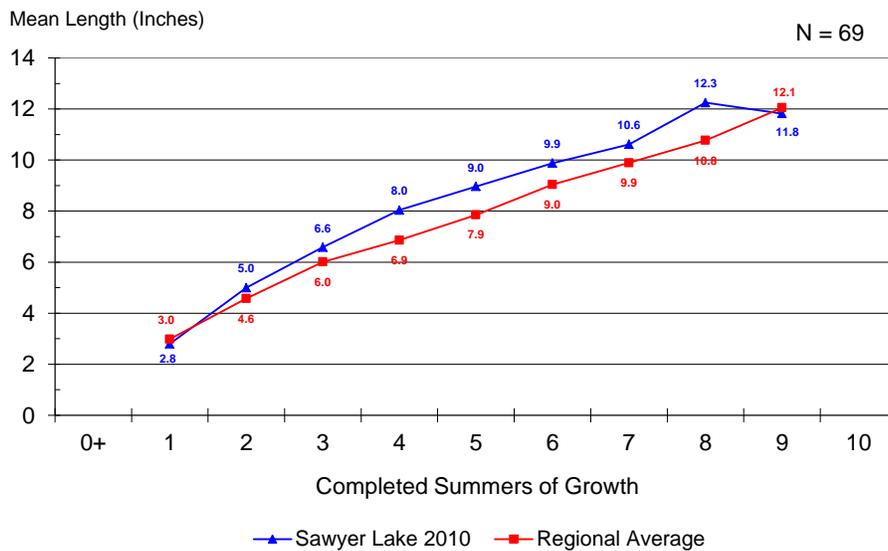
The yellow perch length frequency (Figure 9) shows a healthy population with the majority of fish in the 6–9 inch range. The largest perch captured was 12.8 inches. Of

perch 5 inches and larger (stock size), 36% were over 8 inches, 5% were over 10 inches, and 0.6% were over 12 inches (Figure 9). Growth of perch was estimated with scales taken from a subsample of 69 fish and growth rates were well above regional averages for most ages (Figure 10).

**Figure 9. Yellow Perch Length Frequency  
Sawyer Lake - 2010**



**Figure 10. Yellow Perch Growth Rates  
Sawyer Lake - 2010**



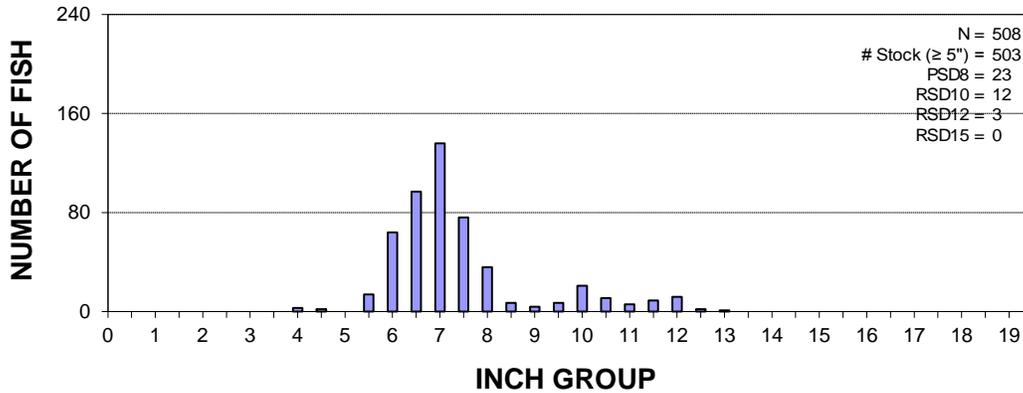
### Black Crappie

Seven-hundred-forty-one black crappie were captured, all but 20 of them were from the ice-out fyke netting survey. The ice-out fyke netting capture rate was 16.4 per NN (Table 4) indicating a moderate density population. Panfish were only targeted for 1.0 mile (0.5 hours) of electrofishing and this occurred on the night of April 29. Only 1 crappie was captured in that electrofishing survey (2.0 per hour; Table 4). Nineteen black crappie (3.2 per NN) were captured in the panfish fyke netting period.

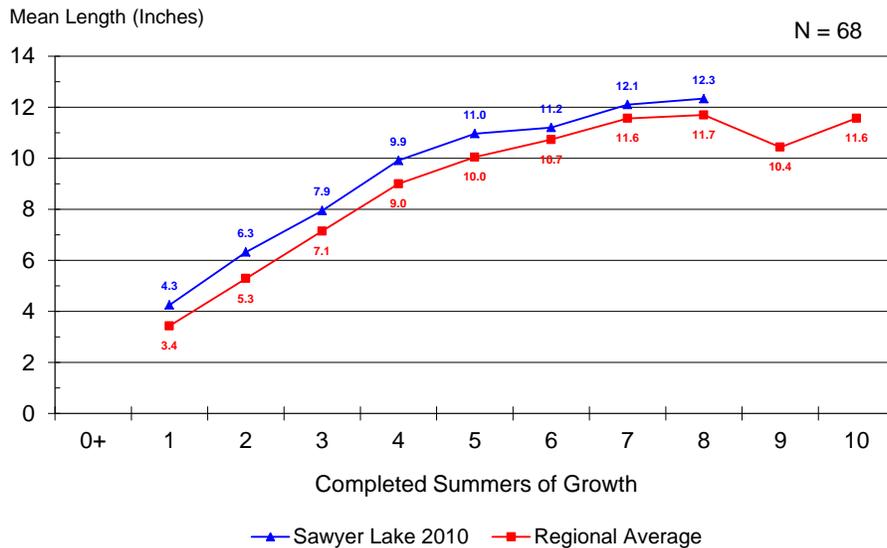
The crappie length frequency (Figure 11) shows a typical population with the majority of fish in the 6–8 inch range. The largest crappie captured was 13.0 inches. Size quality of crappie was decent with 23% of 5 inch and larger fish (stock size) over 8 inches, 12%

over 10 inches, and 3% over 12 inches (Figure 11). Growth rates of black crappie, based on scale samples from 68 fish, were well above regional averages for all ages (Figure 12).

**Figure 11. Black Crappie Length Frequency  
Sawyer Lake - 2010**



**Figure 12. Black Crappie Growth Rates  
Sawyer Lake - 2010**



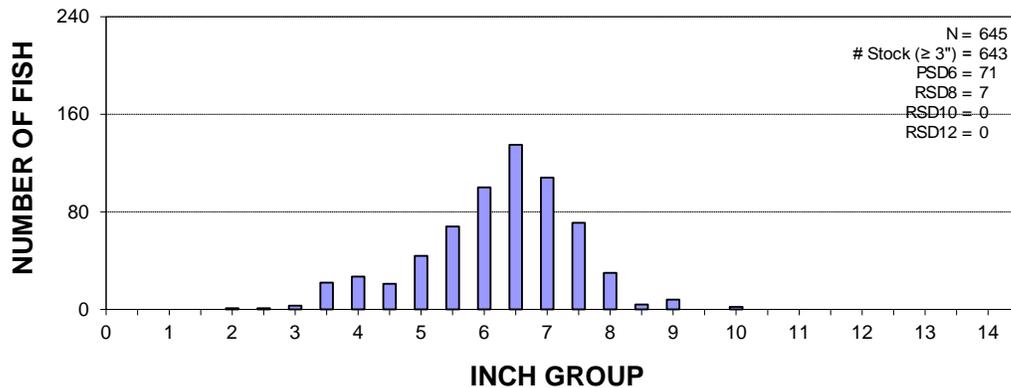
## Bluegill

A total of 650 bluegill were captured, most of them in the two fyke netting surveys. The panfish fyke netting survey led the way with 377 or 62.8 per NN (Table 4) indicating a high density population. The ice-out fyke netting survey captured 243 or 5.5 per NN. Panfish were only targeted for 1.0 mile (0.5 hours) of electrofishing and this occurred on the night of April 29. Thirty bluegill were captured in that electrofishing survey (60.0 per hour; Table 4).

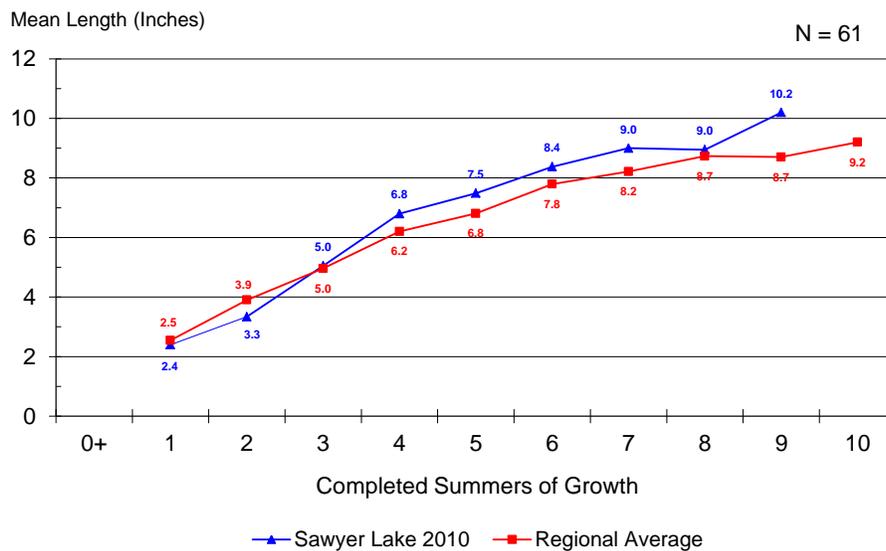
The bluegill length frequency (Figure 13) reveals better than average size quality, with the majority of fish in the 5–8 inch range. The largest bluegill captured was 10.2 inches.

Of bluegill 3 inches and larger (stock size), 71% were over 6 inches, 7% were over 8 inches, and 0.3% were over 10 inches (Figure 13). Growth of bluegill was estimated with scales taken from a subsample of 61 fish and growth rates were at or above regional averages for most ages (Figure 14).

**Figure 13. Bluegill Length Frequency  
Sawyer Lake - 2010**



**Figure 14. Bluegill Growth Rates  
Sawyer Lake - 2010**

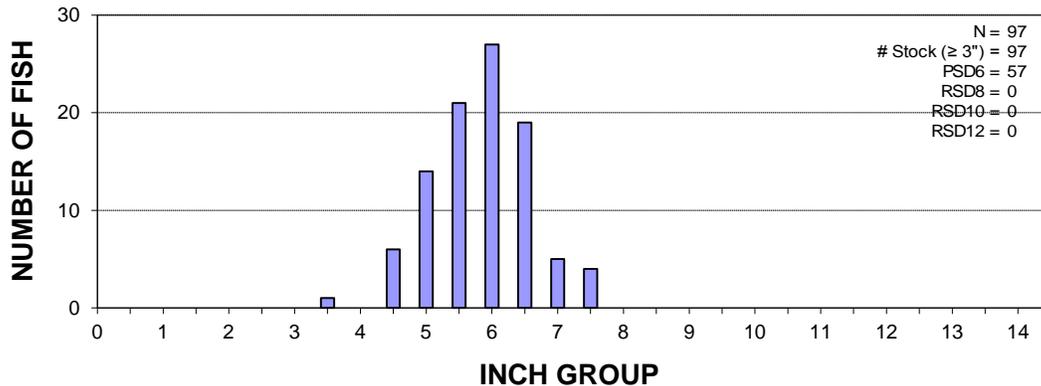


## Pumpkinseed

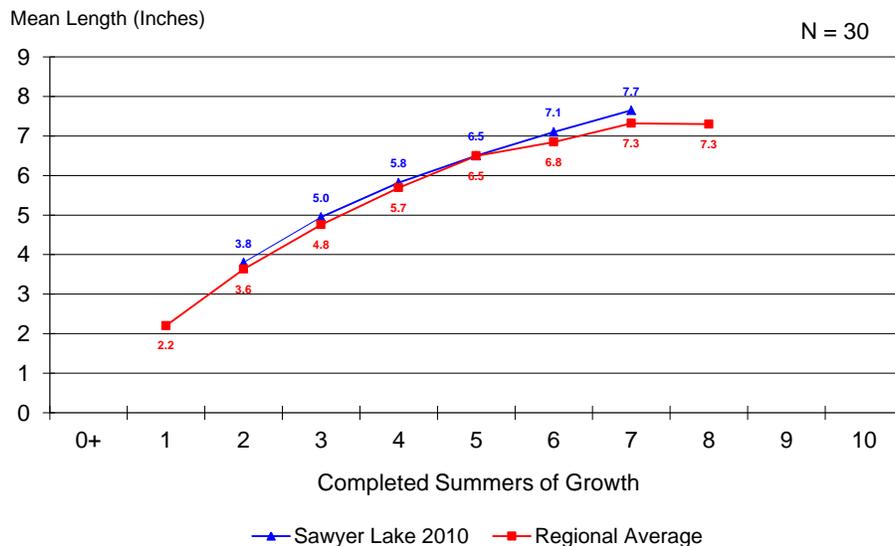
Ninety-seven pumpkinseed were captured, all but 14 of them were from the ice-out fyke netting survey. The ice-out fyke netting capture rate was 1.9 per NN (Table 4) indicating a low density population. Panfish were only targeted for 1.0 mile (0.5 hours) of electrofishing and this occurred on the night of April 29. Only 4 pumpkinseeds were captured in that electrofishing survey (8.0 per hour; Table 4). Ten pumpkinseeds (1.7 per NN) were captured in the panfish fyke netting period.

The pumpkinseed length frequency (Figure 15) shows a quality population with the majority of fish in the 5–7 inch range. The largest pumpkinseed captured was 7.7 inches. Size quality was good with 57% of 3 inch and larger fish (stock size) over 6 inches (Figure 15). Growth rates of pumpkinseed, based on scale samples from 30 fish, were at or above regional averages for all ages (Figure 16).

**Figure 15. Pumpkinseed Length Frequency  
Sawyer Lake - 2010**



**Figure 16. Pumpkinseed Growth Rates  
Sawyer Lake - 2010**

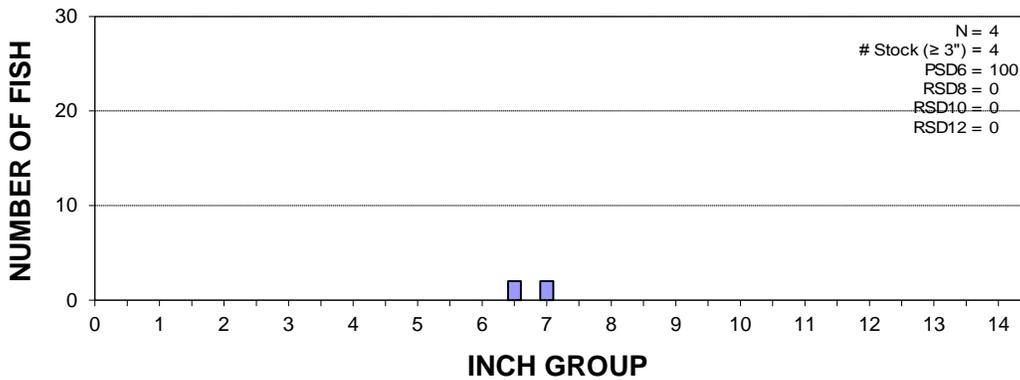


### Hybrid Bluegill (Bluegill X Pumpkinseed)

Natural cross hybrids of bluegill X pumpkinseeds are seen in most lakes where the two species coexist. A total of 4 hybrid bluegill were noted, all during the panfish fyke netting survey (0.7 per NN; Table 4) indicating a low density population.

The hybrid bluegill length frequency is shown in Figure 17. Not much insight can be revealed by such a small sample size (4 fish). The largest hybrid bluegill captured was in the 7.0–7.4 half-inch grouping. Growth of hybrid bluegill was not investigated.

**Figure 17. Hybrid Bluegill (BG X PS) Length Frequency  
Sawyer Lake - 2010**

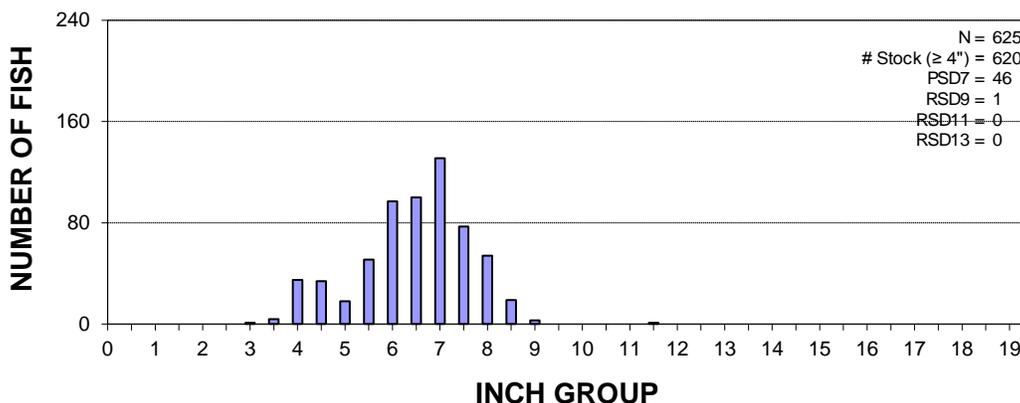


### Rock Bass

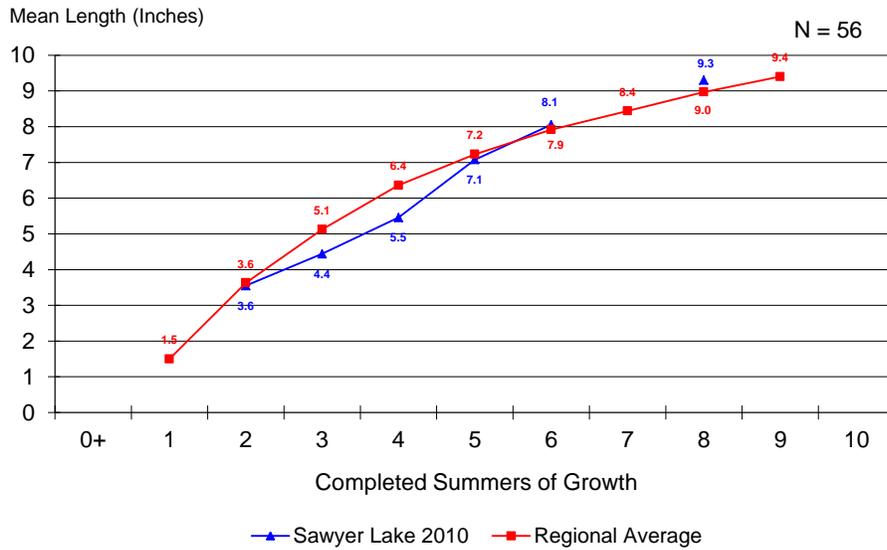
Rock bass were the second most abundant fish species captured in our survey only trailing yellow perch and 3 fish ahead of black crappie. Seven-hundred-forty-four rock bass were captured, all but 65 of them in the two fyke netting surveys. The ice-out fyke netting survey led the way with 476 fish or 10.8 per NN (Table 4) indicating a moderate to high density population. Another 203 were captured panfish fyke netting for a catch rate of 33.8 per NN. Panfish were only targeted for 1.0 mile (0.5 hours) of electrofishing and this occurred on the night of April 29. Sixty five rock bass were captured in that electrofishing survey (130.0 per hour; Table 4).

The rock bass length frequency (Figure 18) shows an average size quality population with the majority of fish in the 5–8 inch range. The largest rock bass captured was 9.4 inches. Size quality was decent with 46% of 4 inch and larger fish (stock size) over 7 inches (Figure 18). Growth rates of rock bass, based on scale samples from 56 fish, were at or below regional averages for most ages (Figure 19).

**Figure 18. Rock Bass Length Frequency  
Sawyer Lake - 2010**



**Figure 19. Rock Bass Growth Rates  
Sawyer Lake - 2010**

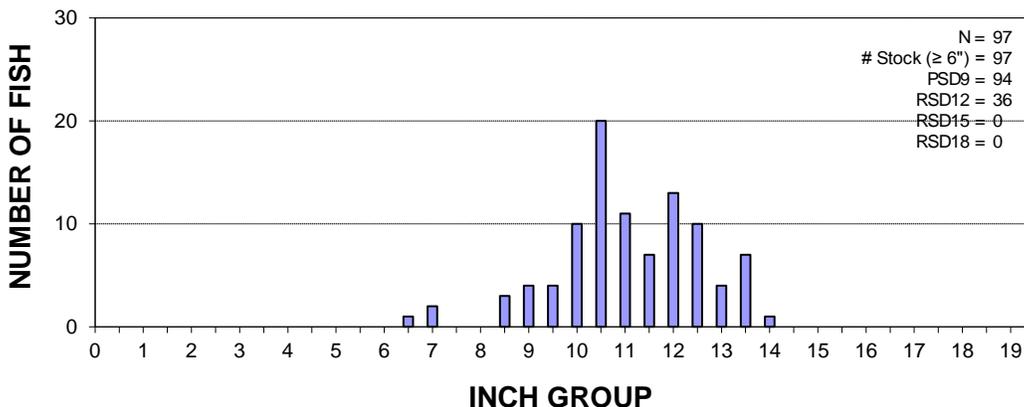


### Yellow Bullhead

A low density population of yellow bullhead was present as revealed by our catch of 97 fish. All but 9 were captured during the ice-out fyke netting survey (2.0 per NN; Table 4). Panfish were only targeted for 1.0 mile (0.5 hours) of electrofishing and this occurred on the night of April 29 and no bullheads were captured. Nine yellow bullheads were captured during the panfish fyke netting for a catch rate of 1.5 per NN.

The yellow bullhead length frequency is shown in Figure 20. It is a high size quality population with good numbers of fish in the 9–14 inch size range. The largest yellow bullhead captured was in the 14.0–14.4 half-inch grouping. Size quality was very good with 94% of 6 inch and larger fish (stock size) over 9 inches and 36% over 12 inches (Figure 20). Growth of yellow bullhead was not investigated.

**Figure 20. Yellow Bullhead Length Frequency  
Sawyer Lake - 2010**

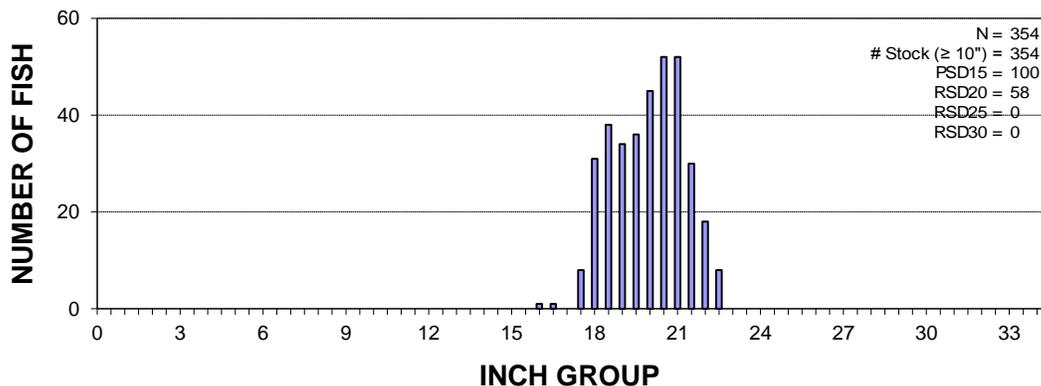


## White Sucker

Suckers are important forage and are present in most lakes in this part of the state. In fact, if they were not present it would be a red flag that the lake may not be as healthy as it should be. Sawyer Lake has a healthy population of white suckers that no doubt play an important role in the good growth rates of fish we found there. A total of 369 suckers were captured, all but 31 of them in the ice-out fyke netting survey. The ice-out fyke netting survey catch rate was 7.7 per NN (Table 4) indicating a moderate to high density population. Nongame fish were only targeted for 1.0 mile (0.5 hours) of electrofishing and this occurred on the night of April 29. Thirty one white suckers were captured in that electrofishing survey (62.0 per hour; Table 4).

The white sucker length frequency (Figure 21) shows a high size quality population with all fish captured between 16 and 23 inches. The lack of a substantial population smaller than 16 inches may be explained by heavy predation by sport fish, which if that is the case, shows the importance of suckers as a forage species. The largest white sucker captured was in the 22.5–22.9 half-inch grouping. Size quality was very good with 100% of 10 inch and larger fish (stock size) over 15 inches and 58% over 20 inches (Figure 21). Growth of white sucker was not investigated.

**Figure 21. White Sucker Length Frequency  
Sawyer Lake - 2010**

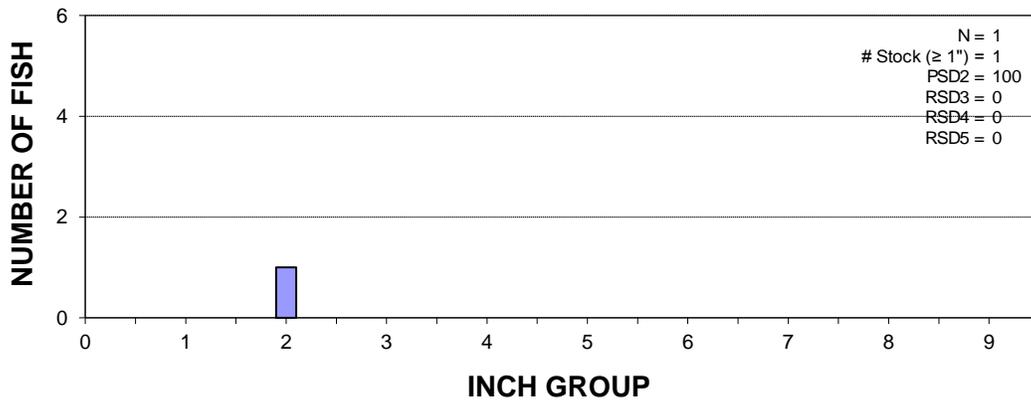


## Blackchin Shiner & Bluntnose Minnow

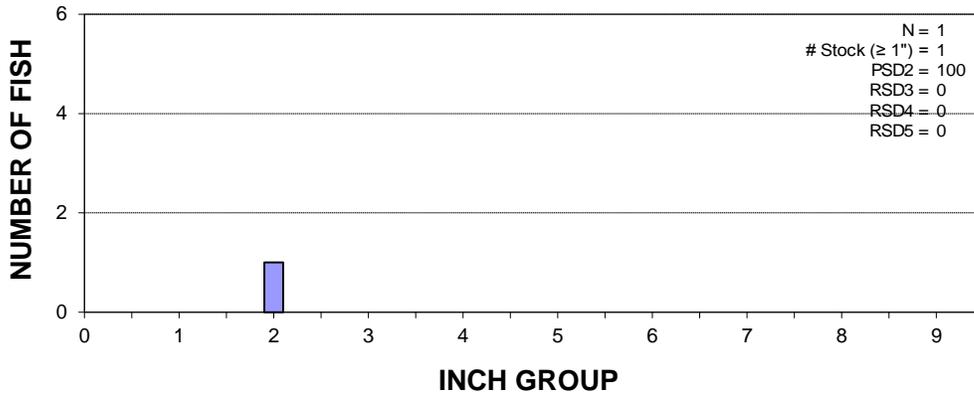
Blackchin shiner and bluntnose minnow were the only species of minnows captured in our surveys. A single individual of each species was captured, both of them during the April 29 electrofishing survey when all species were captured for 1.0 mile (0.5 hours; Table 4). Our fyke nets have too large of mesh (0.75-inch bar measure) for them to catch small fish. Both species are native to lakes in this part of the state and are likely important forage species for small sportfish.

The length frequencies for blackchin shiner and bluntnose minnow are shown in Figures 22 and 23, respectively. Nothing much, other than noting their presence, can be made from such small sample sizes. Both fish were in the 2.0–2.4 half-inch groupings. Growth of these species was not investigated.

**Figure 22. Blackchin Shiner Length Frequency  
Sawyer Lake - 2010**



**Figure 23. Bluntnose Minnow Length Frequency  
Sawyer Lake - 2010**



### Other Aquatic Species

Rusty crayfish, an exotic species, were noted as common during the ice-out fyke netting survey. Banded mystery snails, also an exotic, were noted as present to abundant throughout the entire survey. These species are present in many lakes in this part of the state. No significant ecological issues associated with these exotic species were identified.

We captured a total of 72 painted turtles in our netting surveys, 64 (1.5 per NN) of them during the ice-out fyke netting survey and 8 (1.3 per NN) during the panfish fyke netting survey. Snapping turtles were also present. Four (0.1 per NN) were captured during ice-out fyke netting and 11 (1.8 per NN) during panfish fyke netting.

## MANAGEMENT RECOMMENDATIONS

Sawyer Lake has a healthy and diverse fishery fully supported through natural reproduction. The numbers and size quality of species present are above average for this part of the state and this type and size of lake. The gamefish species of walleye, northern pike, largemouth bass, and smallmouth bass are in balance with each other, their habitat, and the rest of the Sawyer Lake fish community. Size quality of gamefish species was very good and growth rates were near regional averages. Yellow perch, black crappie, bluegill, and rock bass were the most abundant panfish, with lesser numbers of pumpkinseed, yellow bullhead, and hybrid bluegill. Panfish size quality was very good and above regional averages. Growth rates of panfish were well above regional averages in most instances.

Forage and nongame species found were white suckers, blackchin shiners, and bluntnose minnows. The white sucker population is large and healthy and likely provides an important source of food for most of the sport fish populations in Sawyer Lake.

Sawyer Lake is managed primarily for walleye, bass, and panfish. Current fishing regulations appear to be appropriate and working as intended. Looking down the road though and trying to avoid potential problems before they arise, the walleye population may benefit from a regulation change from the 1 fish over 14 inch current regulation, to either a 15 or 18 inch minimum length limit. This potential regulation change proposal should be discussed with anglers and lake association members to see if there is support for such a change. If so, this proposal should be initiated and proceed to the Conservation Congress/Wisconsin DNR Spring Hearing process.

Since 1984, smallmouth and largemouth bass have been managed under a 12–16 inch protected slot limit and 5 daily bag limit. The length frequencies of both the smallmouth and largemouth don't suggest much harvest of fish less than 12 inches. The most abundant size of largemouth bass is in the 11.0–11.4 half-inch grouping and the second most abundant are in the 11.5–11.9 half-inch grouping. If anglers were harvesting significant numbers below the slot, I'd expect to see less fish of these sizes. While the apparent lack of harvest of largemouth bass less than 12 inches doesn't appear to be having any adverse impacts on the fishery of Sawyer Lake, anglers could be missing a harvest opportunity. The bass size quality may even improve with more harvest of bass less than 12 inches.

## ACKNOWLEDGEMENTS

Jeff Reissmann, Tanya Meives, Ron Plank, Rick Halder, Ben Rolling, Tim Tobias, and I performed the netting and electrofishing surveys. Rick Halder, Ben Rolling, and I estimated ages of fish based on scale samples. Jeff Reissmann, Tanya Meives, Rick Halder, Ben Rolling, and I performed tasks associated with data management, organization, summary, and entry into the statewide database. Mike Coshun calculated the walleye population estimate. Mike Vogelsang supervised the field work, data work, and report writing. Mike Vogelsang reviewed and edited the report.

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## APPENDICES

Appendix A. Sawyer Lake Comprehensive Fish Survey Catches

Appendix B. Sawyer Lake Ice-Out Fyke Netting Survey Catches

Appendix C. Sawyer Lake Electrofishing Survey Catches

Appendix D. Sawyer Lake Panfish Fyke Netting Survey Catches

Appendix E. Sawyer Lake Walleye Tribal Spear Harvest History

Appendix F. Sawyer Lake Map (1970)





## Appendix C. Sawyer Lake Electrofishing Survey Catches

Water: Sawyer Lake  
Year: 2010

Gear: Boom EF  
Effort (Hrs):  
Gamefish: 8.47  
Everything Else: 0.50

	9-Apr		29-Apr		6-Oct		Total Measured	Total Counted	Total	CPUE #/Hr.	CPUE #/Mi.
	Gamefish	Everything Else	Gamefish	Everything Else	Gamefish	Everything Else					
EF Minutes	180		160	30	168						
EF Distance (Miles)	5.23		5.23	1.00	5.23						
Species	Measured	Counted	Measured	Counted	Measured	Counted	Measured	Counted	Total	#/Hr.	#/Mi.
Walleye	94		42		12		148	0	148	17.5	9.4
Northern Pike	8		3		7		18	0	18	2.1	1.1
Muskellunge							0	0	0	0.0	0.0
Tiger Muskellunge							0	0	0	0.0	0.0
Smallmouth Bass	16		30		31		77	0	77	9.1	4.9
Largemouth Bass	185		169		248		602	0	602	71.1	38.4
Yellow Perch			9				9	0	9	18.0	9.0
Black Crappie			1				1	0	1	2.0	1.0
Bluegill			30				30	0	30	60.0	30.0
Pumpkinseed			4				4	0	4	8.0	4.0
Hybrid Bluegill (BGXPS)							0	0	0	0.0	0.0
Rock Bass			65				65	0	65	130.0	65.0
Yellow Bullhead							0	0	0	0.0	0.0
Black Bullhead							0	0	0	0.0	0.0
White Sucker			31				31	0	31	62.0	31.0
Shorthead Redhorse							0	0	0	0.0	0.0
Golden Shiner							0	0	0	0.0	0.0
Creek Chub							0	0	0	0.0	0.0
Common Shiner							0	0	0	0.0	0.0
Blackchin Shiner			1				1	0	1	2.0	1.0
Bluntnose Minnow			1				1	0	1	2.0	1.0
0							0	0	0	0.0	0.0
0							0	0	0	0.0	0.0
0							0	0	0	0.0	0.0
0							0	0	0	0.0	0.0
0							0	0	0	0.0	0.0
0							0	0	0	0.0	0.0
0							0	0	0	0.0	0.0
0							0	0	0	0.0	0.0
0							0	0	0	0.0	0.0
0							0	0	0	0.0	0.0
0							0	0	0	0.0	0.0
<b>Total Fish</b>	<b>303</b>	<b>0</b>	<b>386</b>	<b>0</b>	<b>298</b>	<b>0</b>	<b>987</b>	<b>0</b>	<b>987</b>	<b>N/A</b>	<b>N/A</b>
Lymphocystis (Walleye)		P		P			0	0	0	N/A	N/A
Lymphosarcoma (NP)							0	0	0	N/A	N/A
Lymphosarcoma (MU)							0	0	0	N/A	N/A
0							0	0	0	N/A	N/A
Muskrat							0	0	0	N/A	N/A
0							0	0	0	N/A	N/A
Unknown Crayfish							0	0	0	N/A	N/A
Rusty Crayfish							0	0	0	N/A	N/A
Native Mystery Snail							0	0	0	N/A	N/A
Banded Mystery Snail				P			0	0	0	N/A	N/A
Chinese Mystery Snail							0	0	0	N/A	N/A
Unknown Snail							0	0	0	N/A	N/A
Mudpuppy							0	0	0	N/A	N/A
Purple Loosestrife							0	0	0	N/A	N/A
Eurasian Water Milfoil							0	0	0	N/A	N/A
0							0	0	0	N/A	N/A
Painted Turtle							0	0	0	N/A	N/A
Snapping Turtle							0	0	0	N/A	N/A
<b>Total Non Fish</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>N/A</b>	<b>N/A</b>



Appendix E. Sawyer Lake Walleye Tribal Spear Harvest History

<b>Year</b>	<b>Number Speared</b>	<b>Running Average</b>
1985	0	-
1986	0	-
1987	0	-
1988	0	-
1989	0	-
1990	0	-
1991	0	-
1992	0	-
1993	0	-
1994	0	-
1995	0	-
1996	19	19.0
1997	0	9.5
1998	0	6.3
1999	0	4.8
2000	0	3.8
2001	17	6.0
2002	12	6.9
2003	0	6.0
2004	85	14.8
2005	56	18.9
2006	52	21.9
2007	36	23.1
2008	53	25.4
2009	37	26.2
2010	40	27.1
2011	30	27.3
2012	25	27.2

# Appendix F. Sawyer Lake Map (1970)

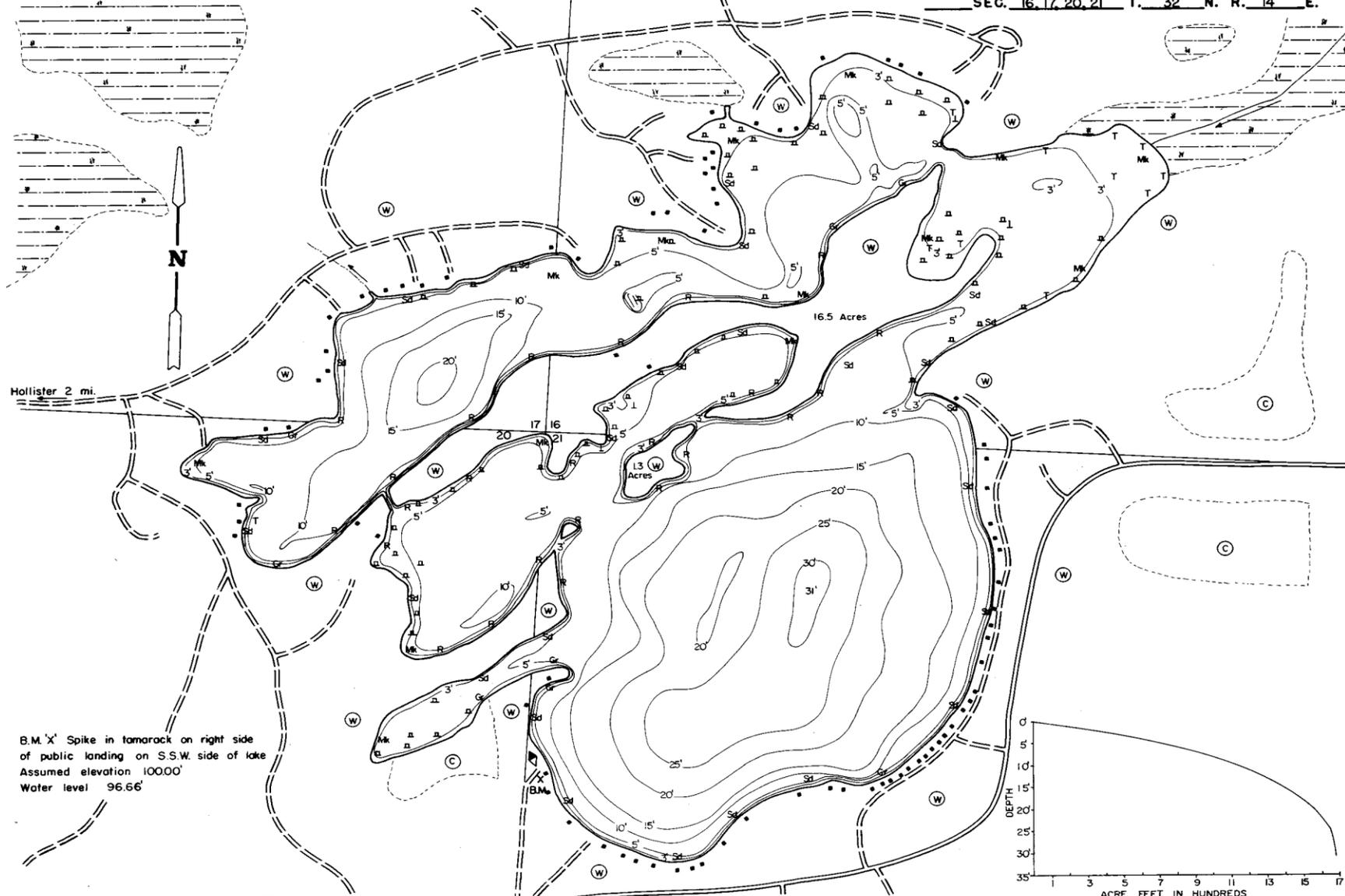
STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES

## LAKE SURVEY MAP

SAWYER  
LAKE

LANGLAD  
COUNTY

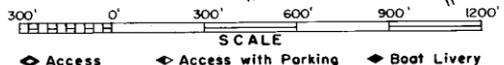
SEC. 16, 17, 20, 21 T. 32 N. R. 14 E.



B.M. 'X' Spike in tamarack on right side  
of public landing on S.S.W. side of lake  
Assumed elevation 10000'  
Water level 96.66'

EQUIPMENT RECORDING SONAR MAPPED AUG 1970

- |                      |                           |                     |                             |
|----------------------|---------------------------|---------------------|-----------------------------|
| TOPOGRAPHIC SYMBOLS  |                           | LAKE BOTTOM SYMBOLS |                             |
| (B) Brush            | Steep slope               | P. Peat             | B. Boulders                 |
| (W) Partially wooded | ~ Indefinite shoreline    | Mk. Muck            | * Stumps & Snags            |
| (W) Wooded           | ~ Marsh                   | C. Clay             | ⚠ Rock danger to navigation |
| (C) Cleared          | ~ Spring                  | M. Marl             | T Submergent vegetation     |
| (P) Pastured         | ~ Intermittent stream     | Sd. Sand            | 1 Emergent vegetation       |
| (A) Agricultural     | ~ Permanent inlet         | St. Silt            | 1 Floating vegetation       |
| B.M. Bench Mark      | ~ Permanent outlet        | Gr. Gravel          | ⚡ Brush shelters            |
| ■ Dwelling           | ~ Dam                     | R. Rubble           |                             |
| ■ Resort             | ~ D.N.R. State owned land | Bc. Bedrock         |                             |
| ■ Camp               |                           |                     |                             |



◊ Access ◊ Access with Parking ◊ Boat Livery

Drawn by: C. Holt  
Field work by: R. Crocker & I. Smith

SPECIES OF FISH	Abundance		
	Abundant	Common	Present
Muskie			
N. Pike			X
Walleye			X
L.M. Bass	X		
S.M. Bass			
Panfish	X		
Trout			

WATER AREA 149.1 ACRES  
UNDER 3 FT. 8 %  
OVER 20 FT. 18 %  
MAX. DEPTH 31 FEET.  
TOTAL ALK. 85 P.P.M.  
VOLUME 1680 ACRE FT.  
SHORELINE 3.36 MILES  
SHORELINE 5.23 MILES WITH IS.