CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: March 19, 2010 FILE REF: 3600

TO: Sue Beyler

FROM: Benjamin Heussner, Steven Gospodarek, and Luke Roffler

SUBJECT: Comprehensive Survey Report of Lac La Belle – Waukesha County (WBIC 848800).

ABSTRACT

A comprehensive fisheries survey of Lac La Belle was conducted in the spring of 2009 to assess local gamefish and panfish populations. Species captured included walleye, northern pike, smallmouth bass, largemouth bass, muskellunge, and common carp. An extended special study was also conducted to estimate the abundance of common carp in Lac La Belle.

Walleye catch rates were low during fyke netting on Lac La Belle, with female size structure much larger than that of males, all of which is consistent with the 1993 survey. Males greatly outnumbered females, both during the survey and in the population estimate. Total adult walleye abundance, at 2.1/acre, was larger than in previous surveys, mostly due to a five-fold increase in the estimate of male adult walleye abundance. Average lengths and weights for walleye have also increased since the 1993 survey. Walleye growth rates on Lac La Belle were higher than statewide average, while annual mortality, at 66.2%, began at around 14.4 inches. These growth and mortality rates demonstrate the need to protect female walleyes in Lac La Belle for at least two spawning seasons. Two successive year classes of naturally reproduced walleyes were observed in 2009 surveys on Lac La Belle.

Northern pike fyke netting catch rates were low, though equal to the previous survey. Average lengths and weights were up, however, with a PSD of 75.4% and an RSD-28 of 24.6%. Northern pike in Lac La Belle grow at a rate equal to statewide average, with females growing more quickly than males.

Smallmouth bass electrofishing catch rate was relatively low on Lac La Belle, with over 25% of smallmouth captured measuring longer than the 14-inch minimum length limit. Smallmouth abundance, estimated at 0.65 bass/acre, was relatively low. Lac La Belle smallmouth showed a 55.1% annual mortality rate beginning at age 3, or 10.1 inches.

Largemouth bass captured during the survey showed large size structure, with 40% measuring longer than the 14-inch minimum length limit. Largemouth bass were much less frequent than smallmouth during the survey.

Muskellunge captured on Lac La Belle showed very large size structure. Muskellunge PSD was at 100% and RSD-20 was at 84.9%, with an average size over 42 inches and 21 pounds. All of the muskellunge captured during the survey were longer than the 34-inch minimum length limit.

Common carp were estimated at 12.7 fish/acre following a mark and recapture effort on Lac La Belle. While the carp fyke netting catch rate was equal to the 1993 survey, average size has increased. Carp PSD and RSD-21 values have steadily increased through the years, potentially indicating a decrease in carp abundance. The annual Lac La Belle Management District's Carp Out event resulted in a total of 614 carp removed from the lake.

Bluegill and other panfish were relatively rare during the survey, with yellow bass and white bass becoming more common since previous surveys. Other species of note included rock bass, black crappie, flathead catfish, and smallmouth buffalo.

METHODS

The 2009 comprehensive fisheries survey of Lac La Belle began on March 23rd, with the setting of eight fyke nets. Up to 16 total nets were fished on Lac La Belle through April 30th (Figure 1). Fourteen nets were made up of ¾-inch bar white nylon mesh and two nets were ½-inch green nylon mesh, while all nets featured four-foot frames. All fish species were measured to the nearest tenth-inch and gamefish were also weighed to the nearest tenth-pound. Walleye, northern pike, and muskellunge were given finclips to identify recaptures and facilitate abundance estimates (female – right pectoral, male – left pectoral, unknown or immature – top caudal), as were largemouth and smallmouth bass (top caudal) and common carp (right pectoral).

Electrofishing sampling began with a walleye recapture run on April 8th. Electrofishing focusing on bass and panfish began on the evening of May 4th and continued through May 27th. An extended electrofishing survey was conducted for common carp from May 11th through June 4th. On June 6th, the Lac La Belle Management District held their annual "Carp Out" event, from which data was collected as the recapture run on common carp. The total shocking effort for walleyes was 3.0 hours, 17.9 hours for muskellunge, 14.9 hours for other gamefish, 29.23 hours for common carp, and 0.25 "catch all" hours in which all species were collected.

Mark and recapture efforts during fyke netting and electrofishing produced population estimates for walleye, smallmouth bass, and common carp. For all species, abundance was estimated using the Petersen formula $N = \frac{MC}{R}$, where M is the number of marked fish at large, C is the number of fish captured during the recapture run, and R is the number of recaptured fish identified during the recapture run.

Scales for ageing were collected from largemouth bass, muskellunge, northern pike, smallmouth bass, and walleye, which allowed for estimation of growth and survival rates for each species. Mean length and catch per effort were calculated for all species sampled.

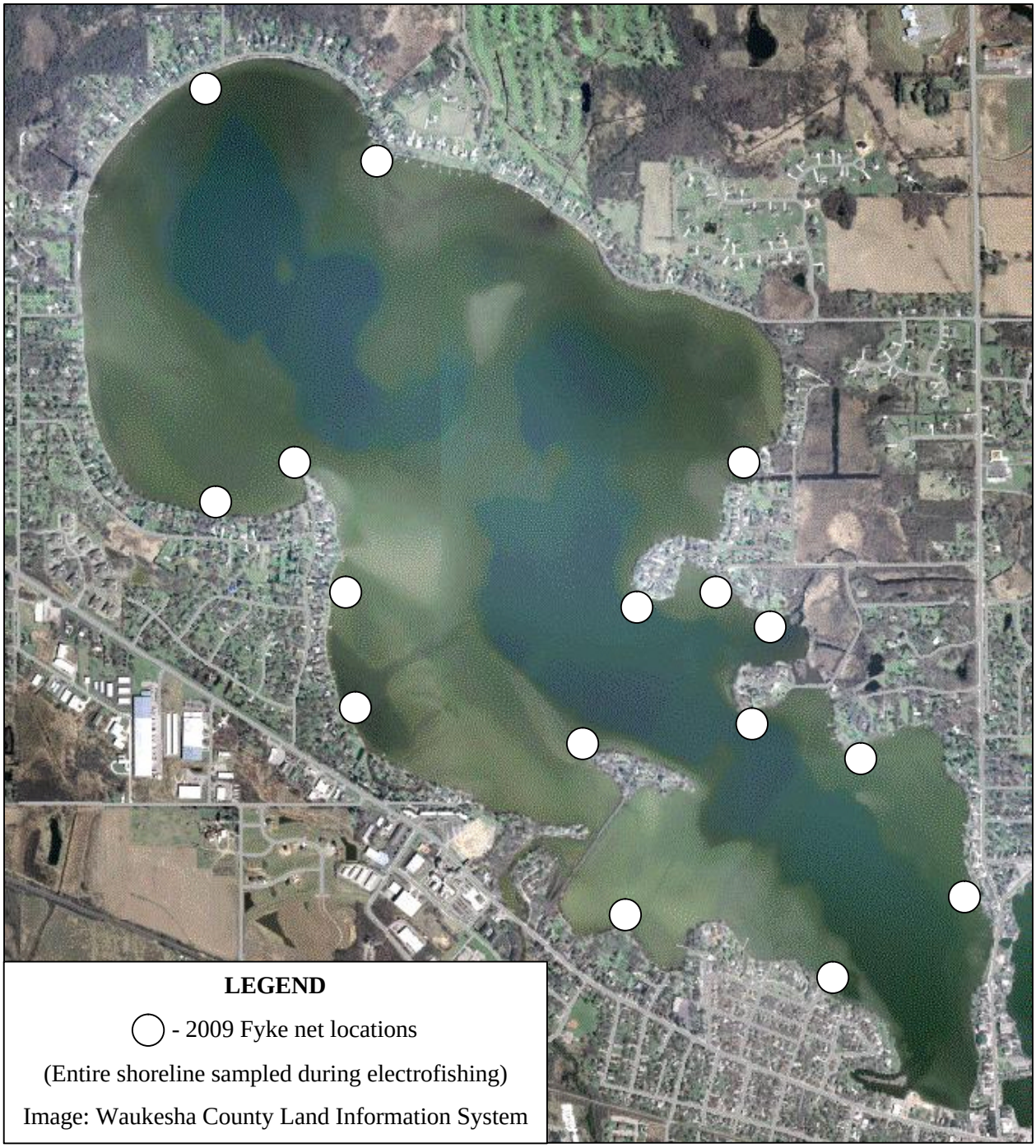

Figure 1. Survey map of Lac La Belle showing fyke net and electrofishing locations.

RESULTS

Walleye

In March and April of 2009, walleyes in Lac La Belle were sampled by fyke net and a single recapture electrofishing run. Fyke netting catch rates, mean lengths, and mean weights for female, male, and unknown walleyes were quantified and summarized (Table 1).

Table 1. Walleye captured by fyke net from Lac La Belle in spring of 2009. Total effort of 205 net nights.

Sex	Number	Catch/Net Night	Mean Length	Std. Dev.	Mean Weight	Std. Dev.
Female	180	0.88	18.65	1.63	2.82	1.05
Male	553	2.70	15.56	1.51	1.68	0.57
Unknown	203	0.99	12.56	2.49	0.80	0.53
Total	936	4.57	15.44	2.66	1.85	1.06

The largest walleye captured during fyke netting was a 25.1-inch female, whereas the largest male was 20.3 inches. Female walleyes showed a length frequency mode of 18.1 inches, while males showed a modal length of 16.5 inches (Figure 2).

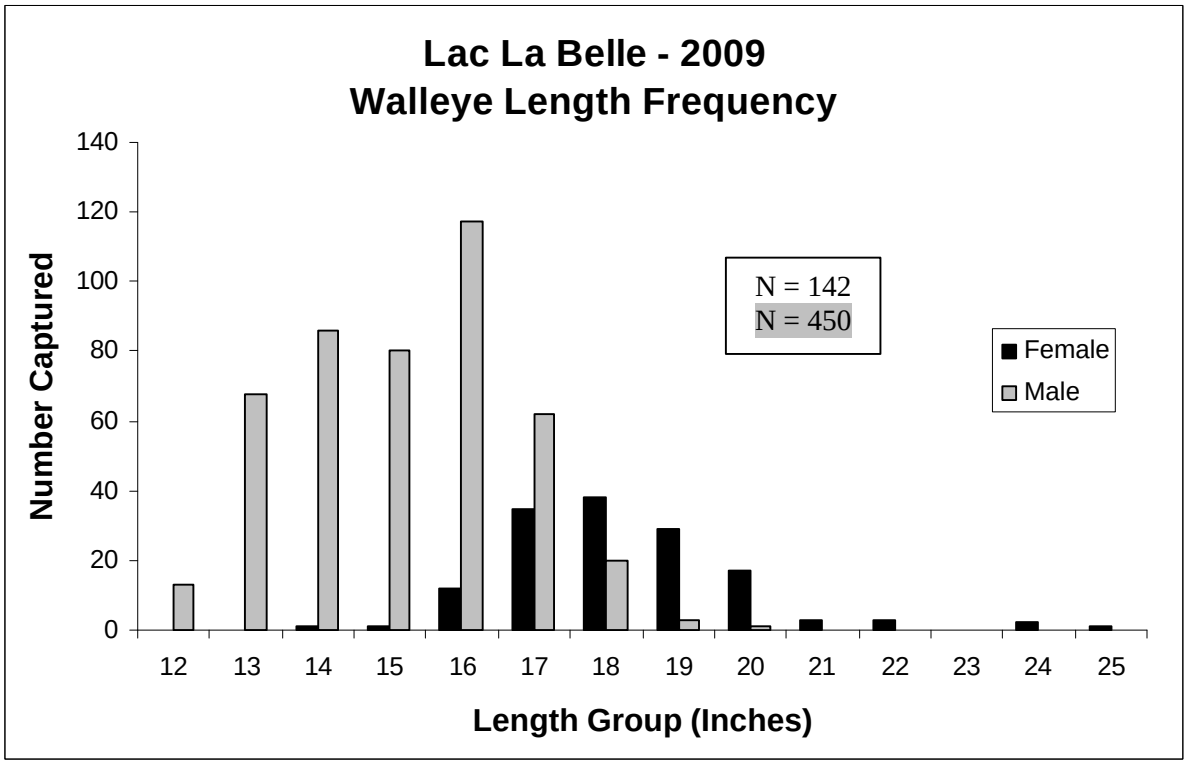

Figure 2. Walleye length frequency from Lac La Belle fyke netting in spring of 2009.

Walleye catch rate during electrofishing was high, with similar average lengths to fyke netting (Table 2).

Maximum size was smaller during electrofishing with walleyes topping out with a 19.6-inch male. Females showed a similar length frequency mode as their fyke netting counterparts, while male modal

length was lower at 14.4 inches (Figure 3). Weights were not collected during the walleye shocking run. Young walleyes from the 2008 year class were captured throughout the spring survey and walleye from the 2009 year class were captured in a follow-up fall survey (5.33 young-of-the-year/hour). Lac La Belle was not stocked with walleyes in 2008 or 2009, meaning that these fish are naturally reproduced.

Table 2. Walleye captured by electrofishing from Lac La Belle in spring of 2009. Total effort of 3.0 hours.

Sex	Number	Catch/Hour	Mean Length	Std. Dev.
Female	21	7.00	17.97	0.50
Male	236	78.67	15.08	1.50
Unknown	111	37.00	12.80	2.05
Total	368	122.67	14.53	2.12

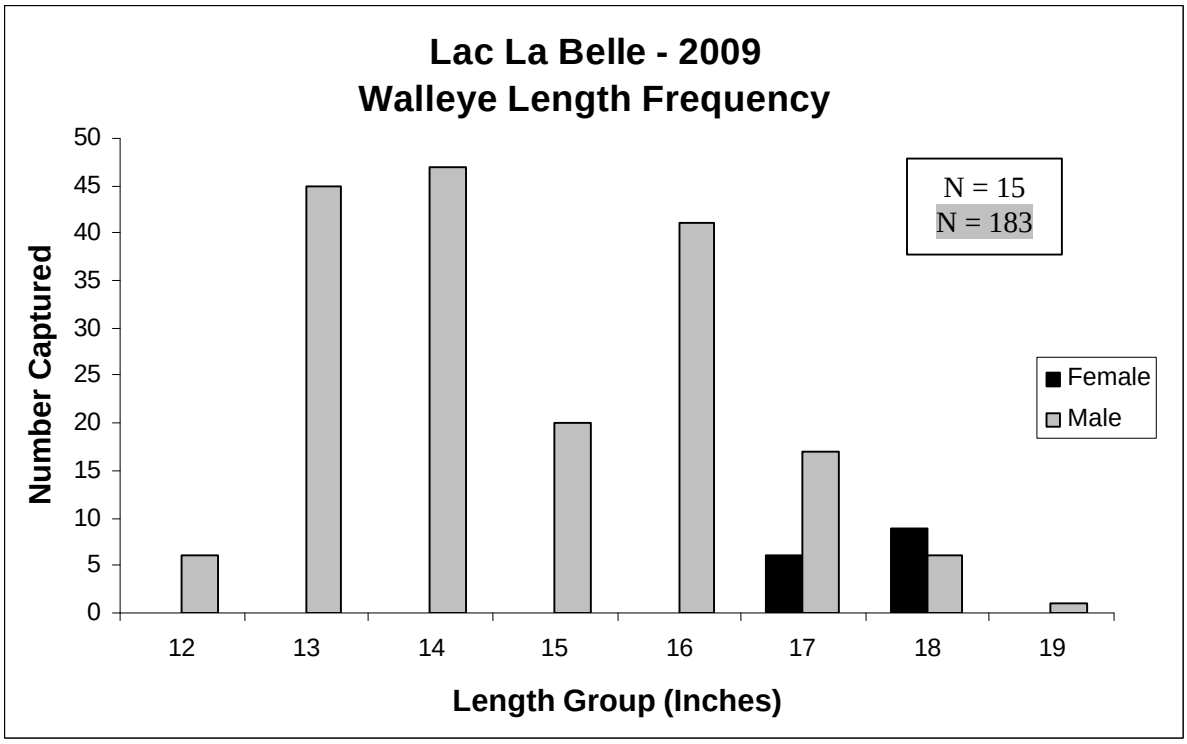

Figure 3. Walleye length frequency from Lac La Belle electrofishing in spring of 2009.

Gender-specific proportional stock density (PSD), using a stock length of 10 inches and a quality length of 15 inches, showed relatively large female walleyes compared to their male counterparts. Female PSD was 99.7%, whereas male PSD was 58.1%. Female relative stock density (RSD-20), using a stock length of 10 inches and a preferred length of 20 inches, was 16.6%, compared to 0.16% for males.

Walleyes from Lac La Belle were given differential finclips throughout spring sampling, allowing for a mark and recapture effort to estimate abundance. The resulting population estimate using the Petersen formula indicated 497 adult female walleye in Lac La Belle (95% confidence intervals of 272 and 1,259), or 0.4/acre (Table 3).

Adult male walleye abundance was estimated at 2,004 (95% confidence intervals of 1,589 and 2,601), or 1.7/acre (Table 4).

Table 3. Female walleye mark and recapture data and Petersen population estimate from Lac La Belle in spring of 2009 (R/C=0.29, CV=34.50%).

Marked M	Examined C	Recaptured R	Population Estimate N	Lower 95% C.I.	Upper 95% C.I.
142	21	6	497	272	1,259

Table 4. Male walleye mark and recapture data and Petersen population estimate from Lac La Belle in spring of 2009 (R/C=0.22, CV=12.10%).

Marked M	Examined C	Recaptured R	Population Estimate N	Lower 95% C.I.	Upper 95% C.I.
450	236	53	2,004	1,589	2,601

Scales for ageing were collected from walleye, allowing for calculation of growth rates and comparison to statewide average. Walleyes in Lac La Belle showed growth rates greater than state average (Figure 4).

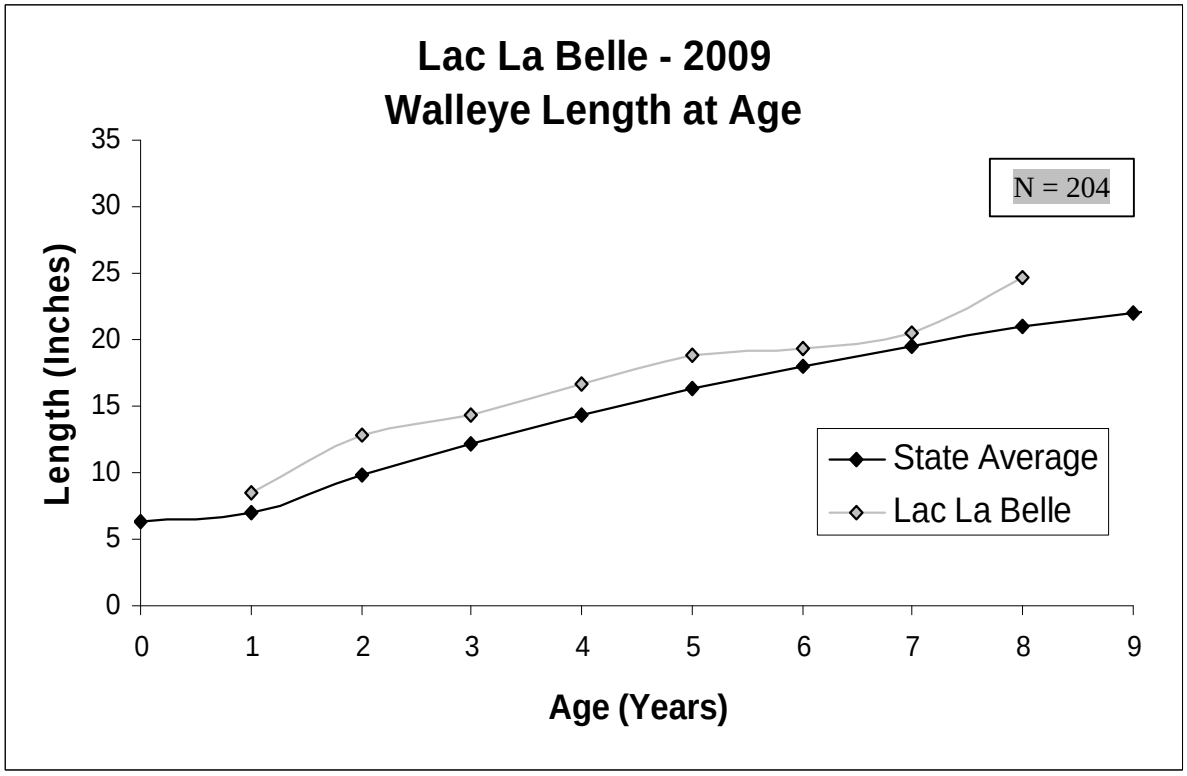

Figure 4. Walleye length at age from Lac La Belle in spring of 2009.

Female and male walleye growth rates were also calculated and plotted separately (Figure 5).

A catch curve was constructed for walleye in Lac La Belle, providing an estimate of mortality. Lac La Belle walleyes show 66.2% mortality beginning at age 3 or 14.4 inches (Figure 6). These fish are well below the 20-inch minimum length limit, meaning this mortality is likely a combination of natural causes and other factors.

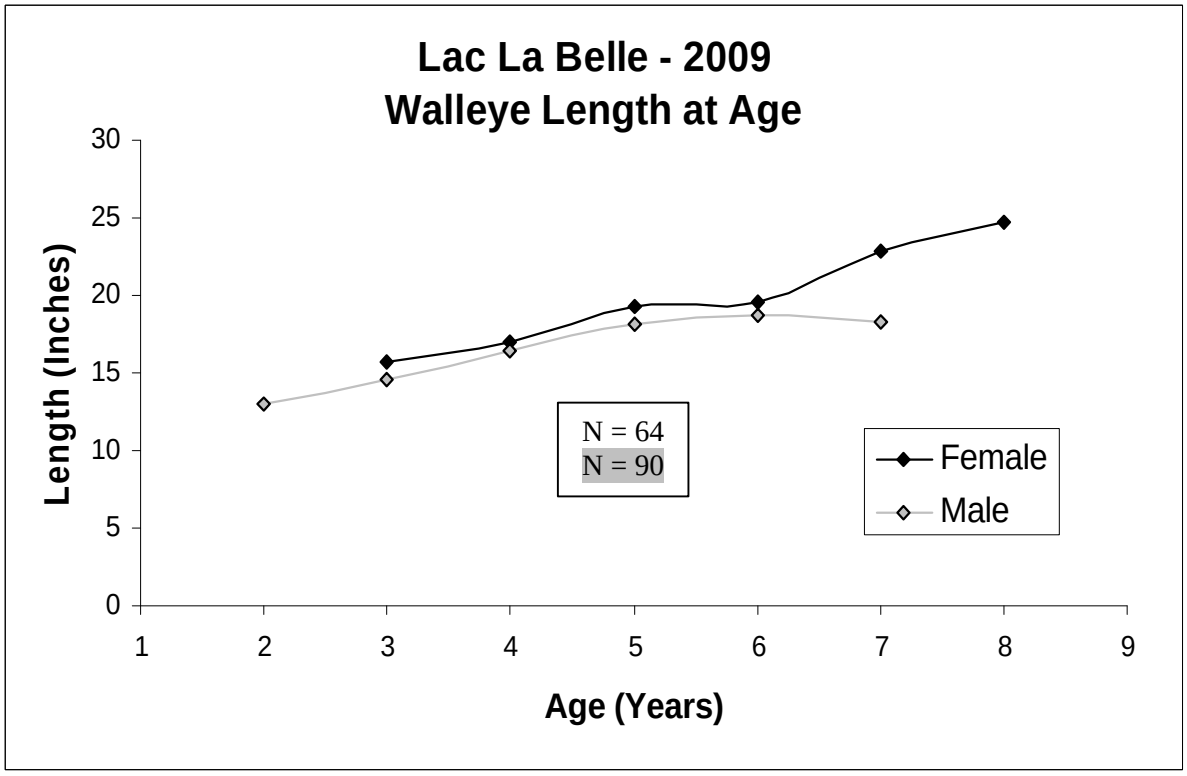

Figure 5. Walleye length at age by gender from Lac La Belle in spring of 2009.

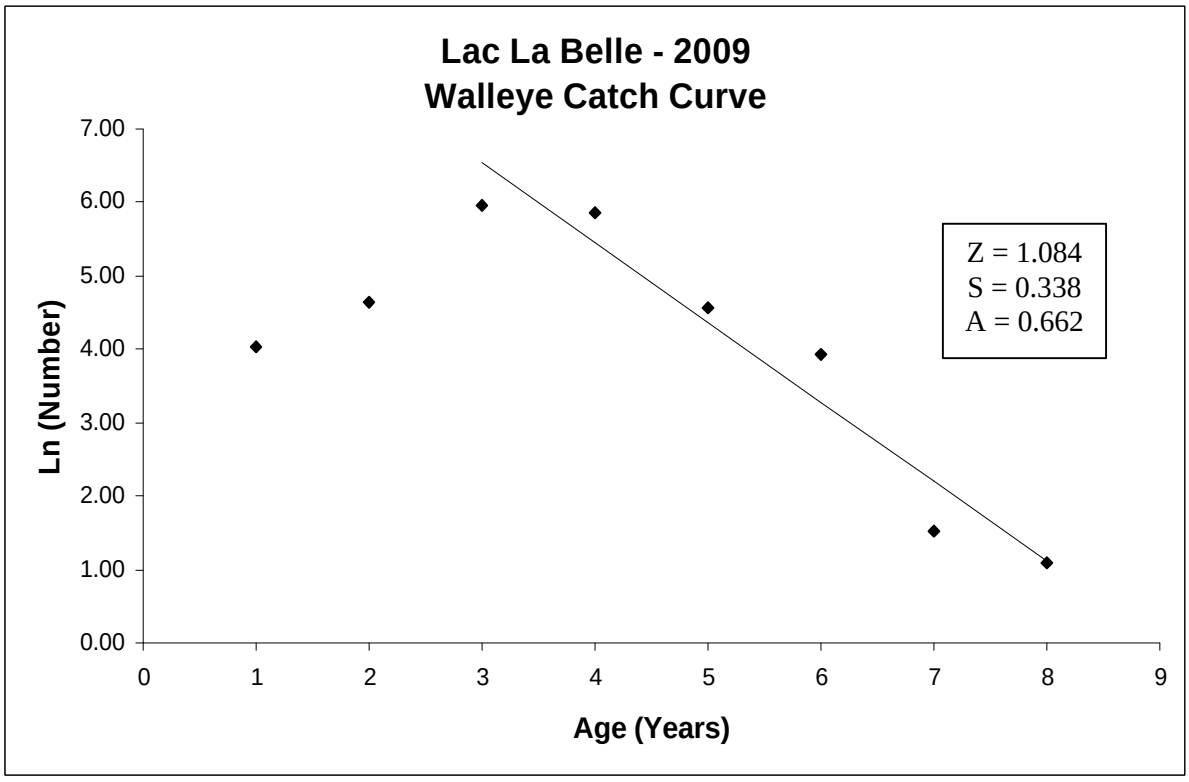

Figure 6. Walleye catch curve from Lac La Belle in spring of 2009.

Northern Pike

Northern pike were sampled throughout spring fyke netting. Catch rates were low, though average sizes were high (Table 5). The largest female sampled was 38.0 inches, whereas the largest male measured 29.0 inches.

Table 5. Northern pike captured by fyke net from Lac La Belle in spring of 2009. Total effort of 205 net nights.

Sex	Number	Catch/Net Night	Mean Length	Std. Dev.	Mean Weight	Std. Dev.
Female	30	0.15	25.67	5.50	4.55	2.76
Male	42	0.20	21.60	5.32	2.80	1.68
Unknown	66	0.32	11.72	2.24	0.41	0.17
Total	138	0.67	17.99	7.33	2.64	2.46

Female northern pike showed a length frequency mode of 20.3 inches, compared to 24.6 inches for males (Figure 7).

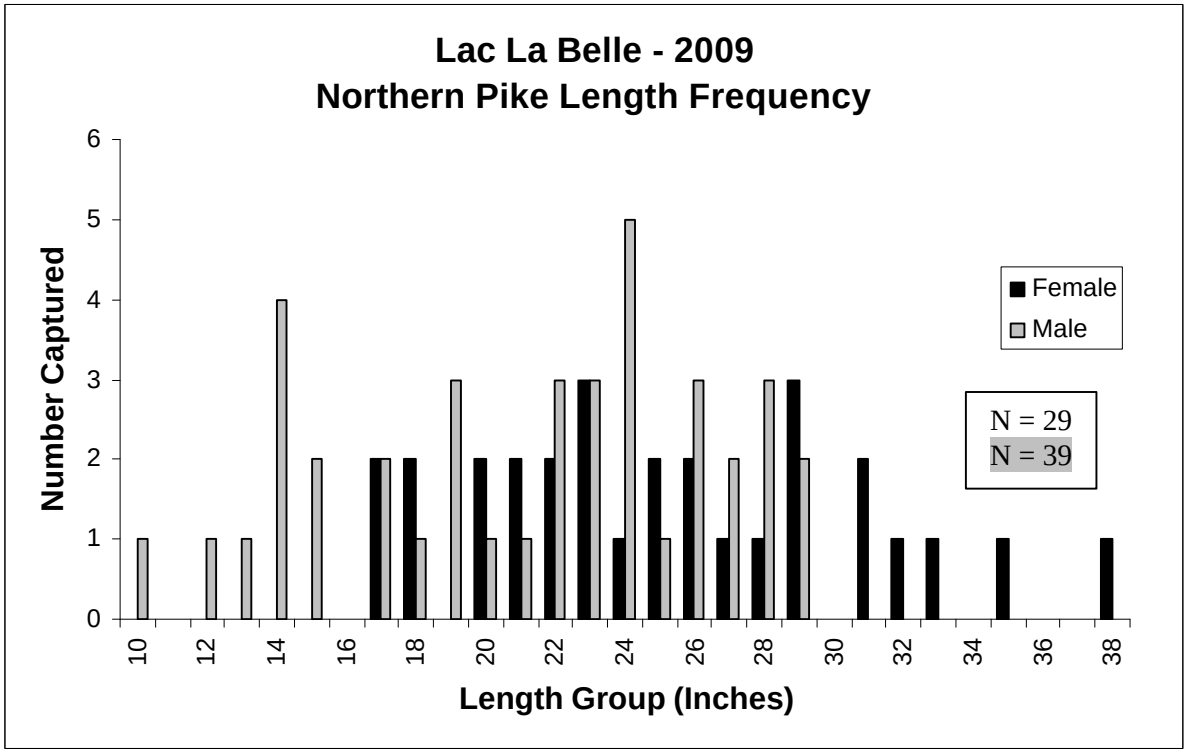

Figure 7. Northern pike lake frequency from Lac La Belle fyke netting in spring of 2009.

Northern pike PSD, at 75.4%, indicates a relatively large size structure, which is reinforced by an RSD-28 of 24.6%.

Scales for ageing were collected from northern pike during fyke netting. Estimates of northern pike growth rates were compared to statewide average, showing that pike in Lac La Belle grow at the statewide average rate (Figure 8).

Female and male northern pike growth rates were also calculated separately, allowing for comparison of

gender-specific growth rates (Figure 9).

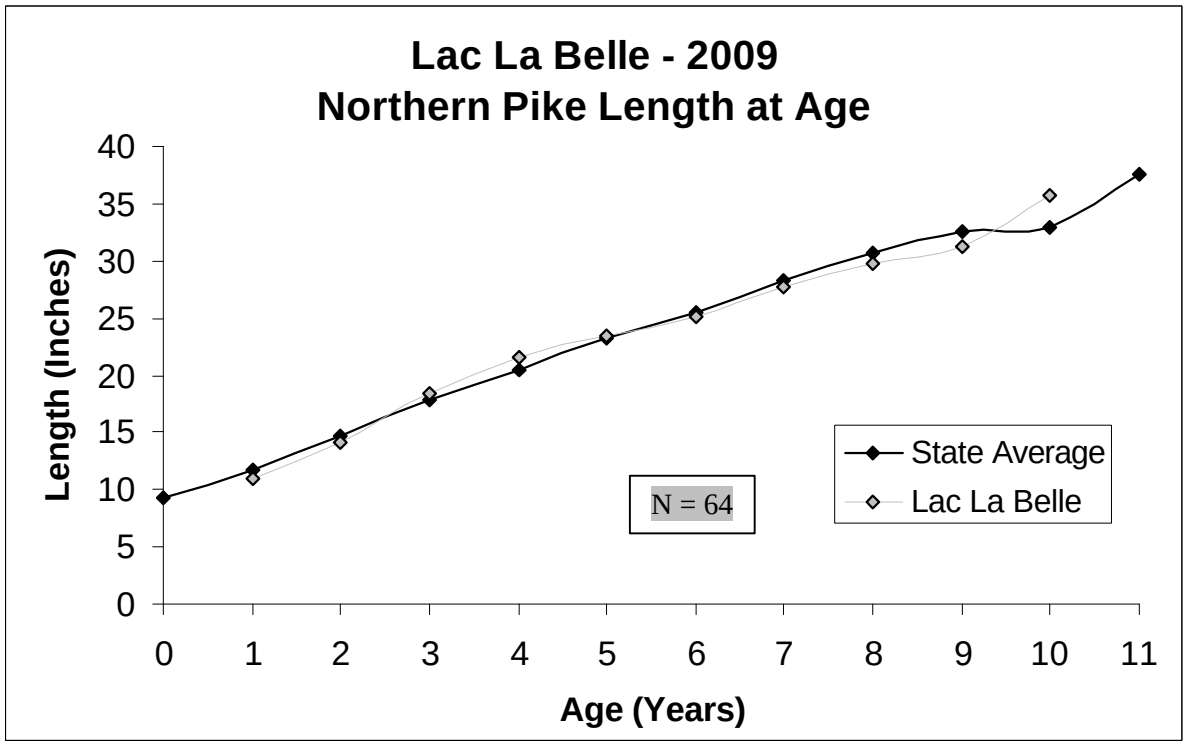

Figure 8. Northern pike length at age from Lac La Belle in spring of 2009.

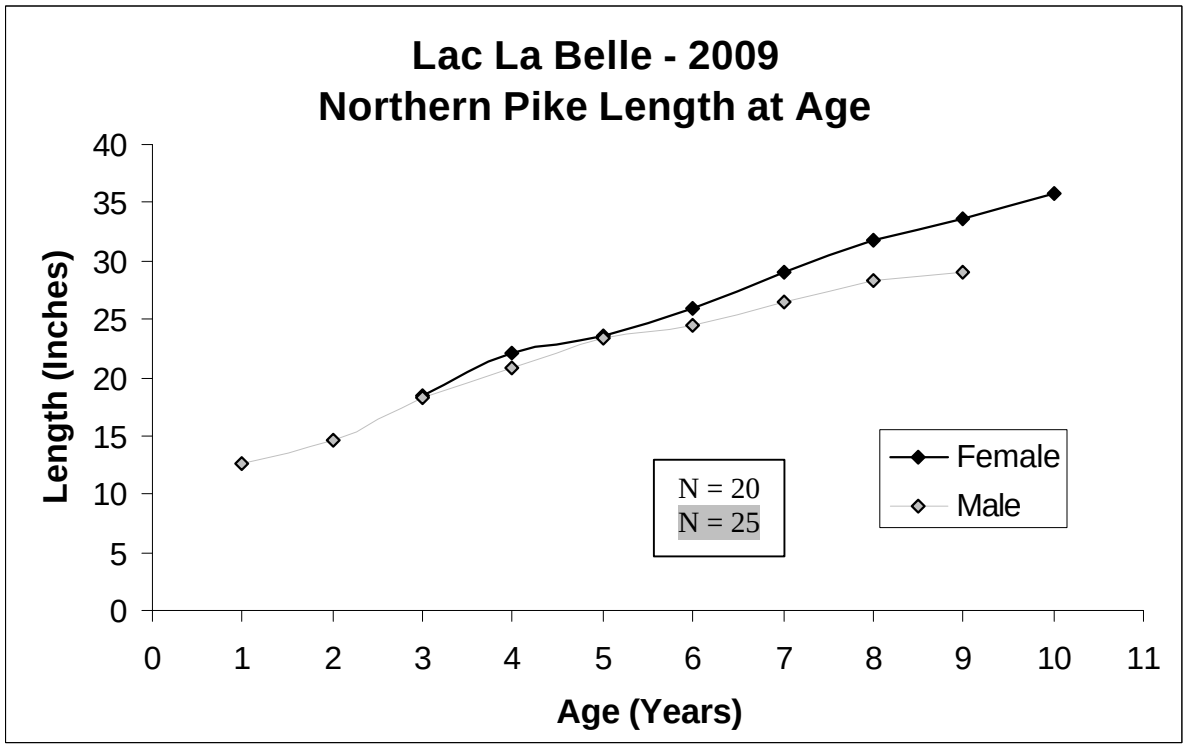

Figure 9. Northern pike length at age by gender from Lac La Belle in spring of 2009.

Northern pike sample size was not sufficient to plot a catch curve or calculate a mortality rate.

Smallmouth Bass

Smallmouth bass were captured during fyke netting and electrofishing surveys on Lac La Belle in spring of 2009. Smallmouth are not a target species during fyke netting, therefore the 167 bass captured during netting are considered incidental catch and do not contribute to the calculation of growth or mortality rates.

Electrofishing produced relatively low smallmouth bass catch rates, with an average size of 11.9 inches (Table 6).

Table 6. Smallmouth bass captured by electrofishing from Lac La Belle in the spring of 2009. Total effort of 14.9 hours.

Number	Catch/Hour	Mean Length	Std. Dev.	Mean Weight	Std. Dev.
290	19.46	11.91	2.82	1.19	0.81

The length frequency mode for smallmouth bass captured during electrofishing was 8.5 inches, with a maximum size of 19.5 inches (Figure 10). Overall smallmouth bass PSD (62.5%) and RSD-14 (25.3%) indicate a balanced size structure. Over 25% of smallmouth bass captured were longer than the 14-inch minimum length.

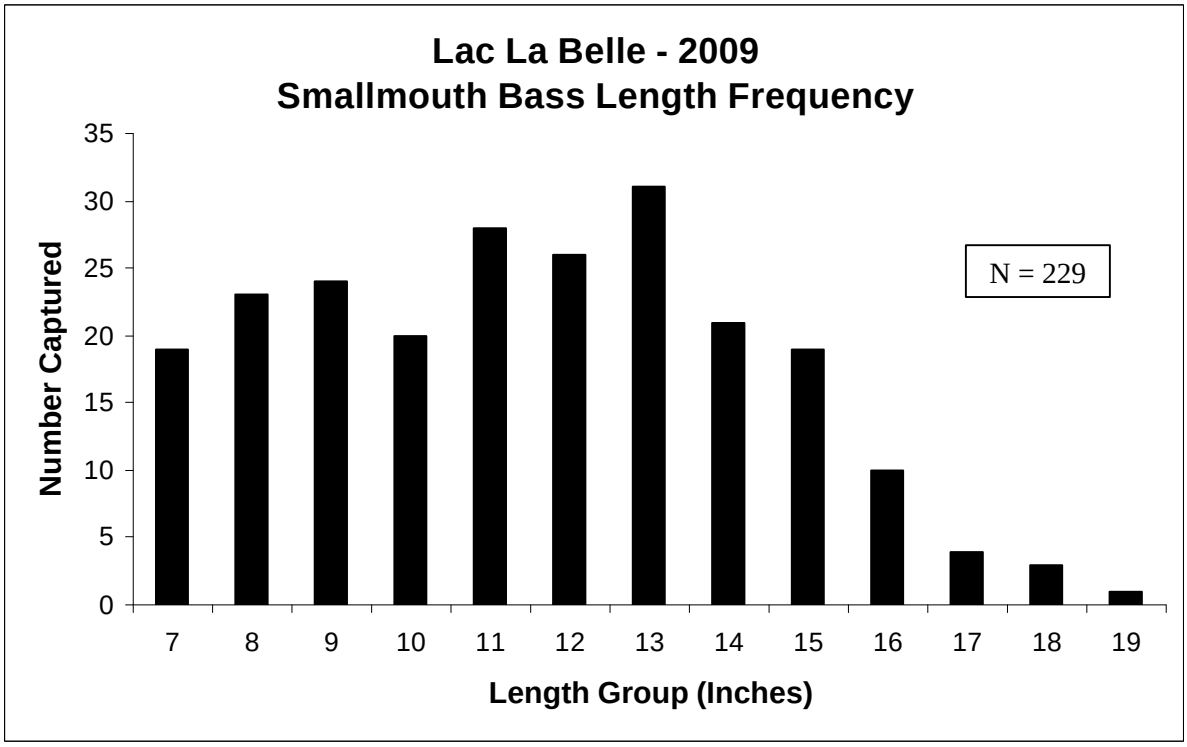

Figure 10. Smallmouth bass length frequency from Lac La Belle electrofishing in spring of 2009.

Smallmouth bass were marked with top caudal finclips throughout fyke netting and electrofishing

sampling. Recaptures during electrofishing runs provided a population estimate via the Petersen formula. This population estimate of 758 (95% confidence intervals of 561 and 1,169) is roughly equal to 0.65 smallmouth/acre (Table 7).

Table 7. Smallmouth bass mark and recapture data and Petersen population estimate from Lac La Belle in spring of 2009 (R/C=0.50, CV=17.15%).

Marked	Examined	Recaptured	Population Estimate	Lower 95%	Upper 95%
M	C	R	N	C.I.	C.I.
379	34	17	758	561	1,169

Scales were collected from smallmouth bass for ageing, allowing for the estimation of growth rates in Lac La Belle. Smallmouth in this lake showed slightly higher growth rates than statewide average (Figure 11).

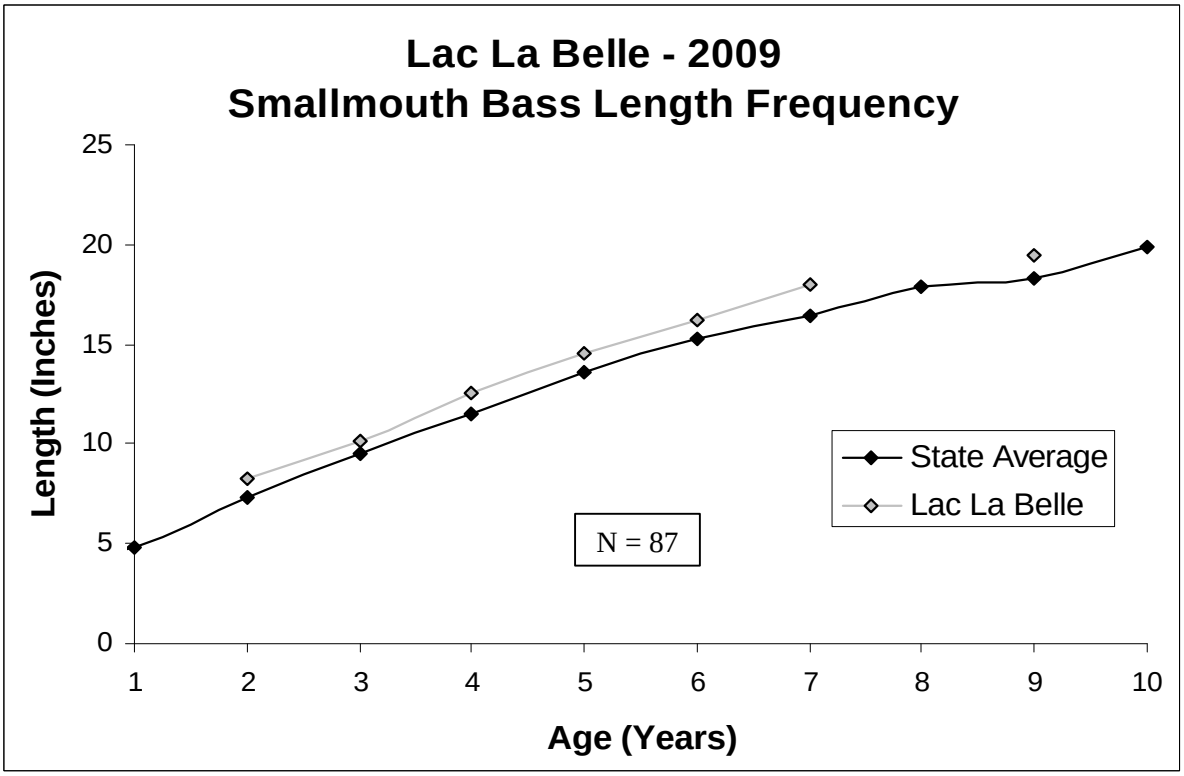

Figure 11. Smallmouth bass length at age from Lac La Belle in spring of 2009.

A catch curve was constructed for smallmouth bass to estimate annual mortality. Smallmouth bass in Lac La Belle exhibit 55.1% mortality beginning at age 3, or 10.1 inches (Figure 12). These fish are below the 14-inch minimum length limit, meaning this mortality is likely due to a combination of natural causes and other factors.

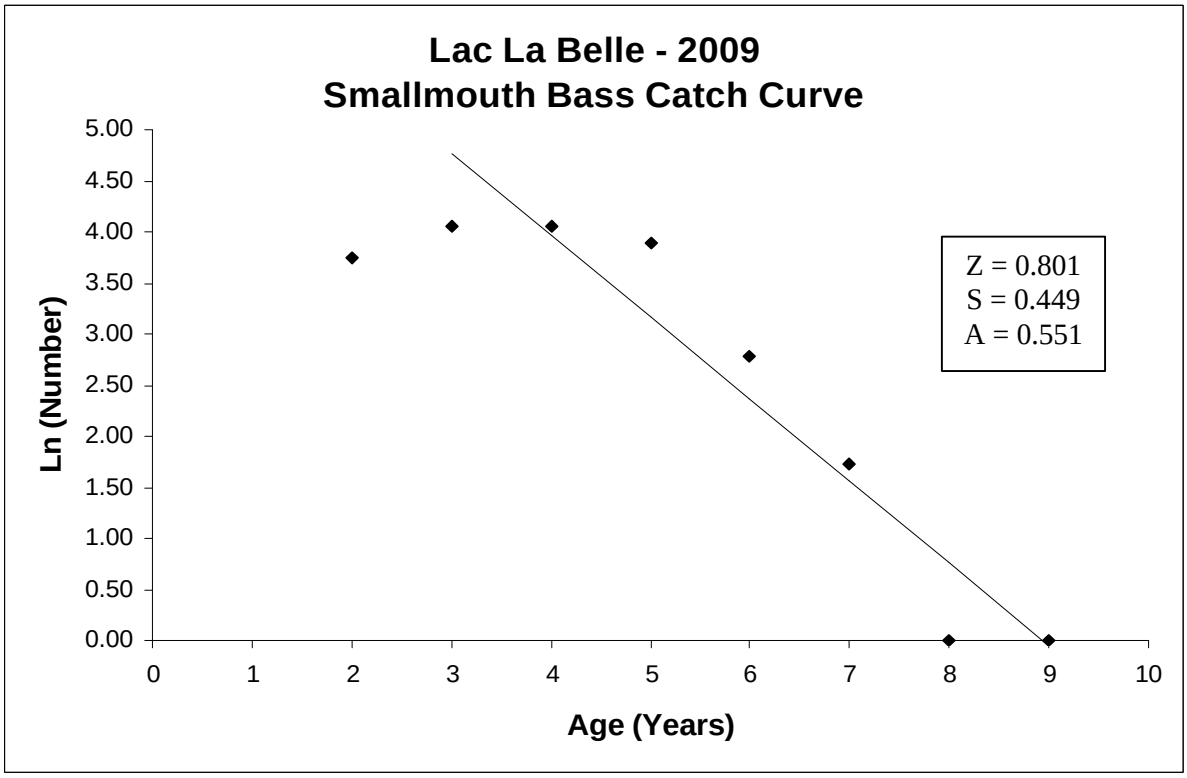

Figure 12. Smallmouth bass catch curve from Lac La Belle in spring of 2009.

Largemouth Bass

Largemouth bass were sampled from Lac La Belle throughout the entire spring sample. The 125 largemouth bass captured during fyke netting were regarded as incidental catch, as bass are not targeted during fyke netting surveys.

Largemouth were also captured during electrofishing, with an average size of 13.2 inches and a much smaller catch rate than smallmouth bass (Table 8).

Table 8. Largemouth bass captured by electrofishing from Lac La Belle in the spring of 2009. Total effort of 14.9 hours.

Number	Catch/Hour	Mean Length	Std. Dev.	Mean Weight	Std. Dev.
24	1.61	13.19	3.09	1.57	0.78

The length frequency mode for largemouth captured by electrofishing was 15.4 inches (Figure 13). Overall largemouth PSD, at 66.7%, and RSD-15, at 38.9%, indicate a relatively large size structure. Anderson (1980) recommends a largemouth bass PSD from 40-70%, with an RSD-15 between 10-25%. Approximately 39% of sampled largemouth bass were longer than the 14-inch minimum length.

Largemouth bass sample size was not sufficient to calculate growth or mortality rates.

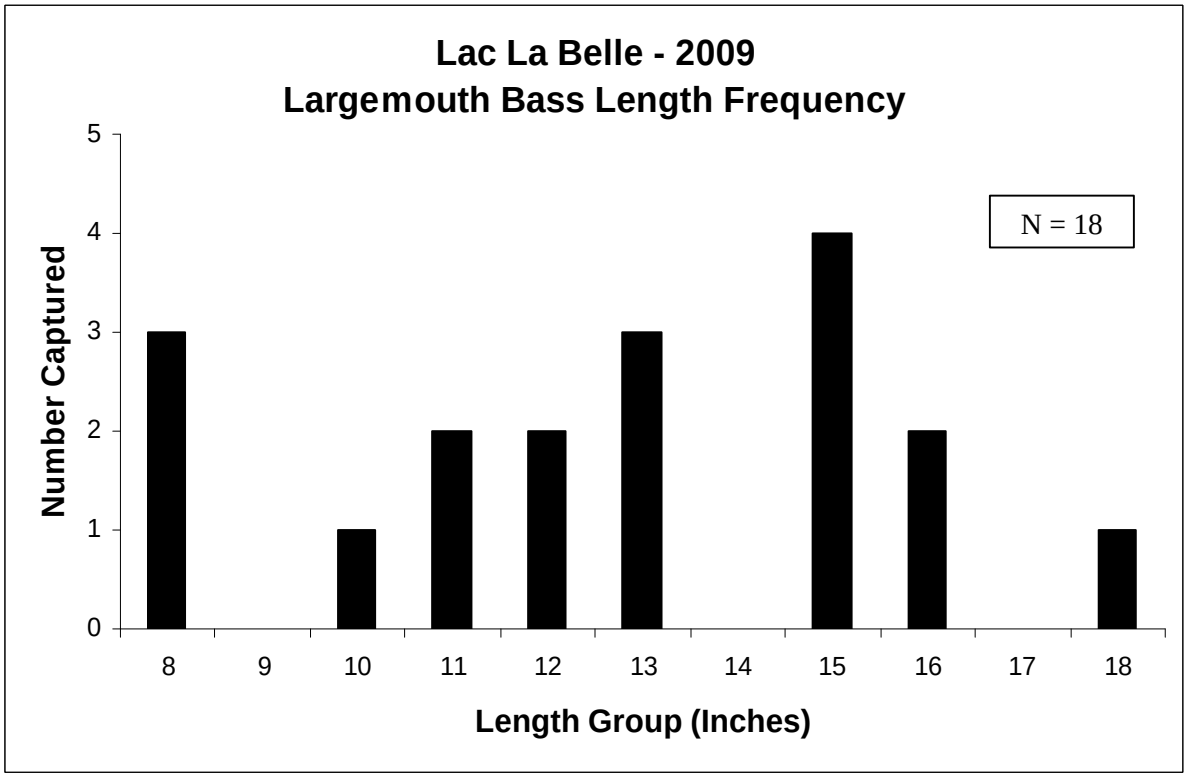

Figure 13. Largemouth bass length frequency from Lac La Belle electrofishing in spring of 2009.

Muskellunge

Muskellunge were sampled during fyke netting and electrofishing on Lac La Belle in 2009. Catch rate during fyke netting was low, though average size was relatively high (Table 9).

Table 9. Muskellunge captured by fyke net from Lac La Belle in spring of 2009. Total effort of 458 net nights.

Sex	Number	Catch/Net Night	Mean Length	Std. Dev.	Mean Weight	Std. Dev.
Female	17	0.04	44.99	3.06	27.84	6.41
Male	22	0.05	39.57	2.22	17.30	3.21
Unknown	0	0.00	-	-	-	-
Total	39	0.09	42.10	3.78	21.82	7.12

Female muskellunge showed a length frequency mode of 46.5 inches, while the male modal length was 40.0 inches (Figure 14).

Two muskellunge were captured during electrofishing surveys. These fish also displayed a relatively low catch rate and high average size. Overall muskellunge size structure was top heavy, with a PSD of 100% and an RSD-20 of 84.9%. All fish captured during the survey were larger than the 34-inch minimum length limit.

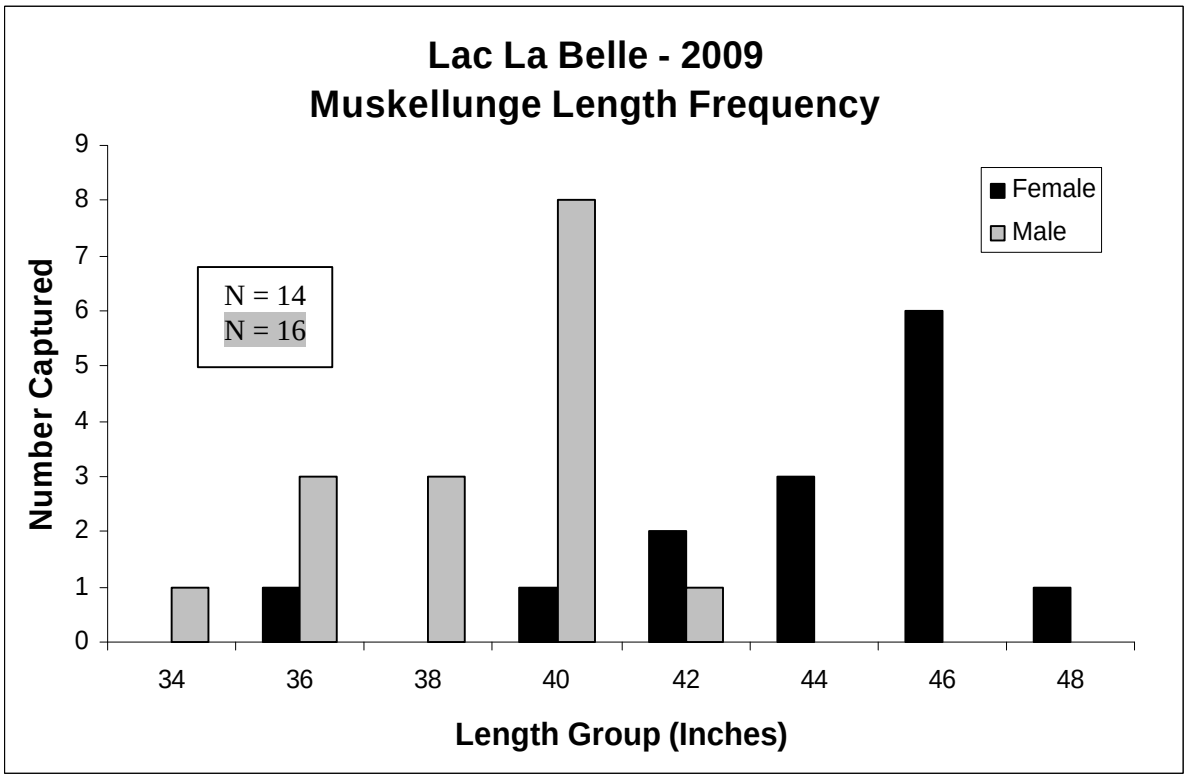

Figure 14. Muskellunge length frequency from Lac La Belle fyke netting in spring of 2009.

Common Carp

Common carp were a significant focus during the spring 2009 survey on Lac La Belle. Carp were captured during fyke netting and electrofishing, along with an extended electrofishing survey specifically targeting carp. The fyke netting catch rate for carp was low, with an average size of 20.3 inches (Table 10).

Table 10. Common carp captured by fyke netting from Lac La Belle in the spring of 2009. Total effort of 458 net nights.

Number	Catch/Net Night	Mean Length	Std. Dev.
138	0.30	20.29	3.06

These carp displayed a modal length of 18.3 inches, with a maximum of 32.0 inches (Figure 15).

Carp were also captured during electrofishing runs on Lac La Belle. Carp catch rates were high during electrofishing, partially due to the exclusive targeting of carp later in the spring (Table 11). Electrofishing modal length (19.5 inches) and maximum length (33.7 inches) for common carp were both higher than during fyke netting (Figure 15). Overall carp PSD, at 100%, and RSD-21, at 38.1%, indicate a relatively large size structure for common carp on Lac La Belle. Comparison of the 2009 PSD and RSD-21 results to those of recent carp-only surveys on Lac La Belle show a strong upward trend in both calculations (Figure 16).

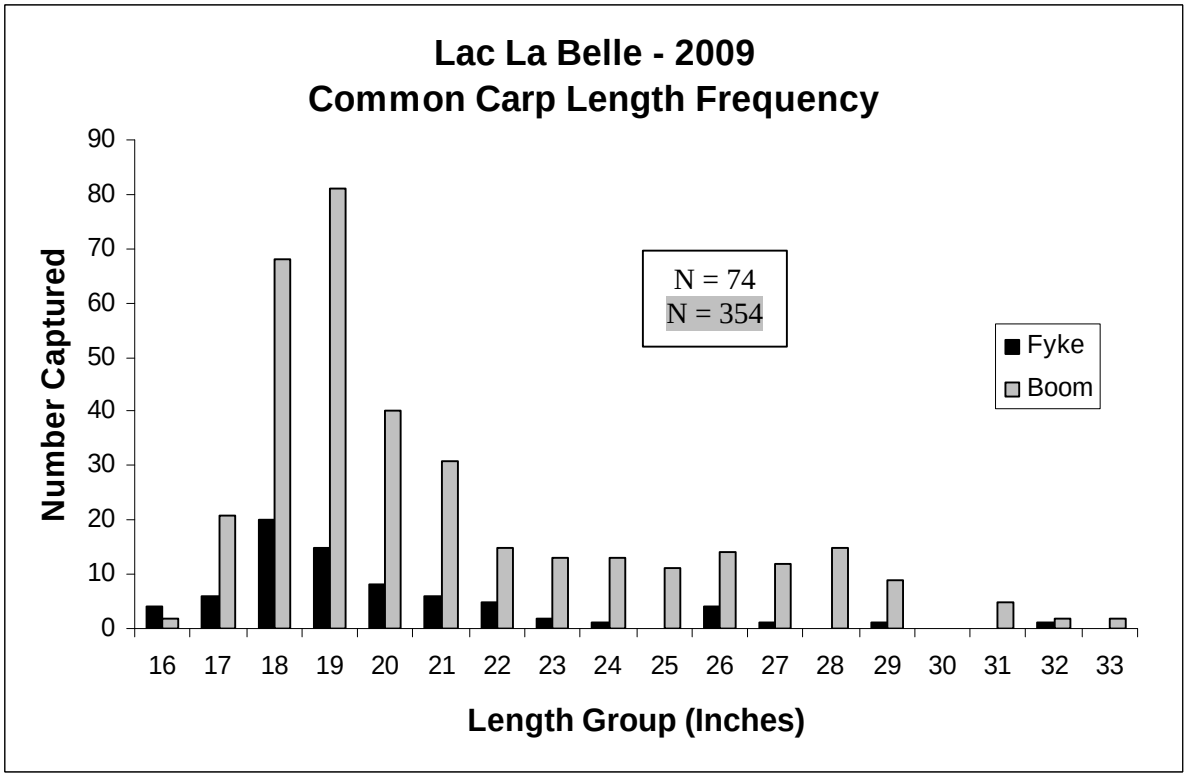

Figure 15. Common carp length frequency from Lac La Belle in spring of 2009.

Table 11. Common carp captured by electrofishing from Lac La Belle in the spring of 2009. Total effort of 29.23 hours.

Number	Catch/Hour	Mean Length	Std. Dev.
1,045	35.75	21.53	3.68

Throughout spring sampling, common carp were marked with a right pectoral clip to identify subsequent recaptures. After marking carp during fyke netting and electrofishing surveys, the annual Lac La Belle Management District "Carp Out" was used as the recapture survey for common carp. Over 600 carp were removed from the lake, all of which were checked for finclips by WDNR personnel. The resulting Petersen population estimate indicated 14,827 common carp in Lac La Belle (95% confidence intervals of 11,294 and 19,988), or 12.7 carp/acre (Table 12).

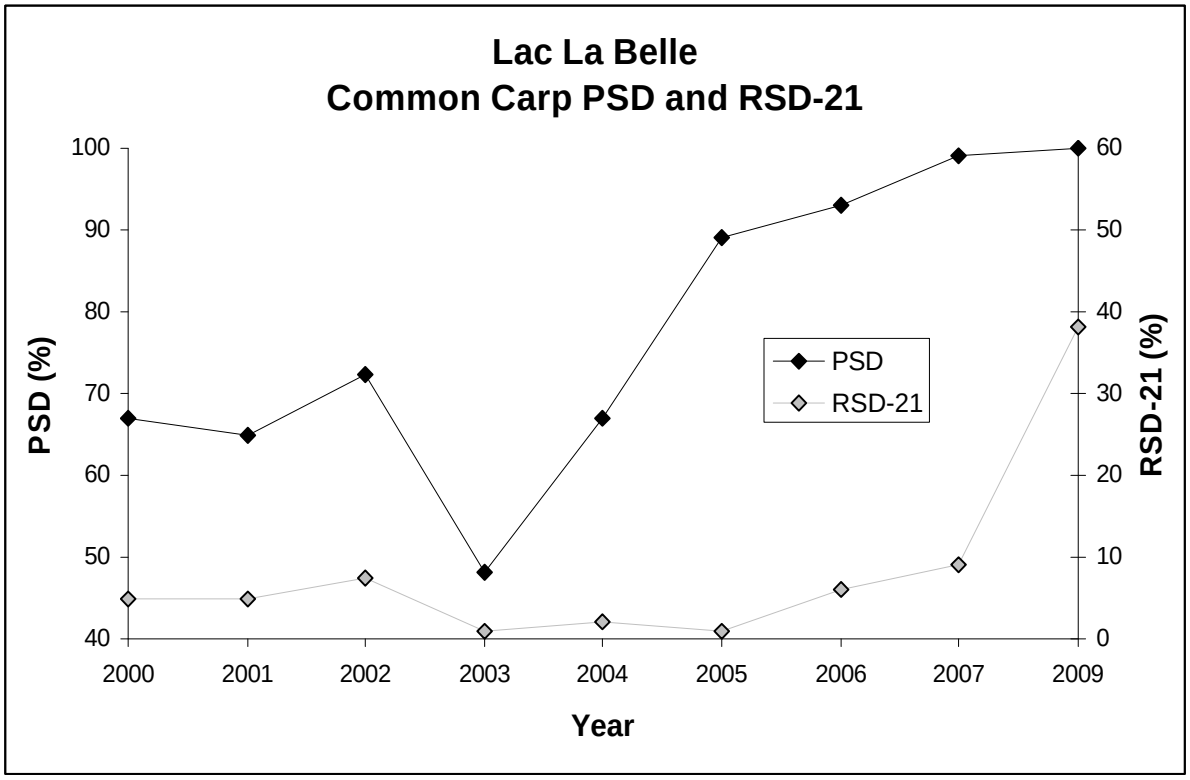

Figure 16. Common carp PSD and RSD-21 from recent surveys (2000-2007 is WDNR data from carp-only electrofishing surveys).

Table 12. Common carp mark and recapture data and Petersen population estimate from Lac La Belle in spring of 2009 (R/C=0.08, CV=14.02%).

Marked	Examined	Recaptured	Population Estimate	Lower 95%	Upper 95%
M	C	R	N	C.I.	C.I.
1,135	614	47	14,827	11,294	19,988

Other Species

Several other species were captured during the spring 2009 survey on Lac La Belle. Eight other species were sampled during fyke netting, with bluegill being the most prevalent (Table 13).

Table 13. Fish captured by fyke net from Lac La Belle in spring of 2009. Total effort of 458 net nights.

Species	Number Captured	Catch/Net Night	Mean Length	Std. Dev.
Black Crappie	50	0.11	7.13	2.17
Bluegill	260	0.57	5.73	1.17
Flathead Catfish	26	0.06	26.63	5.91
Green Sunfish	4	0.01	6.28	0.57
Pumpkinseed	3	0.01	5.83	1.48
Rock Bass	76	0.17	7.02	1.30
Smallmouth Buffalo	14	0.03	-	-
Yellow Bass	1	<0.01	7.40	-
Yellow Perch	8	0.02	6.20	1.61

Fewer total species were captured during boom shocking, with several yellow bass and white bass sampled during the "catch all" run (Table 14).

Table 14. Fish captured by electrofishing from Lac La Belle in spring of 2009. Total effort of 14.9 hours for catfish and sauger, 0.25 "catch all" hours.

Species	Number Captured	Catch/Hour	Mean Length	Std. Dev.
Bluegill	2	8.00	5.95	0.49
Flathead Catfish	4	0.27	29.38	9.92
Sauger	1	0.07	18.60	-
White Bass	14	56	12.30	1.07
Yellow Bass	25	100	7.96	1.35
Yellow Perch	1	4	5.30	-

DISCUSSION

Walleye catch rate on Lac La Belle was low during fyke netting, though equivalent to the 1993 survey. Average lengths and weights were higher than the previous survey, despite gender-specific PSD and RSD-20 ratios very similar to the 1993 survey. Walleye catch rate during electrofishing was high, with male walleyes outnumbering female walleyes by more than twelve-to-one, compared to three-to-one during fyke netting. The relatively large female walleye size structure, in comparison to that of males, indicates the disproportionate vulnerability to harvest of female walleyes. Angler reports rarely mention harvested walleye, despite their frequent targeting, particularly during ice fishing. Two successive year classes of walleye natural reproduction were documented during 2009 surveys, including a fall survey which showed a young-of-the-year walleye capture rate of 5.33/hour.

Total adult walleye abundance was estimated at only 2.1 adults/acre, with males greatly outnumbering females. While this is a marked increase from the 1993 estimate of 0.7 adults/acre, the estimate of female abundance has not substantially increased from previous surveys. Walleye growth rates in Lac La Belle were higher than state average, with females growing more swiftly than males. These accelerated growth rates, coupled with the relatively low abundance of female walleye and the high mortality rate of sub-legal walleye, exhibit the need to protect female walleyes in Lac La Belle for at least two spawning seasons.

Northern pike catch rate during fyke netting closely paralleled that of the previous survey. Average lengths and weights for female and male pike have increased since 1993. Overall pike size structure is relatively large, as indicated by a PSD of 75.4% and an RSD-28 of 24.6%. Lac La Belle northern pike grow at a rate roughly equal to the statewide average, though females grow faster than males. Northern pike are commonly targeted by ice anglers on Lac La Belle, with a high frequency of success. Since 2006, northern pike have been stocked into Lac La Belle in the fall as large fingerlings.

Smallmouth bass catch rate on Lac La Belle was relatively small, though size structure was well balanced. Over 25% of smallmouth captured during electrofishing were longer than the 14-inch minimum, with an average size close to 12 inches. The smallmouth population estimate indicated 758 total bass, for an average of 0.65 smallmouth/acre. Smallmouth growth rates were slightly higher than state average, and age 3+ smallmouth (10.1 inches and up) showed a 55.1% mortality rate. Smallmouth bass are targeted frequently and successfully by anglers on Lac La Belle.

Largemouth bass were much less frequent than smallmouth during this survey, though PSD and RSD

values were similar. Nearly 40% of largemouth captured during the survey were larger than the 14-inch minimum length limit.

Muskellunge were relatively infrequent in the spring survey, though size structure was very large. Overall average size was 42.1 inches and 21.8 pounds during fyke netting. Muskellunge PSD (100%) and RSD-20 (84.9%) were also very high, with no fish smaller than the 34-inch minimum length limit. Muskellunge are not stocked into Lac La Belle and those sampled during the survey are migrants from Okauchee Lake. These fish pass through several waterbodies before reaching Lac La Belle, meaning few smaller muskellunge are likely to be present in the lake. However, angler reports very occasionally make mention of muskellunge smaller than those found in the survey.

Common carp were captured throughout the spring survey on Lac La Belle. The fyke netting catch rate for carp was equal to that of the 1993 survey, though average size increased by more than three inches. Overall carp PSD and RSD-21 values indicate a relatively large size structure. Comparison to previous carp-only surveys shows a general upward trend in common carp PSD and RSD-21 on Lac La Belle. As discussed in the 1994 WDNR report on common carp in Lac La Belle, increasing average size may be a sign of reduced competition for food among a smaller total number of common carp. However, carp catch rate during electrofishing was high, partially due to the exclusive targeting of carp later in the spring, and the carp mark and recapture effort resulted in an abundance estimate of 12.7 carp/acre.

The annual Carp Out event hosted by the Lac La Belle Management District resulted in 614 carp removed from the lake through angling and bowfishing. This was roughly equal to the results of the 2007 event, which removed 576 carp from the lake. This yearly event allows local youth and adults to take an active management role in the health of their lake and, as such, should be encouraged and supported in the years to come.

Bluegills on Lac La Belle were relatively uncommon during fyke netting and electrofishing. Yellow bass and white bass, however, were fairly common, particularly during electrofishing. Hundreds more of these bass were observed but not collected during gamefish and carp shocking runs. These findings run counter to those from the 1993 survey, which found many more bluegill than yellow bass and white bass. Yellow bass, in particular, are known to compete with bluegill for food resources and prey upon fish eggs and young-of-the-year bluegill (Baumann 1972, Driscoll and Miranda 1999).

Future management recommendations include:

- Transition to an 18-inch minimum length limit and three fish daily bag for walleye to continue protection of female walleyes for multiple spawning seasons and potentially increase the contribution of natural recruitment to the walleye population.
- Convert to stocking of large fingerling walleyes to increase survival and overall adult abundance.
- Monitor walleye population for contribution of stocked versus naturally reproduced fish to each year class through OTC marking.
- Continue regular stocking of large fingerling northern pike to increase survival and improve overall abundance.
- Continue to closely monitor common carp abundance estimates and size structure.
- Encourage continued carp removal efforts including the annual Lac La Belle Management District Carp Out and commercial contracts for rough fish removal.
- Continue to monitor bass and panfish populations through catch rates, average sizes, and abundance estimates.

LITERATURE CITED

Anderson, R. O., 1980. Proportional stock density (PSD) and relative weight (W_r): interpretive indices for fish populations and communities. Pages 27-33 in S. Gloss and B. Shupp, editors. Practical fisheries management: more with less in the 1980's. Proceedings of the 1st Annual Workshop of the New York Chapter American Fisheries Society.

Baumann, P. C., 1972. Distribution, movement, and feeding interactions among bluegill and three other panfish in Lake Wingra. Master's Thesis, University of Wisconsin.

Driscoll, M. P, and L. E. Miranda, 1999. Diet ecology of yellow bass, *Morone mississippiensis*, in an oxbow of the Mississippi River. Journal of Freshwater Ecology 14:477.

Benjamin M. Heussner
Fisheries Biologist – Waukesha County
Wisconsin Department of Natural Resources
141 NW Barstow St.
Waukesha, Wisconsin 53188
414-303-0109