

Large Lake Monitoring Program Annual Completion Report:

Lake Pepin, 2009

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INTRODUCTION

Annual monitoring of fish populations is valuable in terms of detecting trends in population dynamics as well as being a useful tool in predicting the future of the fishery. The Large Lake Monitoring Program within the Minnesota Department of Natural Resources (MN DNR) was initiated in 1986 to provide long-term monitoring information of fish populations in Minnesota's ten largest lakes and Minnesota's portion of Lake Superior (Wingate and Schupp 1984). One of these lakes is Lake Pepin, a natural impoundment of the Mississippi River created by the delta formed at the confluence of the Chippewa and Mississippi Rivers. The lake is part of Pool 4 of the Upper Mississippi River (UMR), which extends from Lock and Dam (LD) 3 near Red Wing, Minnesota, downstream to LD 4 at Alma, Wisconsin. The navigation pool is 43 miles-long and covers 39,255 acres. Lake Pepin is located in the middle of the pool and is about 21 miles-long, averages 1.7 miles-wide, and covers 25,295 acres. Being a large impoundment, substantial sedimentation occurs in the upper end of the lake where the flow of the Mississippi River slows. Turbidity lessens further downstream in the lake whereas zooplankton levels increase. Other similar characteristics of a large impoundment include shoreline wave action, sparse aquatic vegetation, and significant water level fluctuations. A detailed description of physical, chemical, and biological characteristics of Lake Pepin is found in the 2008 Large Lake report (Meerbeek 2009).

This report provides summarized results of the 2009 MN DNR fish collection data on Pool 4. The reporting of historical and current year's data will always be part of the large lake report; however, future reports will also focus on improving predictive models for Pool 4 as well as determining the possible impacts of likely invaders.

METHODS

Pool 4 is divided into eight sampling stations; six within Lake Pepin and two in the riverine portion of Pool 4 above and below the lake. Stations were set up spatially based on river miles and macrohabitats (e.g., riverine, up-lake, and down-lake). Fish populations were sampled via seines, trawls, gill nets, and electrofishing. Fixed sampling sites exist for each gear within each station located in Lake Pepin. Fixed seining and electrofishing sites were sampled in the riverine stations.

Shoreline seining was conducted from July 6-23, 2009 with a 100-foot bag seine (6' depth; 1/4" mesh), utilizing the fixed pole seining technique (Wingate and Schupp 1984). The outer Braille was weighted with a chain and pulled by boat except when seining in heavily vegetated or very shallow areas, where, seining was done by wading. Three hauls were made at each station and combined to represent one haul. There are three fixed sites in each station for a total of 24 seine haul estimates. Total lengths and weights were taken on a subsample (N = 25 per station) of young-of-the-year (YOY) gamefish species and gizzard shad each week to calculate Fulton's condition factor (k) and growth increment analysis. The formula used for K factor was:

$$K = [(100,000)(W)] / L^3$$

where, W is the weight in grams and L is the total length in millimeters (Ricker 1975). Remaining fish were identified in the field and counted. Counts were categorized as YOY, juveniles, or adults. Lengths of adult and juvenile gamefish were collected. Seine data is reported as number of fish per haul and number of fish per acre.

Bottom trawling was conducted at 20 fixed sites from August 18 to August 26 when water temperatures were between 70 and 75 °F. Five-minute hauls were made at each station once a week

for two weeks. All gamefish were identified, measured and counted; non-gamefish were counted. Catch-per-unit-effort was expanded to represent catch per hour.

The remains of white bass harvested and filleted by anglers were collected from the cleaning facility at Camp Lacupolis on 31 August and 1 September, 2009. White bass were measured, sexed (if possible), and otoliths were removed for aging.

Daytime boat electrofishing was used to collect adult walleye, smallmouth bass, and largemouth bass. Electrofishing was conducted from September 24-30, with water temperatures ranging from 61 to 74 °F. A Smith-Root pulsed DC electrofishing boat was used for all collections. Electrofishing continued until a representative number of fish were collected for length measurement and aging. Therefore, not all stations were sampled.

Gill netting in Lake Pepin was conducted between September 30 and October 7, 2009. Water temperatures ranged from 54 to 59 °F. Twenty-four sets were made, including all original (first set in 1965) fall gill netting sites (N = 20). Standardized MN DNR experimental gill nets were used for all sets (250' length; 5 mesh sizes) and were fished for a 24 hour period. Gamefish were measured and weighed individually, whereas, non-game species were individually measured and weighed, or bulk weighed.

Night electrofishing for YOY walleye and sauger occurred from October 26-28 when water temperatures ranged from 45 to 47 °F. Eight stations were sampled with a pulsed DC electrofishing boat. All sauger and walleye up to 11 inches were counted and a subsample of at least 25 of each species was measured per station. Catch per unit effort was reported as catch per hour.

All walleye and sauger captured in gill nets were sexed and a subsample of each species was aged using otoliths. All white bass collected from Camp Lacupolis and captured in gill nets were

aged using otoliths. Otoliths were read in whole view on a black background with reflected light with a dissecting microscope. Whole view otoliths from walleye and sauger that had six or more annuli and all white bass otoliths were cracked in half through the nucleus and the exposed section was burned to increase contrast of the annuli. Ages from all walleye, sauger, and bass >11 inches sampled via trawl and electrofishing were estimated from spines. Spines were prepared and viewed using the methods provided by Logsden (2007). Scales were used to estimate the ages of bass < 11 inches. Impressions of scales were made on acetate slides and read with a microfiche reader.

Several indices previously developed were used to quantify sauger and walleye abundance. An index of abundance using the original 20 gill net set data from 1965 to 2009 was calculated by dividing the number collected at age (x) in year (y) by the mean catch of age (x) for all years. Another index that was used examines year-class strength using catch at age from seining, trawling, electrofishing, and gill netting (Stevens 1997).

Ovaries and testes were removed and weighed from gill net subsampled mature walleye and sauger to calculate the gonadosomatic index (GSI). The GSI was calculated for each fish by dividing gonad weight by body weight and multiplying by 100. Mean GSI values for each age class were calculated for both male and female walleye and sauger.

RESULTS AND DISCUSSION

2009 Water Elevation and Temperature

Water levels in 2009 were near the historical mean from January to mid-March, on average 2.5 feet above the historic mean from mid-March to mid-April, on average 2.0 feet below from mid-April to October, and about average the remainder of the year (Figure 1). Water levels peaked on

April 1 and were as much as 5.1 feet above the historic mean. In general, water temperatures in 2009 were cooler than the historic mean from January to early September (average of 1.4 °F cooler; maximum of 8.1 °F cooler; Figure 2). The latter part of September was warmer than average (3.2 °F above) and was followed by an unusually cool October-early November (on average 3.7 °F cooler) with water temperatures as much as 10.9 °F below the historic mean. Water temperatures increased substantially in late November (average of 1.9 °F above mean), but were followed by a cool December (average of 1.9 °F below mean). Cool water temperatures from July-September likely increased fish survival by maximizing dissolved oxygen concentrations resulting in no fish kill reports for 2009.

2009 Fish Collection

Relative abundance of YOY fish populations were measured by shoreline seining and electrofishing. Non-game species, particularly gizzard shad, accounted for 88% of the YOY seine catch (Table 1). Catch rates of YOY gizzard shad were below average for the second consecutive year and were the 5th lowest on record (Table 4). Near-shore, limnetic YOY gamefish species (i.e. centrarchids) are most effectively sampled using shoreline seining; however, some pelagic species (i.e. white bass; sauger; walleye) are also effectively sampled in Pool 4. Seine catch rates of all centrarchids were near or below the historic mean in 2009 (Table 3). This was the first year since 2004 that bluegill or largemouth bass catch rates were not substantially higher than the historic mean. White bass catch was up from 2008 but remained well below the historic mean (Table 3). White bass catch has been below the historical mean since the excellent 1997 year class (307 per seine haul). Northern pike YOY catch in 2009 was the lowest observed since 2003. Yellow perch YOY catch in 2009 was above the historical mean and a general trend in more consistent

recruitment has been observed since 2000. Walleye and sauger YOY seine catch in 2009 ranked 1 and 2, respectively. Likewise, YOY electrofishing catch rates were the 2nd highest recorded for walleye and the 4th highest recorded for sauger (Table 10).

Mean lengths of YOY gamefish sampled via shoreline seining were consistently below the historical mean for every time period sampled except for yellow perch (Table 8). Walleye and sauger mean lengths during the period of fall shoreline electrofishing were also below the historical mean (7.3 inches for walleye; 5.9 inches for sauger; Table 11). The cooler water temperatures were most likely responsible for the lower than average size of most gamefish species.

Trawling catch rates in 2009 were the fifth highest recorded for YOY sauger and gizzard shad, and the second highest recorded for YOY walleye. Trawling catch rates for all other YOY species were below the historical mean (Table 13). Overall catch of juvenile and adult fish was low (Table 14) and reflected in the low catch rates of freshwater drum. Freshwater drum are typically the bulk of the juvenile/adult trawl sample, but catch rates since 2006 have been only one-half to one-third of the historical mean.

Most adult gamefish populations were abundant as evidenced through gill net and electrofishing samples. Walleye gill net catch rate in 2009 was above the interquartile range for the ninth straight year due to contributions from recent good year-classes (Figure 3), however they have been gradually declining since 2002 (Figure 4). In addition, fall electrofishing for adult fish revealed good numbers of large walleye (Table 23). Mean GSI for each age group of male and female walleye was the lowest recorded (Table 40). Prolonged cooler than average summer water temperatures, and a poor YOY gizzard shad year class may have been responsible for the reduced condition of walleye in the fall. Sauger gill net catch rates in 2009 were within the interquartile

range and now have remained within or above the interquartile range for ten straight years (Figure 5). Good sauger catch rates are most likely related to the consistency in year-class formation in the last 14 years (Figure 3). In particular, the 2007 year class was very good and fish averaged 14.2 inches in the fall gill netting. Similar to walleye, mean GSI for each age group of male and female sauger was also the lowest recorded (Table 40).

White bass gill net catch of 5.0/net was slightly below the historical mean (Table 26). Otoliths removed from white bass in 2008 revealed a much older population than previously recorded (one 15 year old fish). Therefore, in 2009, all white bass captured in gill nets and fish collected from the cleaning facility at Camp LaCupolis were aged using otoliths to estimate natural mortality, longevity, and age structure of the harvested population. A total of 300 white bass ranging from 6.9-17.0 inches were aged. Based on the gill net sample, annual mortality of white bass (age 1-15) was 22% (18% in 2008; Table 39). A total of 193 white bass averaging 14.2 inches were collected from Camp Lacupolis. The mean age of the harvested population was 5.5 years; two of those fish were 16 years old and 90% of the white bass harvested that were ≥ 15 inches were age 6 or older (Table 41).

Channel catfish gill net catch has declined since 2004 and was below the historic mean in 2009. Yellow perch gill net catch was nearly double the historic mean and represented good size structure. Northern pike gill net catch rates in 2009 were slightly below the historical mean, but represented good size structure (Tables 26 and 28). Largemouth bass electrofishing catch rates in 2009 were average (Table 24). Several good largemouth bass year-classes were produced in recent years including the excellent 2005 year-class. Smallmouth bass electrofishing catch rates in 2009 were the highest recorded since sampling began in 1992 (Table 24). Based on age frequency

distribution, there has been consistent smallmouth bass recruitment (Table 22). In summary, sampling from all gear types combined revealed excellent populations of walleye, sauger, and smallmouth bass.

Year-Class Strength Index

The relative year-class strength index was well above the interquartile range for both walleye and sauger in 2009 (Figure 3). Walleye YOY were caught at or near record highs in three different gear types (seine, trawl, electrofishing); however, the size of YOY walleye throughout the year was considerably smaller than what has been observed in the past decade. Gill net samples in 2009 indicated a good number of age 2 and 3 walleye, and these fish averaged 16.4 and 19.5 inches, respectively (Table 33). Based on the index of abundance from the 2009 gill net sample, the 2008 year class was the poorest since 1994, whereas the 2006 and 2007 year classes remained above average (Table 39). Age 1 and 2 sauger were abundant in the gill net catch in 2009 and these fish averaged 11.1 and 14.2 inches, respectively. Based on the index of abundance, both age 1 and 2 sauger catch rates have been above average six out of the last seven years and represented very consistent recruitment (Table 38).

Angling Forecast

Angling should continue to be excellent for largemouth bass, smallmouth bass, walleye, and sauger during 2010 based on the numbers of adult fish sampled. White bass fishing success should remain good. Crappie and northern pike populations should be good based on the number of YOY fish sampled in 2008 and from observations of juvenile fish in 2009. The consistent bluegill and yellow perch reproduction observed since 2004 should provide good angling opportunities with quality sized fish available in 2010.

Exotic Species

Numerous exotic species exist in Pool 4 because of disturbed habitats and easy accessibility. Zebra mussels demonstrated a marked decline in the summer of 2001 due to above average water temperatures. However, sampling in 2003 indicated that two year-classes of zebra mussels were present and that they were again increasing in abundance. Warm water temperatures in the summer of 2006 did contribute to a small die-off, but overall densities remain stable. There were no reports of die-offs from 2007-2009, but visual observations of specimens below several locks and dams suggested that numbers were increasing.

Bighead and silver carp invaded the lower Mississippi River system in the early 1980's and have grown to extremely large populations in the river below LD 19. Currently bighead carp are known to have established populations as far north as Pool 15 of the Mississippi River. The first bighead carp captured in Minnesota was a single specimen from the St. Croix River in 1996. In October of 2003, a commercial fisherman captured a 23 lb bighead carp in lower Lake Pepin making this the first confirmed record of bighead carp in Pool 4. A second confirmed adult bighead carp (29 lbs) was captured in October 2008 in the middle portion of Lake Pepin by the same commercial fisherman. In November 2008, five Asian carp were captured by one Wisconsin licensed commercial fisherman in Pool 8 of the Mississippi River. Of those five fish, two were bighead carp, two were grass carp, and one was confirmed to be a silver carp. This was the first confirmed silver carp found in Minnesota's portion of the Mississippi River. In January 2009, a commercial fisherman caught a bighead carp and seventeen grass carp in Pool 5A and a single bighead carp in Pool 9. A second silver carp was captured in Pool 8 in March 2009. To date, all

bighead and silver carp that have been confirmed in the Minnesota portion of the Mississippi River have been caught by commercial anglers.

Another exotic species recently discovered in Pool 4 is the zooplankter, *Daphnia lumholtzi* (Burdis and Hirsch 2005). Native to Africa and southern Asia, this zooplankter differs from native *Daphnia* spp. in North America by having extended helmet and tail spines. Negative impacts of this invasion could include a reduction of native zooplankton through direct competition and a decrease in larval fish survival and growth (Kolar et al. 1997). The long-term resource monitoring program (LTRMP) is continuing to monitor the distribution and population levels of *D. lumholtzi* in Pool 4.

RECOMMENDATIONS

Walleye, sauger, white bass, largemouth and smallmouth bass, bluegill, and crappie populations appear healthy in Pool 4, therefore no changes in management strategies are recommended or warranted at this time. We should continue to strengthen and test predictive models of fish abundance (specifically sauger, walleye, and white bass) in Pool 4 by incorporating biotic factors as well as data collected by LTRMP and the Major River Survey program. In addition, more emphasis on the potential impacts of global climate change on walleye recruitment should be examined (i.e. thermal threshold, gonadal somatic index, etc.). Exotic species monitoring should continue to be coordinated with LTRMP because of the additional gears used in this program.

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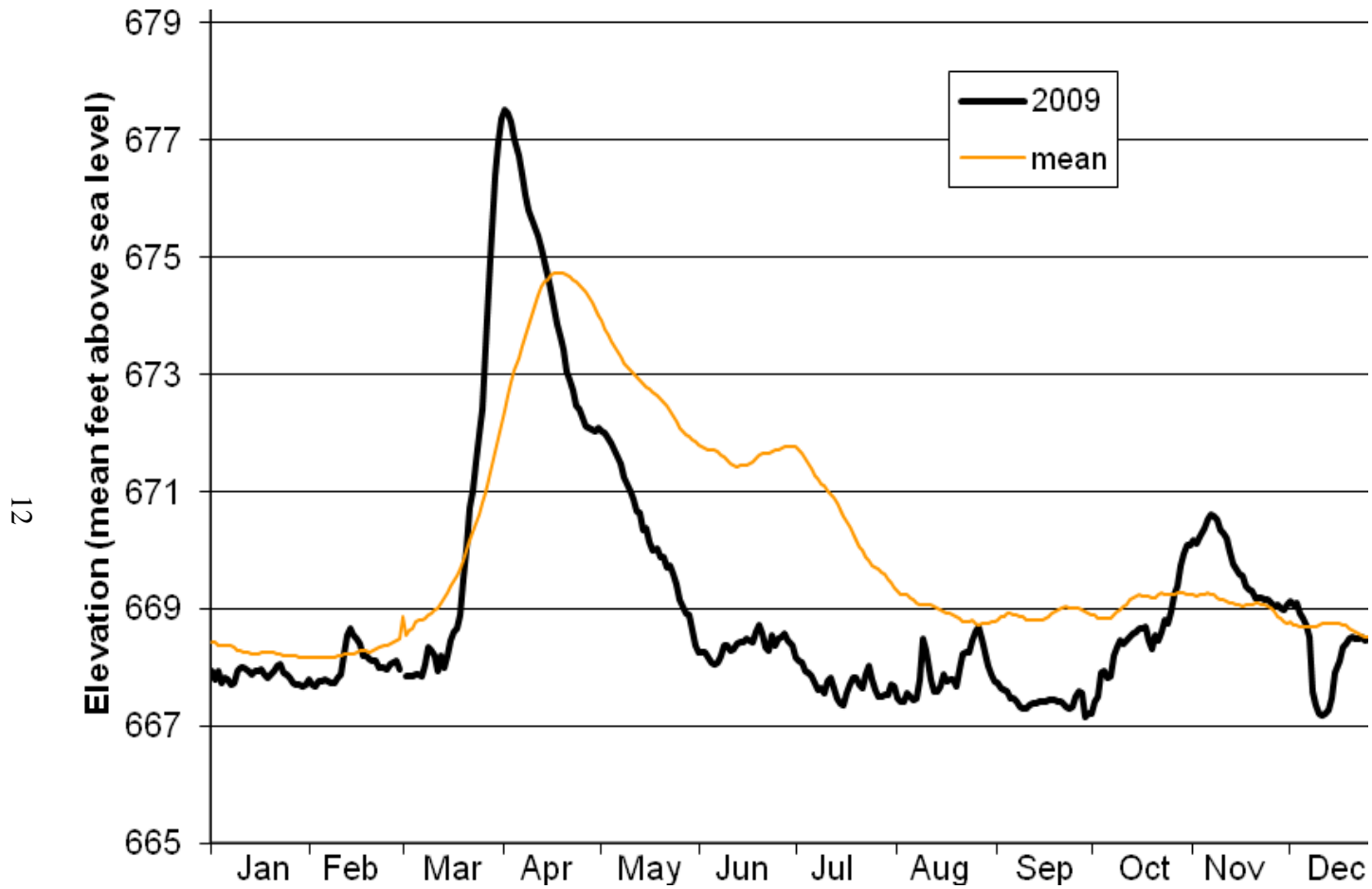


Figure 1. Water elevation at the tailwater of Lock and Dam 3 of the Mississippi River for 2009. Data from the US Army Corps of Engineers. Mean is from 1940-2009.

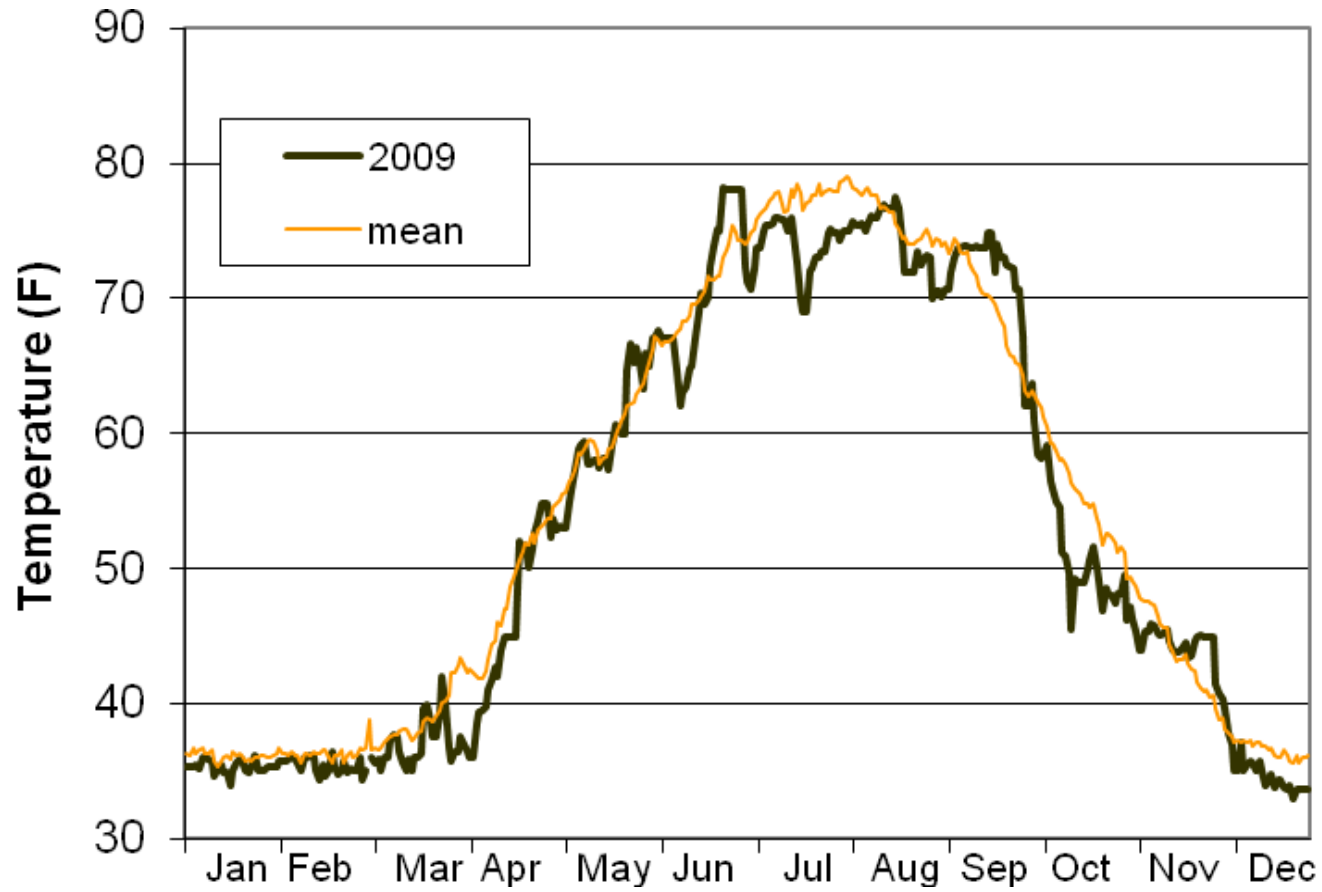


Figure 2. Water temperature at Lock and Dam 3 of the Mississippi River. Data from US Army Corps of Engineers. Mean is from 1998-2009.

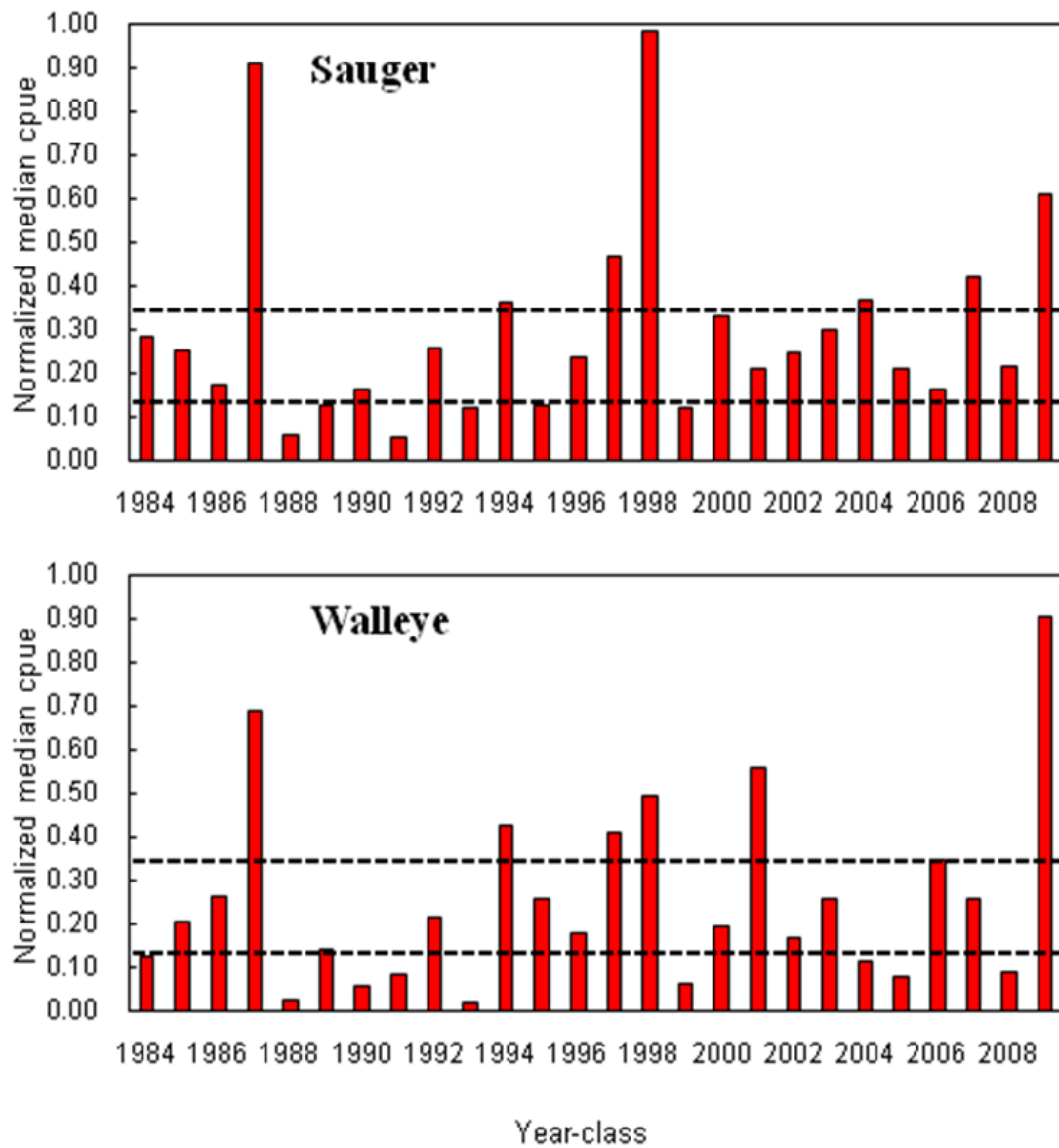


Figure 3. Relative year-class strength index for sauger (top) and walleye (bottom), Lake Pepin, 1984-2009. Index is the median, normalized cpue from year-classes sampled at age 0 by seine, trawl, and electrofish; ages 1 and 2 by trawl and gill net, and at age 3 by gill net, normalized to peak cpue within year-class. Dashed lines show 25 and 75 percent quartiles.

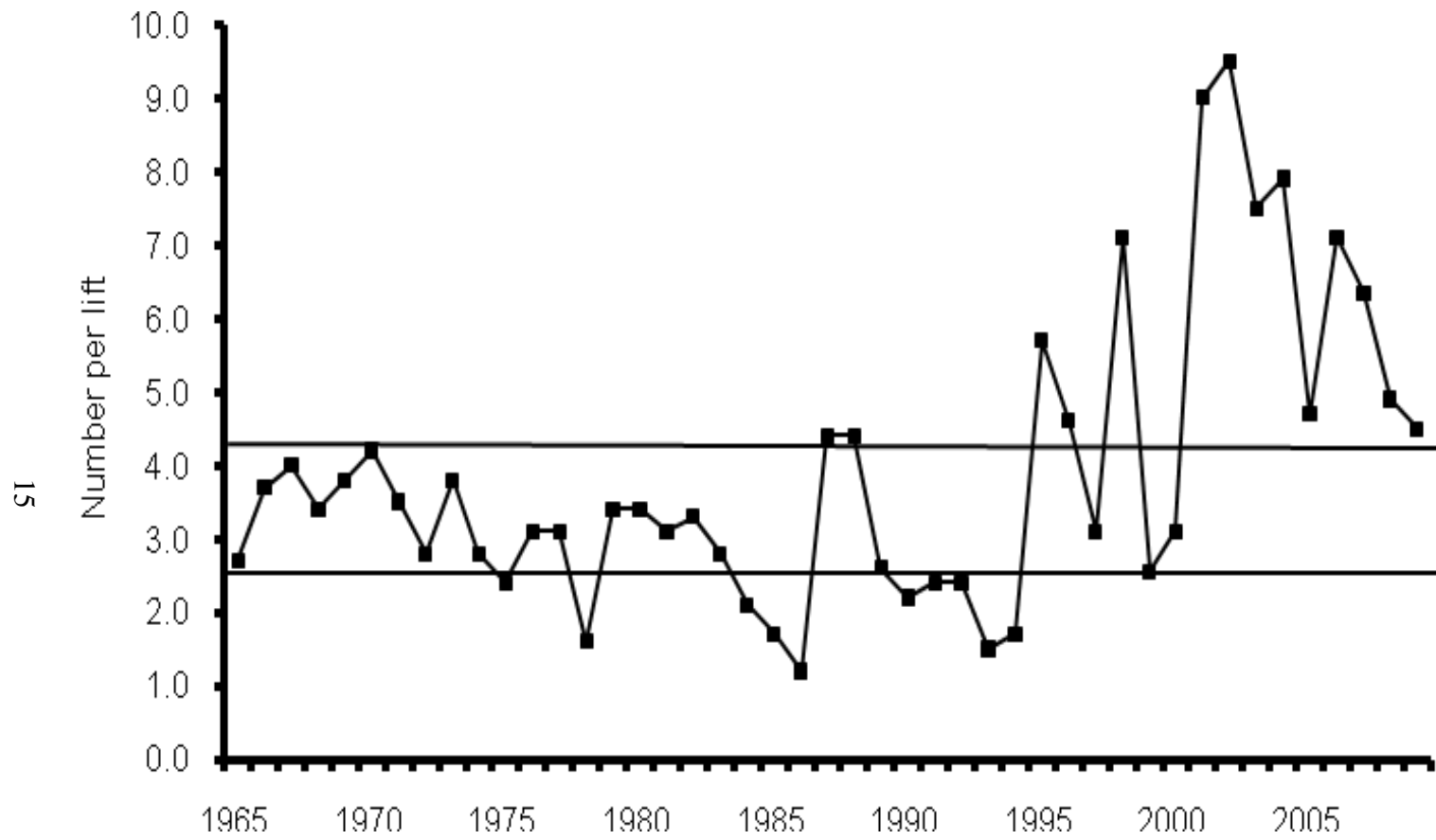


Figure 4. Mean number of walleye per gill net lift on Lake Pepin from 1965 to 2009. Horizontal lines represent 1st and 3rd quartiles.

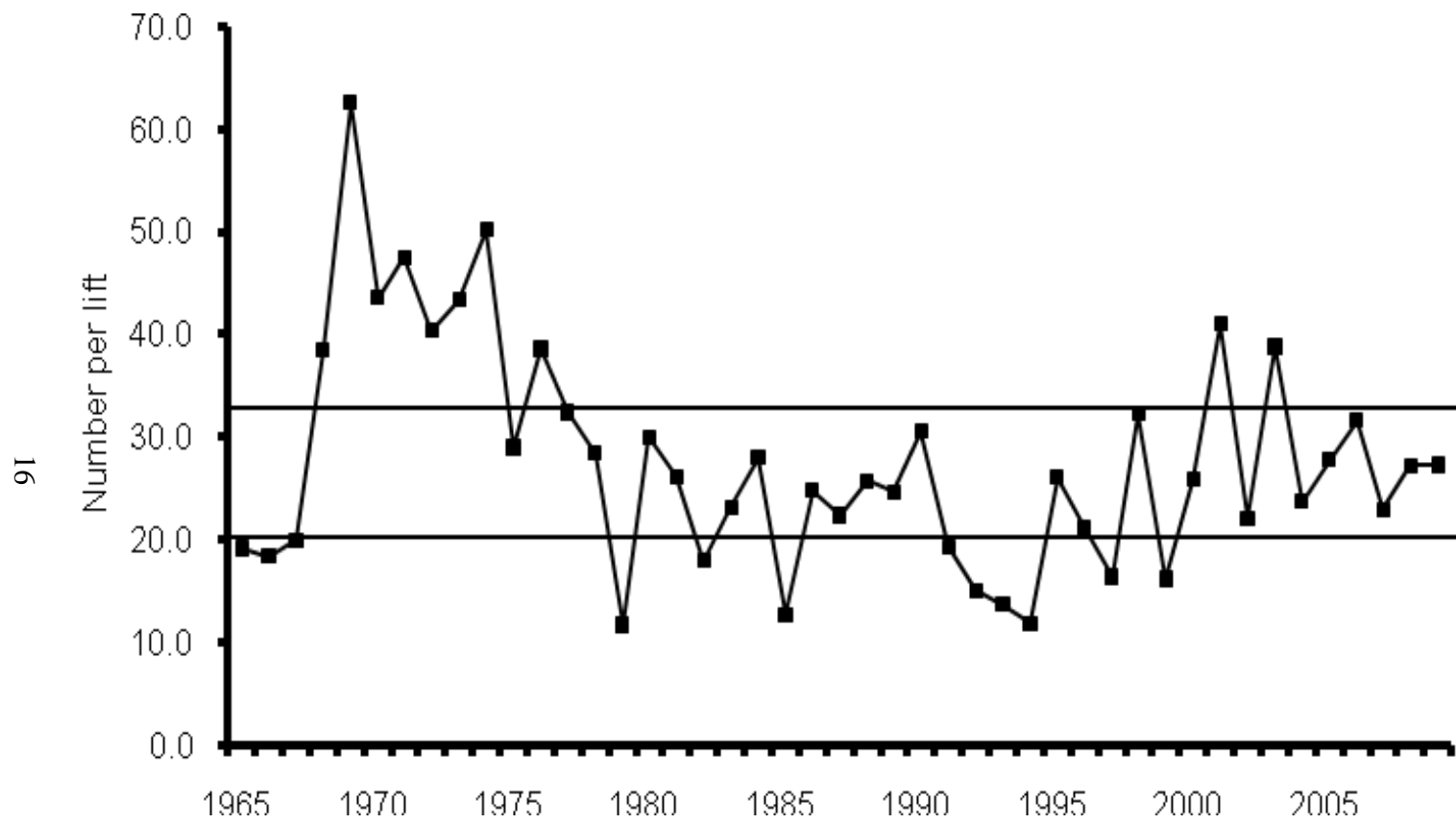


Figure 5. Mean number of sauger per gill net lift on Lake Pepin from 1965 to 2009. Horizontal lines represent 1st and 3rd quartiles.

Table 1. Mean catch (\pm SE) per seine haul (3 arcs) of young-of-year fish from Pool 4, 6-23 July, 2009.

	Station								Grand Mean	Percent of catch
	1	2	3	4	5	6	7	8		
Longnose gar			0.4 (0.2)		0.1 (0.1)			0.1 (0.1)	0.1 (0.0)	0.0
Gizzard shad	297.2 (156.3)	399.9 (327.2)	93.2 (59.9)	149.0 (106.0)	0.3 (0.2)	94.0 (93.6)	769.6 (383.1)	614.6 (541.7)	306.3 (97.1)	86.6
Common carp		0.7 (0.4)	0.1 (0.1)			0.8 (0.5)	1.3 (0.7)		0.4 (0.1)	0.1
Carp sucker spp.	0.4 (0.2)	1.0 (0.7)	0.4 (0.2)	1.8 (1.1)	0.2 (0.1)	0.4 (0.4)	0.4 (0.3)	0.9 (0.6)	0.7 (0.2)	0.2
Smallmouth buffalo		0.1 (0.1)							0.0 (0.0)	0.0
Redhorse spp.		0.2 (0.2)	1.0 (0.8)	0.6 (0.2)		0.1 (0.1)	0.3 (0.2)	5.6 (3.8)	1.0 (0.5)	0.3
Northern pike							0.7 (0.4)		0.1 (0.1)	0.0
White bass	11.3 (6.2)	19.7 (7.9)	30.1 (13.7)	2.9 (1.5)	1.3 (0.7)	0.8 (0.5)	62.4 (40.0)	1.8 (0.9)	16.4 (5.7)	4.7
Rock bass	0.1 (0.1)							0.1 (0.1)	0.0 (0.0)	0.0
Bluegill	0.8 (0.5)	0.2 (0.1)	7.1 (5.1)	8.7 (2.6)	6.8 (3.2)	3.2 (1.8)		0.1 (0.1)	3.4 (0.9)	1.0
Smallmouth bass	0.1 (0.1)	0.2 (0.1)	0.2 (0.2)	0.1 (0.1)	0.2 (0.1)	0.1 (0.1)	0.1 (0.1)	3.0 (1.7)	0.5 (0.2)	0.1
Largemouth bass			1.0 (0.9)	1.1 (0.6)	0.3 (0.2)	0.6 (0.3)	10.4 (6.7)	15.6 (8.9)	2.5 (1.0)	1.0
Unidentified crappie	0.2 (0.2)	0.1 (0.1)	13.2 (8.9)	12.6 (6.2)	0.9 (0.6)	4.2 (2.3)	5.2 (1.8)	1.9 (1.1)	4.7 (1.5)	1.4
Yellow perch	0.2 (0.1)	0.1 (0.1)	1.2 (0.7)	14.9 (4.7)	11.2 (4.6)	20.9 (9.2)	4.3 (2.3)	2.9 (1.4)	7.0 (1.6)	2.0
Sauger	0.7 (0.3)	2.7 (1.0)	6.2 (2.6)	3.1 (1.5)	0.4 (0.2)	2.7 (1.6)	9.9 (4.8)		3.3 (0.8)	0.9
Walleye	0.6 (0.3)	1.2 (0.8)	7.3 (3.6)	11.2 (6.2)	2.8 (1.2)	7.9 (5.1)	3.2 (0.7)	1.8 (1.4)	4.6 (1.2)	1.3
Freshwater drum		0.1 (0.1)	0.1 (0.1)				10.4 (4.1)		1.3 (0.6)	0.4
Number of hauls	9	9	9	9	9	9	9	9	72	

Table 2. Mean catch (\pm SE) per acre seined of young-of-year fish from Pool 4, 6-23 July, 2009.

	Station								Grand Mean	Percent of catch
	1	2	3	4	5	6	7	8		
Longnose gar			0.8 (0.4)		0.2 (0.2)			0.2 (0.2)	0.2 (0.1)	0.0
Gizzard shad	550.4 (289.4)	740.5 (606.0)	172.6 (110.9)	275.9 (196.3)	0.6 (0.4)	174.1 (173.4)	1425.1 (709.5)	1138.2 (1064.1)	567.2 (181.1)	86.6
Common carp		1.2 (0.7)	0.2 (0.2)			1.4 (0.9)	2.5 (1.3)		0.7 (0.2)	0.1
Carp sucker spp.	0.8 (0.4)	1.9 (1.2)	0.8 (0.4)	3.3 (2.1)	0.4 (0.3)	0.8 (0.8)	0.8 (0.6)	1.6 (1.2)	1.3 (0.4)	0.2
Smallmouth buffalo		0.2 (0.2)							0.0 (0.0)	0.0
Redhorse spp.		0.4 (0.4)	1.9 (1.4)	1.0 (0.4)		0.2 (0.2)	0.6 (0.4)	10.4 (7.4)	1.8 (1.0)	0.3
Northern pike							1.2 (0.7)		0.2 (0.1)	0.0
White bass	21.0 (11.4)	36.4 (14.7)	55.8 (25.4)	5.3 (2.7)	2.5 (1.3)	1.4 (1.0)	115.6 (74.0)	3.3 (1.8)	30.4 (10.7)	4.7
Rock bass	0.2 (0.2)							0.2 (0.2)	0.1 (0.0)	0.0
Bluegill	1.4 (0.9)	0.4 (0.3)	13.2 (9.4)	16.0 (4.9)	12.6 (5.9)	6.0 (3.3)		0.2 (0.2)	6.3 (1.7)	1.0
Smallmouth bass	0.2 (0.2)	0.4 (0.3)	0.4 (0.4)	0.2 (0.2)	0.4 (0.3)	0.2 (0.2)	0.2 (0.2)	5.6 (3.4)	0.9 (0.4)	0.1
Largemouth bass			1.9 (1.6)	2.1 (1.0)	0.6 (0.4)	1.0 (0.6)	19.3 (12.5)	28.9 (17.5)	4.6 (1.8)	1.0
Unidentified crappie	0.4 (0.4)	0.2 (0.2)	24.5 (16.4)	23.3 (11.5)	1.6 (1.0)	7.8 (4.4)	9.7 (3.4)	3.5 (2.1)	8.8 (2.8)	1.4
Yellow perch	0.4 (0.3)	0.2 (0.2)	2.3 (1.2)	27.6 (8.6)	20.8 (8.6)	38.7 (17.0)	8.0 (4.3)	5.3 (2.8)	12.9 (3.1)	2.0
Sauger	1.2 (0.5)	4.9 (1.8)	11.5 (4.8)	5.8 (2.9)	0.8 (0.4)	4.9 (3.0)	18.3 (8.9)		6.0 (1.5)	0.9
Walleye	1.0 (0.5)	2.3 (1.4)	13.6 (6.7)	20.8 (11.4)	5.1 (2.3)	14.6 (9.5)	6.0 (1.3)	3.3 (2.7)	8.5 (2.2)	1.3
Freshwater drum		0.2 (0.2)	0.2 (0.2)				19.2 (7.6)		2.5 (1.2)	0.4
Number of hauls	9	9	9	9	9	9	9	9	72	

Table 3. Mean catch (\pm SE) per seine haul (3 arcs) and percent total catch of young-of-year fish during July from Pool 4, 2005-2009. Historical mean is from 1986 to 2008.

Species	2005	%	2006	%	2007	%	2008	%	2009	%	Mean
Longnose gar	0.2 (0.1)	0.1	0.2 (0.1)	0.0	0.1 (0.1)	0.0	0.2 (0.1)	0.0	0.1 (0.0)	0.0	0.1
Skipjack herring											0.1
Gizzard shad	1011.7 (450.1)	95.6	859.3 (335.1)	90.6	617.0 (231.5)	92.0	513.1 (188.1)	84.4	306.3 (97.1)	86.6	606.5
Mooneye											0.0
Common carp	0.1 (0.1)	0.1	0.3 (0.2)	0.0	4.7 (3.4)	0.7			0.4 (0.1)	0.1	1.3
Carp sucker spp.	0.2 (0.2)	0.1	8.0 (2.9)	0.8	6.5 (3.6)	1.0	0.3 (0.1)	0.1	0.7 (0.2)	0.2	6.5
Sucker spp.											0.0
White sucker	0.1 (0.1)	0.1	0.0 (0.0)	0.0	0.0 (0.0)	0.0					0.2
Buffalo spp.											0.2
Smallmouth buffalo	0.2 (0.1)	0.1	0.2 (0.1)	0.0	0.6 (0.5)	0.1			0.0 (0.0)	0.0	1.4
Bigmouth buffalo	0.1 (0.1)	0.1	0.0 (0.0)	0.0	0.1 (0.0)	0.0	0.0 (0.0)	0.0			0.4
Shorthead redhorse											0.0
Redhorse spp.	0.4 (0.3)	0.1	3.3 (1.3)	0.3	0.7 (0.2)	0.1	0.1 (0.1)	0.0	1.0 (0.5)	0.3	0.6
Channel catfish	0.4 (0.3)	0.1	0.1 (0.0)	0.0							0.0
Flathead catfish											0.0
Northern pike	1.3 (0.4)	0.1	0.5 (0.2)	0.1	0.2 (0.1)	0.0	1.7 (0.4)	0.3	0.1 (0.1)	0.0	0.5
Muskellunge											0.0
White bass	4.3 (1.3)	0.4	17.9 (7.0)	1.9	12.6 (6.3)	1.8	6.8 (2.4)	1.1	16.4 (5.7)	4.7	67.0
Rock bass	0.1 (0.1)	0.1	0.1 (0.0)	0.0	0.1 (0.0)	0.0	0.2 (0.1)	0.0	0.0 (0.0)	0.0	0.1
Green sunfish					0.0 (0.0)	0.0					0.0
Bluegill	17.4 (5.7)	1.6	25.9 (16.0)	2.7	15.4 (4.0)	2.2	41.5 (8.4)	6.7	3.4 (0.9)	1.0	7.0
Smallmouth bass	0.5 (0.2)	0.1	0.8 (0.2)	0.1	0.8 (0.3)	0.1	0.7 (0.3)	0.1	0.5 (0.2)	0.1	0.5
Largemouth bass	8.3 (1.8)	0.8	5.9 (2.7)	0.6	3.1 (1.2)	0.4	4.6 (1.2)	0.8	2.5 (1.0)	1.0	1.9
Crappie spp.							26.1 (4.8)	4.3	4.7 (1.5)	1.4	1.3
White crappie			0.3 (0.2)	0.0							0.2
Black crappie	3.2 (0.9)	0.3	2.3 (0.8)	0.2	2.0 (0.5)	0.3					4.6
Yellow perch	5.4 (3.2)	0.5	1.7 (0.7)	0.2	2.3 (0.8)	0.3	10.0 (2.4)	1.7	7.0 (1.6)	2.0	4.1
Sauger	0.3 (0.2)	0.1	1.3 (0.4)	0.1	1.8 (0.5)	0.3	0.7 (0.2)	0.1	3.3 (0.8)	0.9	1.4
Walleye	0.1 (0.1)	0.1	0.6 (0.2)	0.1	0.7 (0.2)	0.1	0.4 (0.2)	0.1	4.6 (1.2)	1.3	1.0
Freshwater drum	4.2 (1.7)	0.4	19.5 (5.9)	2.1	3.2 (1.1)	0.5	1.8 (0.8)	0.3	1.3 (0.6)	0.4	2.2
Total catch per haul	1058.4		948.0		679.4		608.3		352.3		
Number of hauls	63		71		72		72		72		

Table 4. Mean catch (\pm SE) per seine haul (3 arcs) of juvenile and adult fish from Pool 4, 6-23 July, 2009.

Species	Station								Grand mean	Percent of catch
	1	2	3	4	5	6	7	8		
Bowfin							0.3 (0.3)		0.0 (0.0)	0.0
Mooneye								0.3 (0.3)	0.0 (0.0)	0.0
Spotfin shiner	0.2 (0.2)	2.1 (1.0)	1.7 (1.2)	0.3 (0.2)		1.6 (1.2)	6.3 (2.1)	33.1 (15.8)	5.7 (2.3)	2.6
Common carp	1.2 (0.5)	0.9 (0.5)	0.8 (0.5)	0.1 (0.1)	0.7 (0.3)	0.3 (0.3)	1.1 (0.7)		0.6 (0.2)	0.3
Silver chub	0.1 (0.1)		1.7 (1.3)				0.3 (0.3)		0.3 (0.2)	0.1
Emerald shiner	4.7 (1.2)	211.1 (122.9)	24.1 (9.7)	82.8 (36.9)	72.9 (39.0)	272.4 (225.5)	246.2 (83.9)	165.6 (105.7)	135.0 (36.8)	62.8
Spottail shiner	0.1 (0.1)	2.2 (1.0)	33.6 (23.8)	44.9 (14.9)	12.2 (6.1)	9.7 (2.9)	5.1 (3.0)	2.7 (1.9)	13.8 (3.9)	6.4
Weed shiner				0.1 (0.1)		1.9 (1.4)		4.6 (2.8)	0.8 (0.4)	0.4
Mimic shiner		0.2 (0.1)	0.1 (0.1)	0.1 (0.1)	0.1 (0.1)	0.6 (0.4)	0.2 (0.2)	5.7 (5.5)	0.9 (0.7)	0.4
Bullhead minnow	0.3 (0.3)	1.8 (1.7)	1.2 (1.2)			5.9 (5.3)	31.2 (11.4)	8.2 (5.4)	6.1 (2.0)	2.8
River carpsucker	0.6 (0.3)								0.1 (0.0)	0.0
Smallmouth buffalo				0.1 (0.1)	0.1 (0.1)				0.0 (0.0)	0.0
Silver redhorse	0.1 (0.1)	0.2 (0.2)			0.1 (0.1)			0.9 (0.8)	0.2 (0.1)	0.1
Golden redhorse		0.1 (0.1)							0.0 (0.0)	0.0
Shorthead redhorse	0.4 (0.2)		0.3 (0.3)	0.1 (0.1)	0.4 (0.4)				0.2 (0.1)	0.1
Channel catfish	0.1 (0.1)								0.0 (0.0)	0.0
Tadpole madtom							0.1 (0.1)		0.0 (0.0)	0.0
Northern pike				0.7 (0.3)	0.1 (0.1)		0.4 (0.3)	0.5 (0.3)	0.2 (0.1)	0.1
Central mudminnow							0.2 (0.2)		0.0 (0.0)	0.0
Trout perch	0.1 (0.1)								0.0 (0.0)	0.0
Brook silverside			1.2 (1.2)	0.3 (0.2)	0.1 (0.1)	0.9 (0.8)			0.3 (0.2)	0.1
White bass	0.4 (0.2)	0.1 (0.1)	0.1 (0.1)				0.3 (0.2)		0.1 (0.0)	0.1
Bluegill	0.2 (0.1)	0.2 (0.1)	1.7 (1.4)	0.4 (0.2)	0.6 (0.3)	3.3 (1.3)	18.9 (8.7)	3.1 (1.2)	3.6 (1.3)	1.7
Smallmouth bass	0.6 (0.2)	0.1 (0.1)		0.3 (0.2)	1.2 (0.7)			0.3 (0.2)	0.3 (0.1)	0.1
Largemouth bass		0.1 (0.1)	0.5 (0.3)	0.6 (0.2)	0.1 (0.1)	0.6 (0.3)	3.8 (2.2)	3.3 (3.2)	1.1 (0.5)	0.5
Black crappie						0.2 (0.1)	0.8 (0.4)	0.9 (0.5)	0.2 (0.1)	0.1
Johnny darter	0.2 (0.1)		2.7 (0.9)	2.9 (1.4)	0.3 (0.2)	2.7 (1.5)	2.8 (1.6)		1.5 (0.4)	0.7
Yellow perch			0.2 (0.2)	0.4 (0.2)	1.6 (0.8)	1.3 (0.7)		2.7 (2.7)	0.8 (0.4)	0.4
Logperch	5.8 (2.0)	9.7 (3.9)	38.1 (17.7)	94.9 (25.1)	64.8 (29.0)	118.7 (60.5)	1.0 (0.6)	2.8 (1.9)	42.0 (10.2)	19.5
Slenderhead darter			0.2 (0.2)		0.4 (0.2)	0.1 (0.1)			0.1 (0.0)	0.0
River darter	0.2 (0.1)		1.6 (1.1)	0.4 (0.4)		0.3 (0.2)	0.4 (0.3)		0.4 (0.2)	0.2
Sauger	0.1 (0.1)		0.1 (0.1)				0.6 (0.3)		0.1 (0.0)	0.0
Freshwater drum	1.0 (0.4)	0.7 (0.6)	0.6 (0.4)	0.1 (0.1)	0.1 (0.1)	0.1 (0.1)	2.3 (1.2)		0.6 (0.2)	0.3
Number of hauls	9	9	9	9	9	9	9	9	72	

Table 5. Mean catch (\pm SE) per acre seined of juvenile and adult fish from Pool 4, 6-23 July, 2009.

Species	Station								Grand mean	Percent of catch
	1	2	3	4	5	6	7	8		
Bowfin							0.6 (0.6)		0.1 (0.1)	0.0
Mooneye								0.6 (0.7)	0.1 (0.1)	0.0
Spotfin shiner	0.4 (0.4)	3.9 (1.9)	3.1 (2.3)	0.6 (0.4)		2.9 (2.2)	11.7 (3.8)	61.3 (31.0)	10.5 (4.2)	2.6
Common carp	2.3 (1.0)	1.6 (0.9)	1.4 (1.0)	0.2 (0.2)	1.2 (0.5)	0.6 (0.6)	2.1 (1.3)		1.2 (0.3)	0.3
Silver chub	0.2 (0.2)		3.1 (2.4)				0.6 (0.6)		0.5 (0.3)	0.1
Emerald shiner	8.6 (2.3)	390.9 (227.6)	44.5 (18.0)	153.3 (68.4)	135.0 (72.2)	504.5 (417.6)	455.9 (155.5)	306.7 (207.7)	249.9 (68.7)	62.8
Spottail shiner	0.2 (0.2)	4.1 (1.9)	62.1 (44.0)	83.1 (27.6)	22.6 (11.3)	17.9 (5.4)	9.5 (5.6)	4.9 (3.8)	25.6 (7.3)	6.4
Weed shiner				0.2 (0.2)		3.5 (2.6)		8.4 (5.5)	1.5 (0.8)	0.4
Mimic shiner		0.4 (0.3)	0.2 (0.2)	0.2 (0.2)	0.2 (0.2)	1.0 (0.8)	0.3 (0.3)	10.6 (10.9)	1.6 (1.3)	0.4
Bullhead minnow	0.6 (0.6)	3.3 (3.1)	2.3 (2.3)			10.9 (9.8)	57.7 (21.1)	15.2 (10.7)	11.3 (3.8)	2.8
River carpsucker	1.0 (0.6)								0.1 (0.1)	0.0
Smallmouth buffalo				0.2 (0.2)	0.2 (0.2)				0.1 (0.0)	0.0
Silver redhorse	0.2 (0.2)	0.4 (0.4)			0.2 (0.2)			1.6 (1.5)	0.3 (0.2)	0.1
Golden redhorse		0.2 (0.2)							0.0 (0.0)	0.0
Shorthead redhorse	0.8 (0.3)		0.6 (0.6)	0.2 (0.2)	0.8 (0.8)				0.3 (0.1)	0.1
Channel catfish	0.2 (0.2)								0.0 (0.0)	0.0
Tadpole madtom							0.2 (0.2)		0.0 (0.0)	0.0
Northern pike				1.2 (0.6)	0.2 (0.2)		0.8 (0.6)	0.9 (0.5)	0.4 (0.1)	0.1
Central mudminnow							0.4 (0.4)		0.1 (0.1)	0.0
Trout perch	0.2 (0.2)								0.0 (0.0)	0.0
Brook silverside			2.3 (2.3)	0.6 (0.4)	0.2 (0.2)	1.6 (1.4)			0.6 (0.3)	0.1
White bass	(0.3)	0.2 (0.2)	0.2 (0.2)				0.5 (0.3)		0.2 (0.1)	0.1
Bluegill	(0.3)	0.4 (0.3)	3.1 (2.6)	0.8 (0.4)	1.0 (0.6)	6.2 (2.5)	35.1 (16.1)	5.7 (2.4)	6.6 (2.4)	1.7
Smallmouth bass	1.0 (0.4)	0.2 (0.2)		0.6 (0.4)	2.3 (1.3)			0.6 (0.5)	0.6 (0.2)	0.1
Largemouth bass		0.2 (0.2)	0.9 (0.5)	1.0 (0.3)	0.2 (0.2)	1.0 (0.6)	7.0 (4.1)	6.1 (6.2)	2.1 (0.9)	0.5
Black crappie						0.4 (0.3)	1.4 (0.7)	1.7 (1.0)	0.5 (0.2)	0.1
Johnny darter	0.4 (0.3)		5.0 (1.8)	5.3 (2.6)	0.6 (0.3)	4.9 (2.7)	5.1 (2.9)		2.7 (0.7)	0.7
Yellow perch			0.4 (0.4)	0.8 (0.4)	2.9 (1.5)	2.5 (1.3)		4.9 (5.2)	1.4 (0.7)	0.4
Logperch	10.7 (3.8)	17.9 (7.3)	70.6 (32.8)	175.7 (46.5)	120.0 (53.8)	219.8 (112.1)	1.9 (1.1)	5.1 (3.7)	77.7 (18.9)	19.5
Slenderhead darter			0.3 (0.3)		0.8 (0.4)	0.2 (0.2)			0.2 (0.1)	0.0
River darter	0.4 (0.3)		2.9 (2.1)	0.8 (0.8)		0.6 (0.4)	0.8 (0.6)		0.7 (0.3)	0.2
Sauger	0.2 (0.2)		0.2 (0.2)				1.0 (0.6)		0.2 (0.1)	0.0
Freshwater drum	1.9 (0.8)	1.2 (1.0)	1.0 (0.8)	0.2 (0.2)	0.2 (0.2)	0.2 (0.2)	4.3 (2.2)		1.1 (0.4)	0.3
Number of hauls	9	9	9	9	9	9	9	9	72	

Table 6. Mean catch (\pm SE) per seine haul (3 arcs) and percent total catch of juvenile and adult fish during July from Pool 4, 2005-2009. Historical mean is from 1986 to 2008.

Species	2005	%	2006	%	2007	%	2008	%	2009	%	Mean
Chestnut lamprey			0.0 (0.0)	0.0							0.0
Longnose gar							0.0 (0.0)	0.0			0.0
Shortnose gar											0.0
Bowfin			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
Gizzard shad	0.4 (0.2)	0.3	1.8 (0.8)	1.1	0.2 (0.1)	0.1	0.0 (0.0)	0.0	0.0 (0.0)	0.0	0.6
Mooneye	0.1 (0.1)	0.1	0.1 (0.0)	0.0	0.1 (0.1)	0.1	0.1 (0.1)	0.1	0.0 (0.0)	0.0	0.1
Spotfin shiner	5.5 (1.6)	3.3	6.0 (3.3)	3.6	7.3 (2.6)	4.0	1.8 (0.8)	1.4	5.7 (2.3)	2.6	8.8
Common carp	0.5 (0.1)	0.3	1.0 (0.2)	0.6	0.9 (0.2)	0.5	0.4 (0.1)	0.3	0.6 (0.2)	0.3	0.5
Silver chub	0.2 (0.1)	0.1	0.1 (0.0)	0.0	0.1 (0.1)	0.0			0.3 (0.2)	0.1	1.0
Horneyhead chub			0.0 (0.0)	0.0							0.0
Golden shiner			0.0 (0.0)	0.0							0.0
Emerald shiner	144.3 (49.9)	86.5	123.8 (25.1)	75.0	136.4 (21.8)	74.7	98.3 (29.3)	76.5	135.0 (36.8)	62.8	281.1
River shiner	0.1 (0.1)	0.1	0.0 (0.0)	0.0	0.1 (0.1)	0.0	0.0 (0.0)	0.0			2.5
Spottail shiner	6.9 (1.8)	4.1	9.3 (2.4)	5.7	14.8 (4.6)	8.1	6.4 (3.3)	5.0	13.8 (3.9)	6.4	7.1
Sand shiner			0.0 (0.0)	0.0							0.3
Weed shiner	0.1 (0.1)	0.1					0.4 (0.2)	0.3	0.8 (0.4)	0.4	0.0
Mimic shiner	0.1 (0.1)	0.1	0.1 (0.1)	0.1	0.3 (0.1)	0.2	0.3 (0.2)	0.3	0.9 (0.7)	0.4	0.8
Bluntnose minnow	0.1 (0.1)	0.1	0.1 (0.1)	0.1							0.2
Fathead minnow	0.1 (0.1)	0.1					0.0 (0.0)	0.0			0.0
Bullhead minnow	0.4 (0.2)	0.3	2.9 (1.0)	1.8	3.1 (1.5)	1.7	0.5 (0.2)	0.4	6.1 (2.0)	2.8	0.9
Quillback	0.1 (0.1)	0.1			0.0 (0.0)	0.0	0.0 (0.0)	0.0			0.0
Carp sucker spp.	0.1 (0.1)	0.1	0.2 (0.1)	0.1	0.8 (0.4)	0.4	0.1 (0.1)	0.1	0.1 (0.0)	0.0	0.4
White sucker	0.1 (0.1)	0.1	0.0 (0.0)	0.0			0.0 (0.0)	0.0			0.0
Northern hogsucker					0.1 (0.0)	0.0	0.0 (0.0)	0.0			0.0
Smallmouth buffalo	0.1 (0.1)	0.1	0.0 (0.0)	0.0	0.1 (0.0)	0.0	0.0 (0.0)	0.0	0.0 (0.0)	0.0	0.1
Bigmouth buffalo	0.1 (0.1)	0.1	0.4 (0.4)	0.2	0.0 (0.0)	0.0					0.0
Spotted sucker			0.1 (0.0)	0.0							0.0
Redhorse spp.	0.1 (0.1)	0.1	0.0 (0.0)	0.0	0.0 (0.0)	0.0	0.0 (0.0)	0.0			0.1
Silver redhorse	0.1 (0.1)	0.1	0.4 (0.1)	0.2	0.3 (0.1)	0.2	0.2 (0.1)	0.1	0.2 (0.1)	0.1	0.1
Golden rehorse	0.2 (0.1)	0.1	0.0 (0.0)	0.0	0.1 (0.1)	0.1			0.0 (0.0)	0.0	0.1
Shorthead redhorse	0.2 (0.1)	0.1	0.2 (0.1)	0.1	1.0 (0.2)	0.5	0.3 (0.1)	0.2	0.2 (0.1)	0.1	0.4
Greater redhorse											0.0
Channel catfish			0.5 (0.2)	0.3	0.0 (0.0)	0.0	0.1 (0.1)	0.1	0.0 (0.0)	0.0	0.2
Stonecat											0.0
Tadpole madtom									0.0 (0.0)	0.0	0.0
Flathead catfish					0.0 (0.0)	0.0					0.0
Northern pike	0.3 (0.1)	0.2	0.4 (0.1)	0.3	0.3 (0.1)	0.2	0.3 (0.1)	0.2	0.2 (0.1)	0.1	0.2
Muskellunge											0.0
Central mudminnow									0.0 (0.0)	0.0	0.0

Table 5 continued on next page.

Table 6. Continued.

Species	2005	%	2006	%	2007	%	2008	%	2009	%	Mean
Trout-perch	0.1 (0.1)	0.1	0.0 (0.0)	0.0			0.3 (0.3)	0.2	0.0 (0.0)	0.0	0.2
Burbot											0.0
Brook silverside	0.4 (0.2)	0.2	1.0 (0.8)	0.6	0.7 (0.2)	0.4	0.4 (0.2)	0.3	0.3 (0.2)	0.1	0.2
Brook stickleback							0.0 (0.0)	0.0			0.0
White bass	0.2 (0.1)	0.1	1.3 (0.7)	0.8	0.1 (0.1)	0.1	0.1 (0.1)	0.1	0.1 (0.0)	0.1	1.0
Rock bass	0.1 (0.1)	0.1	0.2 (0.1)	0.1	0.2 (0.1)	0.1					0.1
Green sunfish							0.0 (0.0)	0.0			0.0
Pumkinseed							0.0 (0.0)	0.0			0.0
Orangespotted sunfish							0.1 (0.1)	0.1			0.0
Bluegill	2.0 (0.8)	1.2	2.8 (1.3)	1.7	2.6 (1.0)	1.4	3.2 (1.8)	2.5	3.6 (1.3)	1.7	1.1
Hybrid sunfish											0.0
Smallmouth bass	0.6 (0.3)	0.4	0.5 (0.2)	0.3	0.7 (0.1)	0.4	0.8 (0.2)	0.6	0.3 (0.1)	0.1	0.6
Largemouth bass	0.4 (0.1)	0.2	1.2 (0.2)	0.7	0.8 (0.2)	0.4	0.5 (0.1)	0.4	1.1 (0.5)	0.5	0.3
White crappie			0.2 (0.1)	0.1							0.0
Black crappie	0.8 (0.5)	0.5	0.6 (0.3)	0.4	0.3 (0.2)	0.2	0.2 (0.1)	0.1	0.2 (0.1)	0.1	0.3
Crystal darter											0.0
Western sand darter											0.0
Mud darter	0.1 (0.1)	0.1	0.1 (0.1)	0.1	0.0 (0.0)	0.0					0.0
Johnny darter	0.3 (0.1)	0.2	0.6 (0.3)	0.4	0.1 (0.1)	0.1	0.4 (0.1)	0.3	1.5 (0.4)	0.7	0.2
Yellow perch	0.5 (0.3)	0.3	0.8 (0.5)	0.5	0.4 (0.1)	0.2	0.2 (0.1)	0.2	0.8 (0.4)	0.4	0.2
Logperch	1.3 (0.4)	0.8	6.1 (1.4)	3.7	9.0 (2.5)	4.9	11.2 (3.2)	8.7	42.0 (10.2)	19.5	4.6
Blackside darter											0.0
Slenderhead darter			0.0 (0.0)	0.0			0.1 (0.0)	0.1	0.1 (0.0)	0.0	0.0
River darter	0.1 (0.1)	0.1	0.1 (0.1)	0.1	0.0 (0.0)	0.0	0.5 (0.4)	0.4	0.4 (0.2)	0.2	0.1
Sauger	0.1 (0.1)	0.1	0.0 (0.0)	0.0	0.0 (0.0)	0.0	0.2 (0.1)	0.1	0.1 (0.0)	0.0	0.1
Walleye											0.0
Freshwater drum	0.6 (0.2)	0.4	1.9 (0.6)	1.1	1.6 (0.5)	0.9	0.9 (0.2)	0.7	0.6 (0.2)	0.3	0.6
Total catch per haul	166.8		165.0		182.5		128.5		215.0		
Number of hauls	63		71		72		72		72		

Table 7. Total length (mm), weight (g), and k-factor of young-of-year fish from weekly seining, Pool 4, 6-23 July, 2009.

Species	Week*	Length				Weight				K-factor			
		Mean	SE	Range	N	Mean	SE	Range	N	Mean	SE	Range	N
White bass	1	38	0.5	21 - 61	189	0.7	0.0	0.1 - 2.8	189	1.10	0.01	0.72 - 1.39	189
	2	45	0.9	22 - 69	143	1.3	0.1	0.2 - 4.4	142	1.09	0.01	0.58 - 1.46	142
	3	46	1.3	31 - 84	82	1.3	0.2	0.3 - 7.7	82	1.06	0.01	0.73 - 1.30	82
Bluegill	1	17	0.6	14 - 22	21	0.1	0.0	0.1 - 0.1	2	1.01	0.07	0.94 - 1.08	2
	2	19	0.4	12 - 30	85	0.2	0.0	0.1 - 0.3	16	0.92	0.03	0.72 - 1.14	16
	3	21	0.4	13 - 32	113	0.2	0.0	0.1 - 0.4	32	1.06	0.05	0.57 - 1.48	32
Smallmouth bass	1	37	4.0	33 - 41	2	0.7	0.2	0.5 - 0.8	2	1.28	0.00	1.16 - 1.39	2
	2	45	1.6	32 - 56	18	1.3	0.1	0.4 - 2.3	18	1.34	0.02	1.21 - 1.58	18
	3	52	1.7	41 - 64	15	1.9	0.2	0.8 - 3.5	15	1.32	0.03	1.14 - 1.48	15
Largemouth bass	1	41	0.8	32 - 58	45	1.0	0.1	0.4 - 2.7	45	1.34	0.02	1.09 - 1.67	45
	2	49	1.1	33 - 69	51	1.7	0.1	0.5 - 4.8	51	1.36	0.01	1.16 - 1.68	51
	3	53	1.1	33 - 70	49	2.3	0.1	0.5 - 4.7	49	1.40	0.02	1.13 - 1.81	49
Crappie spp.	1	32	0.5	24 - 45	67	0.4	0.0	0.1 - 1.1	67	1.19	0.03	0.51 - 1.53	67
	2	36	0.5	25 - 54	100	0.6	0.0	0.2 - 2.0	100	1.14	0.01	0.83 - 1.52	100
	3	41	0.8	29 - 60	58	0.8	0.1	0.2 - 2.4	58	1.15	0.02	0.82 - 1.38	58
Yellow perch	1	47	0.4	38 - 63	128	1.1	0.0	38.0 - 63.0	128	1.07	0.01	0.43 - 1.36	128
	2	51	0.5	40 - 65	98	1.5	0.0	40.0 - 65.0	98	1.06	0.01	0.88 - 1.30	98
	3	55	0.4	43 - 65	107	1.8	0.0	43.0 - 65.0	107	1.03	0.01	0.83 - 1.18	107
Sauger	1	60	0.6	47 - 73	79	1.5	0.1	0.7 - 2.6	79	0.69	0.01	0.37 - 0.81	79
	2	73	1.1	57 - 85	44	2.8	0.1	1.3 - 4.4	44	0.71	0.01	0.59 - 0.82	44
	3	75	0.8	60 - 93	65	3.0	0.1	1.5 - 5.7	65	0.68	0.00	0.61 - 0.79	65
Walleye	1	71	0.7	54 - 107	167	2.7	0.1	1.2 - 9.7	166	0.72	0.00	0.56 - 0.93	166
	2	82	1.4	65 - 102	44	4.3	0.2	1.8 - 8.2	44	0.75	0.01	0.66 - 0.87	44
	3	93	1.3	72 - 113	57	6.4	0.3	2.7 - 11.8	57	0.76	0.01	0.64 - 0.87	57

* Dates were: week 1, 6-9 July; week 2, 13-16 July; week 3, 20-23 July 2009

Table 8. Mean (\pm SE) total length (mm) of young-of-year fish collected by shoreline seining in Pool 4. Means are given for 2009 sample and a historical mean from 1986 - 2008. Time period refers to the week of sampling noted in the footnotes.

Species		Time period				
		0	1	2	3	4
Gizzard shad	2009		41.9 (1.1)	39.6 (1.0)	48.8 (1.0)	
	mean	48.0 (7.0)	43.9 (1.9)	49.9 (2.2)	55.1 (2.9)	55.0 (0.0)
Northern pike	2009		97.0	150.5 (16.5)	155.0	
	mean		125.7 (6.6)	135.0 (4.4)	147.9 (7.6)	169.0 (11.0)
White bass	2009		38.4 (0.5)	45.2 (0.9)	45.7 (1.3)	
	mean	46.5 (4.5)	44.1 (1.7)	50.4 (2.2)	56.5 (1.7)	68.8 (3.3)
Bluegill	2009		17.3 (0.6)	19.2 (0.4)	21.2 (0.4)	
	mean		21.1 (1.2)	23.6 (1.3)	25.3 (0.6)	29.4 (0.7)
Smallmouth bass	2009		37.0 (4.0)	45.3 (1.6)	51.6 (1.7)	
	mean	47.0 (5.0)	43.8 (1.8)	47.4 (2.1)	54.1 (1.4)	66.1 (4.8)
Largemouth bass	2009		40.9 (0.8)	48.9 (1.1)	53.3 (1.1)	
	mean	44.0 (2.0)	43.4 (1.5)	50.3 (2.1)	57.4 (2.1)	58.2 (2.6)
Crappie spp.	2009		32.1 (0.5)	36.1 (0.5)	40.9 (0.8)	
	mean	35.5 (1.5)	34.9 (0.9)	39.4 (1.2)	44.8 (1.0)	48.6 (4.2)
Yellow perch	2009		46.8 (0.4)	51.0 (0.5)	55.2 (0.4)	
	mean	47.5 (1.5)	45.0 (0.9)	48.5 (1.0)	53.7 (0.7)	54.1 (0.1)
Sauger	2009		59.9 (0.6)	72.8 (1.1)	75.4 (0.8)	
	mean	69.0 (6.0)	66.8 (1.8)	72.8 (1.8)	78.6 (1.6)	81.0 (2.1)
Walleye	2009		70.9 (0.7)	81.6 (1.4)	93.3 (1.3)	
	mean	79.5 (4.5)	77.6 (2.6)	84.1 (2.7)	90.9 (2.5)	99.0 (10.0)

* Dates for each period are:					
	p0	p1	p2	p3	p4
	6/29-7/2	7/2-10	7/10-15	7/15-22	7/22-28

Table 9. Temperature, effort, total catch (N), and catch per hour (N/hr) of young-of-year walleye and sauger by night electrofishing in Pool 4, 26 – 28 October 2009.

Station	Date	Temp. (°F)	Effort Hours	Walleye		Sauger	
				N	N/hr	N	N/hr
1	29	47	0.87	28	32.3	196	226.2
2	29	45	0.93	44	47.1	62	66.4
3	29	47	1.02	46	45.2	402	395.4
4	28	46	1.32	515	391.1	181	137.5
5	28	46	0.98	52	52.9	134	136.3
6	28	47	0.77	62	80.9	81	105.7
7	29	47	0.45	20	44.4	29	64.4
8	30	46	0.52	22	42.6	8	15.5
Total			6.85	789		1093	
Mean of all stations					92.1		143.4
SE					46.0		45.3

Table 10. Historical catch per hour of young-of-year walleye and sauger by night electrofishing during October and November in Pool 4, 2005 to 2009. Overall mean is calculated from 1986 to 2008 data. Stations 7 and 8 are within Pool 4 but outside of Lake Pepin.

<u>WALLEYE</u>						
Station	2005	2006	2007	2008	2009	mean
1	24.3	0.0	104.2	2.7	32.3	24.3
2	14.1	15.0	255.4	1.1	47.1	30.1
3	13.7	1.8	75.3	32.5	45.2	22.8
4	36.0	31.2	145.1	23.1	391.1	47.0
5	68.9	39.2	78.6	1.1	52.9	44.1
6	32.3	29.1	88.6	12.5	80.9	36.2
7	17.5	30.0	3.9	8.3	44.4	18.6
8	38.8	5.0	65.3	1.5	42.6	35.8
Mean						
sta. 1-6	31.5	19.4	124.6	12.2	108.3	34.1
SE	8.3	7.3	30.8	5.9	62.4	8.5
sta. 1-8	30.7	18.9	102.1	10.3	92.1	32.9
SE	6.5	5.8	27.8	4.4	46.0	8.8
<u>SAUGER</u>						
Station	2005	2006	2007	2008	2009	mean
1	184.5	2.9	116.8	44.5	226.2	100.5
2	67.4	69.6	92.6	34.4	66.4	42.7
3	121.9	12.9	121.4	198.7	395.4	80.5
4	100.0	25.4	112.7	92.3	137.5	71.3
5	317.2	49.0	165.4	77.9	136.3	98.6
6	225.8	3.4	181.8	122.5	105.7	69.3
7	57.1	5.6	9.7	8.3	64.4	47.8
8	11.9	0.0	67.1	1.5	15.5	17.3
Mean						
sta. 1-6	169.5	27.2	131.8	95.1	177.9	76.4
SE	37.7	10.1	15.3	26.8	53.2	15.7
sta. 1-8	135.7	21.1	108.4	72.5	143.4	69.5
SE	35.6	9.6	20.5	24.8	45.3	17.9

Table 11. Length-frequency of measured young-of-year walleye and sauger captured by electrofishing in Pool 4, 2005 to 2009.

WALLEYE					
Total length (in)	2005	2006	2007	2008	2009
3.5-3.9					
4.0-4.4					
4.5-4.9					1
5.0-5.4					6
5.5-5.9	2		3		36
6.0-6.4	6	2	5		78
6.5-6.9	3	4	17	3	65
7.0-7.4	21	8	27	10	34
7.5-7.9	36	21	29	17	21
8.0-8.4	42	22	31	27	11
8.5-8.9	22	15	27	20	4
9.0-9.4	13	12	25	1	1
9.5-9.9	5	15	10		
10.0-10.4	4	3	5		
10.5-10.9					
Number	154	102	179	78	257
Length					
mean	8.1	8.4	8.1	8.0	6.7
SE	0.07	0.09	0.07	0.07	0.05
min	5.7	6.2	5.5	6.7	4.8
max	10.3	10.4	10.3	9.0	9.1
SAUGER					
Total length (in)	2005	2006	2007	2008	2009
3.5-3.9					
4.0-4.4				1	12
4.5-4.9				10	53
5.0-5.4	2	3	16	67	92
5.5-5.9	35	18	58	104	68
6.0-6.4	68	26	58	58	24
6.5-6.9	39	30	29	38	5
7.0-7.4	29	13	18	6	4
7.5-7.9	12	4	1	4	1
8.0-8.4	1	1		1	
8.5-8.9					
9.0-9.4					
Number	186	95	180	289	259
Length					
mean	6.5	6.4	6.2	5.9	5.4
SE	0.04	0.06	0.04	0.04	0.04
min	5.3	5.2	5.1	4.4	4.0
max	8.3	8.1	7.6	8.1	7.6

Table 13. Mean catch per hour (\pm SE) of young-of-year fish by trawling in Lake Pepin, August 2005–2009. Historical mean is from 1986–2008.

Species	2005	2006	2007	2008	2009	Historical mean
Gizzard shad	42.3 (14.7)	402.6 (57.5)	229.8 (35.9)	300.9 (45.5)	311.1 (53.3)	107.9 (29.4)
Northern pike	0.6 (0.4)					0.0 (0.0)
Common carp						0.7 (0.6)
Carp sucker spp.					0.3 (0.2)	0.0 (0.0)
Smallmouth buffalo						1.1 (1.0)
Bigmouth buffalo						0.0 (0.0)
Channel catfish	6.2 (2.2)	0.3 (0.2)				0.8 (0.3)
Tadpole madtom						0.0 (0.0)
Flathead catfish	0.3 (0.3)	0.3 (0.3)				0.1 (0.0)
Trout-perch						0.2 (0.2)
30 White bass	8.6 (2.5)	11.4 (5.9)	9.3 (2.7)	0.3 (0.2)	0.9 (0.4)	21.0 (7.2)
Bluegill	9.9 (4.4)	5.4 (3.6)	0.3 (0.2)	1.2 (0.4)	0.0 (0.0)	1.5 (0.5)
White crappie	1.9 (1.0)	1.2 (0.4)	1.8 (0.6)	37.2 (16.1)	0.0 (0.0)	6.6 (1.8)
Black crappie	14.8 (4.1)	15.6 (3.2)	3.9 (1.0)	14.4 (6.1)	0.6 (0.3)	7.2 (1.7)
Unidentified crappie					6.9 (3.1)	0.0 (0.0)
Yellow perch						0.0 (0.0)
Sauger	7.1 (1.8)	2.4 (0.7)	2.7 (0.8)	3.6 (1.4)	8.4 (2.3)	5.8 (1.2)
Walleye	0.9 (0.5)	9.9 (4.6)	9.0 (2.4)	0.6 (0.3)	15.9 (6.4)	3.6 (1.0)
Freshwater drum	1284.8 (191.9)	212.4 (91.0)	99.0 (24.8)	50.4 (14.3)	34.5 (10.7)	307.7 (62.1)
All species	1377.8 (196.7)	662.1 (143.4)	356.1 (65.4)	408.6 (72.1)	378.9 (71.5)	422.5 (65.9)
Number of hauls	39	40	40	40	40	
Hours trawled	3.26	3.33	3.33	3.33	3.33	

Table 14. Mean catch per hour (\pm SE) of juvenile and adult fish by trawling in Lake Pepin, 18-26 August, 2009.

Species	Station					Grand Mean	Percent of total catch
	2	3	4	5	6		
Lake sturgeon				1.5 (1.5)		0.3 (0.3)	0.1
Common carp	4.5 (3.2)	1.5 (1.5)				1.2 (0.7)	0.4
Silver chub	3.0 (3.0)	10.5 (10.5)	1.5 (1.5)			3.0 (2.2)	1.0
Spottail shiner	1.5 (1.5)					0.3 (0.3)	0.1
Quillback			1.5 (1.5)	3.0 (2.0)		0.9 (0.5)	0.3
White sucker	1.5 (1.5)			1.5 (1.5)	1.5 (1.5)	0.9 (0.5)	0.3
Silver redhorse		3.0 (3.0)		1.5 (1.5)		0.9 (0.7)	0.3
Shorthead redhorse	1.5 (1.5)	1.5 (1.5)				0.6 (0.4)	0.2
Channel catfish	1.5 (1.5)		1.5 (1.5)	3.0 (3.0)		1.2 (0.7)	0.4
Trout perch	40.5 (32.1)	16.5 (6.0)	55.5 (26.0)	204.0 (81.2)	42.0 (29.4)	71.7 (21.1)	22.8
White bass	1.5 (1.5)		3.0 (2.0)		7.5 (4.5)	2.4 (1.1)	0.8
Bluegill		3.0 (2.0)		18.0 (13.0)	9.0 (7.4)	6.0 (3.1)	1.9
Smallmouth bass	4.5 (4.5)					0.9 (0.9)	0.3
White crappie		1.5 (1.5)				0.3 (0.3)	0.1
Black crappie	9.0 (6.3)	12.0 (7.2)	9.0 (5.9)	9.0 (4.4)	6.0 (3.2)	9.0 (2.4)	2.9
Yellow perch		1.5 (1.5)	7.5 (6.0)	1.5 (1.5)	1.5 (1.5)	2.4 (1.3)	0.8
Logperch			1.5 (1.5)	1.5 (1.5)		0.6 (0.4)	0.2
River darter		1.5 (1.5)				0.3 (0.3)	0.1
Sauger	6.0 (2.3)	24.0 (8.5)	15.0 (5.9)	12.0 (5.6)	7.5 (4.5)	12.9 (2.6)	4.1
Walleye	9.0 (3.0)	10.5 (5.8)	12.0 (6.0)	1.5 (1.5)	3.0 (2.0)	7.2 (1.9)	2.3
Freshwater drum	268.5 (105.2)	141.0 (52.9)	247.5 (78.8)	207.0 (86.0)	90.0 (29.0)	190.8 (33.6)	60.8
All species	352.5 (130.3)	228.0 (69.7)	355.5 (106.1)	465.0 (157.0)	168.0 (38.7)	313.8 (49.2)	
Number of hauls	8	8	8	8	8	40	
Hours trawled	0.67	0.67	0.67	0.67	0.67	3.33	

Table 15. Mean catch per hour (\pm SE) of juvenile and adult fish by trawling in Lake Pepin, 2005-2009. Historical mean is from 1986-2008.

Species	2005	2006	2007	2008	2009	Historical mean
Chestnut lamprey						0.1 (0.0)
Lake sturgeon				0.6 (0.4)	0.3 (0.30)	0.1 (0.0)
Shortnose gar						0.2 (0.1)
American eel						0.0 (0.0)
Bowfin		0.3 (0.3)				0.1 (0.0)
Mooneye						0.0 (0.0)
Gizzard shad		0.6 (0.4)		2.7 (2.7)		1.2 (0.5)
Northern pike	0.6 (0.4)	0.3 (0.3)	0.3 (0.3)	0.3 (0.3)		0.3 (0.1)
Common carp	10.2 (2.6)	7.5 (1.9)	1.8 (0.7)	4.2 (1.6)	1.2 (0.72)	19.2 (3.0)
Silver chub	6.2 (3.3)	3.3 (1.4)	0.6 (0.4)	3.9 (2.4)	3.0 (2.18)	16.5 (5.9)
Emerald shiner	3.1 (1.3)	9.9 (7.6)	8.1 (6.9)	0.3 (0.3)		3.9 (1.5)
River shiner						0.0 (0.0)
Spottail shiner	0.9 (0.7)				0.3 (0.30)	0.3 (0.1)
Mimic shiner						0.8 (0.8)
Bluntnose minnow	207.0 (102.4)					13.9 (9.5)
Bullhead minnow		0.6 (0.6)				0.4 (0.2)
River carpsucker						0.0 (0.0)
Quillback	0.6 (0.4)	0.6 (0.4)			0.9 (0.51)	0.8 (0.3)
Highfin carpsucker						0.0 (0.0)
Unidentified carpsucker			3.6 (1.4)	0.6 (0.6)		0.6 (0.2)
White sucker	0.9 (0.5)	0.6 (0.4)	1.5 (1.0)	0.3 (0.3)	0.9 (0.51)	4.9 (1.1)
Smallmouth buffalo	1.2 (0.6)		0.6 (0.4)	1.2 (0.7)		2.0 (0.8)
Bigmouth buffalo				0.9 (0.7)		0.2 (0.1)
Spotted sucker						0.0 (0.0)
Silver redhorse	2.8 (1.5)	3.3 (1.3)	0.6 (0.4)	1.5 (0.6)	0.9 (0.66)	3.4 (0.6)
Golden redhorse						0.3 (0.1)
Shorthead redhorse	1.9 (0.9)	0.6 (0.4)	0.6 (0.4)	1.2 (0.8)	0.6 (0.42)	1.6 (0.6)
Channel catfish	7.1 (3.4)	6.0 (1.8)	1.5 (1.0)	4.2 (1.3)	1.2 (0.72)	6.5 (1.0)
Slender madtom						0.0 (0.0)
Tadpole madtom		0.3 (0.3)				0.2 (0.1)
Flathead catfish	2.2 (1.0)	0.6 (0.4)				1.2 (0.2)
Trout-perch	30.0 (7.0)	13.8 (3.9)	24.9 (11.1)	42.6 (13.5)	71.7 (21.13)	42.6 (11.5)
Brook silverside						0.0 (0.0)
White bass		1.2 (0.7)	25.2 (20.3)	2.1 (1.0)	2.4 (1.07)	9.6 (2.9)
Rock bass	0.3 (0.3)					0.0 (0.0)
Hybrid sunfish						0.0 (0.0)
Bluegill	4.3 (1.7)	12.3 (4.5)	9.9 (3.6)	12.0 (6.8)	6.0 (3.07)	7.7 (1.4)
Smallmouth bass		0.3 (0.3)		0.6 (0.4)	0.9 (0.90)	0.3 (0.1)
White crappie		0.6 (0.4)		0.3 (0.3)	0.3 (0.30)	0.5 (0.1)
Black crappie	13.0 (3.2)	7.5 (2.9)	24.6 (10.8)	2.1 (0.7)	9.0 (2.38)	10.6 (1.9)
Mud darter						0.0 (0.0)
Johnny darter						0.2 (0.1)
Yellow perch	2.2 (0.9)	1.8 (0.9)	1.5 (0.6)		2.4 (1.30)	5.8 (1.3)
Logperch		1.5 (0.8)	1.2 (0.6)		0.6 (0.42)	0.9 (0.3)
River darter				1.8 (0.8)	0.3 (0.30)	0.7 (0.3)
Sauger	46.6 (7.3)	9.6 (2.2)	6.3 (1.7)	12.0 (2.2)	12.9 (2.63)	43.0 (8.4)
Walleye	10.8 (2.9)	3.9 (1.2)	6.0 (1.5)	16.2 (4.7)	7.2 (1.86)	21.4 (4.1)
Sauger x walleye hybrid	0.6 (0.4)					0.1 (0.1)
Freshwater drum	439.3 (76.3)	120.9 (39.3)	180.3 (41.2)	160.8 (31.8)	190.8 (33.62)	339.5 (40.5)
All species	792.1 (125.3)	208.2 (40.9)	299.1 (50.8)	272.7 (42.9)	313.8 (49.21)	527.7 (58.6)
Number of hauls	39	40	40	40	40	
Hours trawled	3.26	3.33	3.33	3.33	3.33	

Table 16. Length-frequency of fish captured by trawling in Lake Pepin, 18-26 August, 2009.

Total Length (in)	Black crappie	Bluegill	Channel catfish	Lake sturgeon	White crappie	Sauger	Smallmouth bass	Walleye	White bass	Yellow perch
0.5-0.9										
1.0-1.4										
1.5-1.9										
2.0-2.4	1								1	
2.5-2.9	1									
3.0-3.4									1	
3.5-3.9						2				
4.0-4.4		1				14			1	
4.5-4.9						12		3		
5.0-5.4	1	1				3		15	1	
5.5-5.9								16		
6.0-6.4	2							11		1
6.5-6.9	13	2			1			6		2
7.0-7.4	11	7								3
7.5-7.9	3	5						1		
8.0-8.4		3				4		1		1
8.5-8.9						4				
9.0-9.4		1				6			2	
9.5-9.9						3			2	
10.0-10.4						6				
10.5-10.9						1		1		
11.0-11.4						1				1
11.5-11.9						1		2		
12.0-12.9						6		1	1	
13.0-13.9						3	1	1		
14.0-14.9			2			1		2		
15.0-15.9						2		7		
16.0-16.9						1	1	2	2	
17.0-17.9						2	1	2		
18.0-18.9			1							
19.0-19.9						1		2		
20.0-20.9			1					1		
21.0-21.9						1				
22.0-22.9										
23.0-23.9								1		
24.0-24.9										
25.0-25.9										
26.0-26.9										
>27.0				1						
Total	32	20	4	1	1	74	3	75	11	8
LENGTH										
Mean	6.6	7.2	16.9	55.0	6.8	8.6	15.7	8.7	8.8	7.4
SE	0.2	0.2	1.6			0.5	1.1	0.6	1.5	0.6
min	2.0	4.2	14.0	55.0	6.8	3.5	13.4	4.6	2.2	6.0
max	7.5	8.9	20.9	55.0	6.8	21.9	16.9	23.6	16.1	11.0

Table 17. Age-length frequency and length at capture of sauger captured by trawling, Lake Pepin, 18-26 August, 2009.

Total length (in)	Total number	Age					
		0	1	2	3	4	5
3.0-3.4							
3.5-3.9	2	2					
4.0-4.4	14	14					
4.5-4.9	12	12					
5.0-5.4	3	3					
5.5-5.9							
6.0-6.5							
6.5-6.9							
7.0-7.4							
7.5-7.9							
8.0-8.4	4		4				
8.5-8.9	4		4				
9.0-9.4	6		6				
9.5-9.9	3		3				
10.0-10.4	6		6				
10.5-10.9	1		1				
11.0-11.4	1			1			
11.5-11.9	1			1			
12.0-12.9	6			6			
13.0-13.9	3			3			
14.0-14.9	1			1			
15.0-15.9	2				2		
16.0-16.9	1				1		
17.0-17.9	2				2		
18.0-18.9							
19.0-19.9	1						1
20.0-20.9	1						1
Total	74	31	24	12	5	2	
<u>Aged subsample</u>							
Mean length		4.4	9.4	12.7	15.1		
SE		0.1	0.2	0.3			
Min length		3.5	8.0	11.5	15.1		
Max length		5.2	10.9	14.2	15.1		
N		29	26	10	1		

Table 18. Age-length frequency and length at capture of walleye captured by trawling, Lake Pepin, 18-26 August, 2009.

Total length(in)	Total Number	Age					
		0	1	2	3	4	5
4.5-4.9	3	3					
5.0-5.4	15	15					
5.5-5.9	16	16					
6.0-6.4	11	11					
6.5-6.9	6	6					
7.0-7.4							
7.5-7.9	1	1					
8.0-8.5	1	1					
8.5-8.9							
9.0-9.4							
9.5-9.9							
10.0-10.5							
10.5-10.9	1		1				
11.0-11.4							
11.5-11.9	2		2				
12.0-12.9	1		1				
13.0-13.9	1			1			
14.0-14.9	2			2			
15.0-15.9	7			7			
16.0-16.9	2			2			
17.0-17.9	2			2			
18.0-18.9							
19.0-19.9	2				2		
20.0-20.9	1				1		
21.0-21.9							
22.0-22.9							
23.0-23.9	1						1
24.0-24.9							
25.0-25.9							
26.0-26.9							
Total	75	53	4	14	3	1	
<u>Aged subsample</u>							
Mean length		5.8	11.5	15.0			
SE		0.1	0.3	0.3			
Min length		4.6	10.9	13.0			
Max length		8.2	12.0	15.7			
N		47	4	9			

Table 19. Annual trawl catch per hour of sauger, by age, in Lake Pepin, August 1986-2009.

	Age (+)									
	All	0	1	2	3	4	5	6	7	8
1986 catch=273; hrs.=3.34	81.5	5.4	37.0	28.4	3.3	4.8	2.0	0.3	0.3	
1987 catch=350; hrs.=4.8	72.9	19.8	9.0	18.3	15.4	3.5	3.1	2.7	0.8	0.1
1988 catch=394; hrs.=3.25	121.2	0.6	84.6	16.0	9.8	6.2	1.2	1.8	0.9	
1989 catch=279; hrs.=3.32	84.0	2.1	2.7	74.4	3.0	1.2		0.3		
1990 catch=177; hrs.=3.32	53.3	3.0	11.7	4.8	33.1	0.6				
1991 catch=128; hrs.=3.23	39.6	0	14.2	9.6	4.0	11.4				
1992 catch=183; hrs.=3.30	55.4	19.1	3.0	13.6	4.5	7.9	6.7	0.3		
1993 catch=114; hrs.=3.30	34.5	3.6	17.0	6.1	4.2	1.2	1.2	1.2		
1994 catch=181; hrs.=3.34	54.3	10.2	10.2	22.8	4.5	3.0	0.9	2.4		
1995 catch=52; hrs.=3.34	15.6	1.8	9.3	3.0	1.2					
1996 catch=97; hrs.=3.34	29.0	1.2	5.4	19.2	1.8	1.2				
1997 catch=130; hrs.=3.34	38.9	16.2	6.3	5.1	9.9		0.9			

Continued next page.

Table 19. Continued.

	Age (+)									
	All	0	1	2	3	4	5	6	7	8
1998 catch=112; hrs.=3.29	34.0	7.0	13.4	4.6	5.8	2.7				0.3
1999 catch=527; hrs.=3.08	171.1	2.3	82.0	53.2	23.6	5.9	3.4	0.6		
2000 catch=68; hrs.=2.92	23.3	1.0	1.7	14.4	5.5	0.7				
2002 catch=73; hrs.=3.33	21.9	5.2	9.6	4.8	1.5	0.9				
2003 catch=61; hrs.=3.33	18.3	5.1	5.7	6.9	0.6					
2004 catch=69; hrs.= 1.87	36.9	7.5	7.5	16.6	3.7		1.1			
2005 catch=174; hrs.= 3.33	52.7	7.3	28.2	12.4	3.3					
2006 catch=40; hrs.= 3.33	12.0	2.4	3.0	4.8	1.5	0.6	0.6			
2007 catch=30; hrs.= 3.33	9.0	2.7	3.0	0.9	1.8	0.6				
2008 catch=53; hrs.= 3.33	15.9	4.2	6.9	3.3	0.9	0.6				
2009 catch=74; hrs.= 3.33	22.2	9.3	7.2	3.6	1.5	0.6				
Mean 1986-2008	48.9	6.1	16.9	15.6	6.5	2.4	1.0	0.4	0.1	<0.1

Table 20. Annual trawl catch per hour of walleye, by age, in Lake Pepin, August 1986-2009.

	Age (+)									
	All	0	1	2	3	4	5	6	7	8
1986 catch=90; hrs.=3.34	26.9	6.3	9.3	6.9	1.2	1.8	0.9	0.6		
1987 catch=279; hrs.=4.80	58.1	20.4	26.5	6.0	2.3	0.8	1.0	0.8		0.2
1988 catch=202; hrs.=3.25	62.1	1.2	45.5	11.4	1.8	1.2	0.3	0.3	0.3	
1989 catch=67; hrs.=3.32	20.2		1.2	18.1	0.3					
1990 catch=40; hrs.=3.32	12.0	1.2	6.3	0.3	3.9		0.3			
1991 catch=20; hrs.=3.23	6.2	0.9	1.2	1.9	0.3	1.2			0.3	
1992 catch=45; hrs.=3.30	13.6	4.5	5.8	2.1	0.9		0.3			
1993 catch=27; hrs.=3.30	8.2	3.9	1.8	1.8	0.3			0.3		
1994 catch=33; hrs.=3.34	9.9	4.2		4.8	0.6					
1995 catch=82; hrs.=3.34	24.6	1.8	19.5		2.7					
1996 catch=104; hrs.=3.34	31.1	2.4	18.6	9.9						
1997 catch=70; hrs.=3.34	21.0	4.2	6.6	4.2	5.4	0.6				

Continued next page.

Table 20. Continued.

	Age (+)									
	All	0	1	2	3	4	5	6	7	8
1998 catch=74; hrs.=3.29	22.5	3.0	12.8	4.0	2.1					
1999 catch=246; hrs.=3.08	79.9	0.6	44.7	19.8	10.4	2.8	1.8			
2000 catch=55; hrs.=2.92	18.8	1.0	2.1	13.0	2.7					
2002 catch=97; hrs.=3.33	29.1	0.9	23.7	1.5		2.7				
2003 catch=30; hrs.=3.33	9.0	1.8	0.3	6.0	0.9					
2004 catch=68; hrs.=1.87	36.4	0.5	8.6	11.8	13.4		2.1			
2005 catch=38; hrs.=3.33	11.5	0.9	2.4	6.4	1.2			0.3	0.3	
2006 catch=46; hrs.=3.33	13.8	9.9	0.6	1.8	0.6		0.6	0.3		
2007 catch=30; hrs.=3.33	14.4	8.7	3.6	0.9		0.9	0.3			
2008 catch=56; hrs.=3.33	16.8	1.2	8.7	5.1	0.6	0.3	0.3	0.3		0.3
2009 catch=75; hrs.=3.33	22.5	15.9	1.2	4.2	0.9	0.3				
Mean, 1986-2008	24.8	3.6	11.4	6.3	2.3	0.6	0.4	0.1	<0.1	<0.1

Table 21. Age-length frequency and mean length at capture of adult and juvenile largemouth bass captured by electrofishing in Lake Pepin, 24-30 September, 2009.

Total length (in)	Total Number	Age						
		1	2	3	4	5	6	7
5.5-5.9								
6.0-6.4								
6.5-6.9								
7.0-7.4								
7.5-7.9								
8.0-8.4								
8.5-8.9								
9.0-9.4	3	2	1					
9.5-9.9	1	1						
10.0-10.4	1		1					
10.5-10.9								
11.0-11.4								
11.5-11.9								
12.0-12.9	7		5	2				
13.0-13.9	11		1	9	1			
14.0-14.9	14			3	11			
15.0-15.9	13			2	7	2	1	1
16.0-16.9								
17.0-17.9	1					1		
18.0-18.9								
19.0-19.9								
20.0-20.9								
Total	51	3	8	16	19	3	1	1
<u>Aged subsample</u>								
Mean length		9.4	11.9	13.7	14.7	15.8	15.3	15.7
SE		0.18	0.56	0.27	0.17	0.78		
Min length		9.2	9.4	12.4	13.5	15.1	15.3	15.7
Max length		9.7	13.1	15.9	15.9	17.1	15.3	15.7
N		3	7	14	15	3	1	1

Table 22. Age-length frequency and mean length at capture of adult and juvenile smallmouth bass captured by electrofishing in Lake Pepin, 24-30 September, 2009.

Total length (in)	Total no.	Age								
		0	1	2	3	4	5	6	7	8
3.5-3.9										
4.0-4.4										
4.5-4.9										
5.0-5.4	1		1							
5.5-5.9										
6.0-6.4	2		2							
6.5-6.9	11		11							
7.0-7.4	12		12							
7.5-7.9	15		15							
8.0-8.4	14		14							
8.5-8.9	8		8							
9.0-9.4	5		5							
9.5-9.9	5		3	2						
10.0-10.4	14			14						
10.5-10.9	19			19						
11.0-11.4	27			27						
11.5-11.9	17			10	7					
12.0-12.9	33			4	25	4				
13.0-13.9	53				40	13				
14.0-14.9	31				12	16	3			
15.0-15.9	14				1	9	1	3		
16.0-16.9	3						2	1		
17.0-17.9	4							2	1	1
18.0-18.9										
19.0-19.9	1							1		
Total	289		71	76	85	42	6	7	1	1
<u>Aged subsample</u>										
Mean length			7.8	10.7	13.2	14.7	16.0	17.1	17.3	17.2
SE			0.16	0.13	0.19	0.26	0.65	0.65		
Min length			5.2	9.5	11.7	12.6	14.6	15.7	17.3	17.2
Max length			9.6	12.1	15.1	15.7	17.0	19.4	17.3	17.2
N			41	28	23	16	4	6	1	1

Table 23. Age-length frequency and mean length at capture of adult and juvenile walleye captured by electrofishing in Lake Pepin, 24-30 September, 2009.

Total length (in)	Total Number	Age											
		1	2	3	4	5	6	7	8	9	10	11	
11.0-11.5													
11.5-11.9													
12.0-12.9													
13.0-13.9	4	4											
14.0-14.9	1		1										
15.0-15.9	10		10										
16.0-16.9	11		10	1									
17.0-17.9	13		10	3									
18.0-18.9	9		2	8									
19.0-19.9	6		1	5									
20.0-20.9	12			10	1	1							
21.0-21.9	6			2	2			2					
22.0-22.9	6			1	1		1	1	1			1	
23.0-23.9	3				1	1	1						
24.0-24.9	5					1	4						
25.0-25.9	6					1	2	1	2				
26.0-26.9	6						2	3					1
27.0-27.9	3						1	2				1	
28.0-28.9	6							1				5	
29.0-29.9													
Total	107	4	34	30	5	4	11	10	3			7	1
<u>Aged subsample</u>													
Mean length		13.5	16.6	19.5	22.2	23.6	25.2	25.2	24.6			27.4	26.5
SE		0.25	0.22	0.25	0.57	1.16	0.41	0.90	1.26			0.89	
Min length		13.1	14.2	16.9	20.7	20.7	22.6	21.1	22.6			22.5	26.5
Max length		13.7	19.2	22.1	23.7	25.1	27.4	28.1	25.9			28.7	26.5
N		3	25	29	5	4	11	9	3			7	1

Table 24. Catch per hour of juvenile and adult smallmouth bass, largemouth bass, and walleye, by age, captured by electrofishing in Lake Pepin, September and October, 2005-2009.

Year	Hours	Age												
		All	1	2	3	4	5	6	7	8	9	10	11	12
Smallmouth bass														
2005	6.7	64.6	13.0	33.7	12.1	3.7	1.3	0.4	0.1					
2006	6.2	17.1	5.2	2.1	5.0	2.6	1.1	0.6		0.3		0.2		
2007	5.3	64.7	25.3	14.8	10.4	8.0	4.2	1.3	0.2	0.6				
2008	7.6	45.4	0.5	16.1	8.7	2.8	2.2	1.7	0.7					
2009	4.2	68.8	16.9	18.1	20.2	10.0	1.4	1.7	0.2					
Largemouth bass														
2005	6.7	10.6	1.9	2.0	2.0	3.3	0.9							
2006	6.2	26.2	11.6	5.2	2.9	3.6	1.6	0.6	0.3	0.3				
2007	5.3	20.3	1.1	10.1	4.4	3.2	1.3		0.2					
2008	7.6	6.9	0.3	1.6	3.3	0.7	0.3	0.4		0.1	0.3			
2009	4.2	12.1	0.7	1.9	3.8	4.5	0.7	0.2	0.2					
Walleye														
2005	6.7	17.9	0.4	4.9	4.5	2.7	1.8	1.5	1.5	0.4	0.1			
2006	6.2	24.9	2.3	4.5	6.6	2.7	3.9	1.1	1.8	1.5	0.3	0.2		
2007	5.3	28.1	4.4	4.7	2.7	7.8	2.5	2.7	2.3	1.1				
2008	7.6	20.7	2.9	9.0	2.2	0.3	1.6	1.5	0.8	0.3	0.8	0.8	0.4	0.3
2009	4.2	25.5	1.0	8.1	7.1	1.2	1.0	2.6	2.4	0.7		1.7	0.2	

Table 25. Number and pounds per gill net lift in Lake Pepin, by station 30 September – 7 October, 2009. One standard error in parentheses.

Station	No. sets	Shortnose gar		Mooneye		Gizzard shad		Common carp		Silver chub	
		No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift
1	4					23.50 (15.3)	2.42 (1.2)	0.50 (0.3)	2.14 (2.4)	0.75 (0.9)	0.08 (0.1)
2	4	0.25 (0.3)	0.48 (0.6)			67.25 (27.4)	5.65 (2.9)				
3	4					22.50 (12.0)	1.86 (1.0)				
4	4			0.75 (0.6)	0.57 (0.4)	26.50 (13.4)	2.51 (0.8)				
5	5			0.80 (0.9)	0.60 (0.7)	8.40 (3.5)	2.13 (0.9)	0.20 (0.2)	0.75 (0.8)		
6	3			7.00 (4.3)	5.10 (3.2)	29.33 (7.1)	4.02 (1.4)				
Mean		0.04 (0.0)	0.08 (0.1)	1.17 (0.6)	0.86 (0.5)	28.71 (6.2)	3.02 (0.6)	0.13 (0.1)	0.51 (0.4)	0.13 (0.1)	0.01 (0.0)
Station	No. sets	River carpsucker		Quillback		Highfin carpsucker		White sucker		Smallmouth buffalo	
		No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift
1	4										
2	4					0.25 (0.3)	0.43 (0.5)	0.50 (0.3)	0.81 (0.6)	0.75 (0.3)	0.56 (0.6)
3	4	0.25 (0.3)	0.71 (0.8)					0.25 (0.3)	0.57 (0.7)		
4	4	0.25 (0.3)	0.52 (0.6)	1.00 (0.5)	2.53 (1.3)			1.00 (0.5)	2.14 (1.3)	1.50 (1.4)	0.91 (0.8)
5	5			0.40 (0.3)	0.54 (0.4)			0.40 (0.3)	1.14 (0.8)	0.20 (0.2)	0.97 (1.1)
6	3							2.00	3.63 (0.3)		
Mean		0.08 (0.1)	0.21 (0.1)	0.25 (0.1)	0.53 (0.3)	0.04 (0.0)	0.07 (0.1)	0.63 (0.2)	1.28 (0.3)	0.42 (0.2)	0.45 (0.2)
Station	No. sets	Silver redhorse		Golden redhorse		Shorthead redhorse		Channel catfish		Flathead catfish	
		No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift
1	4	0.50 (0.6)	2.20 (2.5)	0.50 (0.3)	0.83 (0.6)	1.75 (1.3)	2.07 (1.6)	2.00 (1.1)	10.13 (6.9)		
2	4					0.75 (0.6)	0.78 (0.5)	1.50 (0.6)	4.17 (1.7)		
3	4	0.25 (0.3)	0.30 (0.3)			2.00 (1.2)	2.81 (1.6)	2.25 (1.2)	5.29 (2.8)		
4	4	1.75 (0.6)	4.17 (1.6)			3.25 (1.0)	5.36 (1.7)	1.00 (0.8)	2.20 (1.6)		
5	5	0.60 (0.3)	1.37 (0.8)			3.40 (1.4)	4.36 (1.9)	1.80 (0.8)	4.19 (2.3)	0.40 (0.3)	1.05 (0.8)
6	3					3.67 (2.0)	5.71 (2.6)	2.33 (0.4)	6.17 (0.6)		
Mean		0.54 (0.2)	1.40 (0.5)	0.08 (0.1)	0.14 (0.1)	2.46 (0.5)	3.46 (0.7)	1.79 (0.3)	5.27 (1.2)	0.08 (0.1)	0.22 (0.2)

Table 25. Continued.

Station	No. sets	Northern pike		White bass		Rock bass		Bluegill		Smallmouth bass	
		No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift
1	4	0.75 (0.3)	2.81 (1.3)	1.25 (0.6)	0.48 (0.3)						
2	4	0.25 (0.3)	0.83 (1.0)	5.75 (2.2)	6.02 (2.1)						
3	4	0.25 (0.3)	1.13 (1.3)	3.50 (1.4)	2.66 (1.6)						
4	4	0.75 (0.3)	6.12 (3.1)	7.75 (1.7)	9.27 (1.7)						
5	5	0.60 (0.4)	2.93 (2.8)	2.60 (0.6)	2.82 (0.8)	2.00 (2.0)	0.69 (0.7)	0.20 (0.2)	0.01 (0.0)	1.20 (0.8)	0.88 (0.6)
6	3	0.33 (0.4)	0.96 (1.2)	11.67 (9.5)	16.70 (14.2)						
Mean		0.50 (0.1)	2.54 (0.8)	5.04 (1.2)	5.75 (1.7)	0.42 (0.4)	0.14 (0.1)	0.04 (0.0)	0.00 (0.0)	0.25 (0.2)	0.18 (0.1)
Station	No. sets	White crappie		Black crappie		Yellow perch		Sauger		Walleye	
		No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift
1	4	0.75 (0.9)	0.04 (0.0)	0.25 (0.3)	0.25 (0.3)	0.25 (0.3)	0.05 (0.1)	31.50 (4.8)	32.24 (4.9)	3.00 (0.5)	6.14 (1.1)
2	4			4.25 (2.2)	1.18 (0.5)	3.00 (2.1)	0.80 (0.6)	39.25 (13.4)	47.40 (16.5)	7.25 (3.6)	18.94 (15.5)
3	4	0.25 (0.3)	0.19 (0.2)	1.75 (1.2)	0.48 (0.3)	0.25 (0.3)	0.10 (0.1)	35.00 (16.6)	39.43 (17.1)	6.50 (2.8)	9.14 (3.6)
4	4	0.25 (0.3)	0.10 (0.1)	2.00 (1.6)	0.82 (0.6)	8.50 (5.1)	2.97 (1.7)	36.00 (6.7)	45.34 (9.5)	6.75 (1.2)	12.25 (3.6)
5	5			3.40 (1.6)	0.99 (0.5)	9.60 (6.1)	4.71 (3.3)	10.60 (2.9)	11.51 (3.9)	2.80 (0.9)	3.99 (1.7)
6	3	0.67 (0.8)	0.20 (0.2)	0.67 (0.4)	0.15 (0.1)	9.33 (6.0)	3.98 (2.9)	27.67 (17.0)	29.27 (19.9)	3.67 (2.0)	6.48 (5.3)
Mean		0.29 (0.2)	0.08 (0.0)	2.17 (0.6)	0.68 (0.2)	5.17 (1.6)	2.13 (0.8)	29.29 (4.0)	33.46 (4.7)	4.96 (0.8)	9.39 (2.5)
Station	No. sets	Freshwater drum									
		No./lift	Lbs./lift								
1	4	14.75 (5.2)	9.42 (3.0)								
2	4	4.50 (1.5)	2.60 (0.7)								
3	4	15.50 (4.1)	5.88 (1.8)								
4	4	6.00 (3.2)	5.02 (2.3)								
5	5	9.60 (5.1)	4.84 (3.1)								
6	3	8.33 (9.0)	3.04 (3.7)								
Mean		9.83 (1.8)	5.21 (1.0)								

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Table 26. Mean number per gill net lift from Pool 4, 2005-2009. One standard error in parentheses. The historical mean is from 1986-2008.

Species	2005	2006	2007	2008	2009	Historical Mean
Lake Sturgeon	0.1 0.09	<0.05 (<0.05)				<0.05
Shovelnose Sturgeon						<0.05
Paddlefish		<0.05 (<0.05)		<0.05 (<0.05)		<0.05
Longnose Gar				<0.05 (<0.05)		<0.05
Shortnose Gar					0.0 (0.0)	<0.05
Bowfin			0.1 (0.1)	0.1 (0.1)		0.1
Skipjack Herring						<0.05
Gizzard Shad	33.3 (8.1)	16.8 (4.2)	25.3 (6.4)	18.4 (4.8)	28.7 (6.2)	27.5
Goldeye						<0.05
Mooneye	0.5 (0.3)	4.3 (1.2)	1.8 (0.6)	0.3 (0.1)	1.2 (0.6)	1.0
Northern Pike	0.3 (0.1)	1.0 (0.2)	0.5 (0.2)	0.9 (0.3)	0.5 (0.1)	0.6
Common Carp	<0.05 (<0.05)	0.8 (0.1)	0.3 (0.2)	0.1 (0.1)	0.1 (0.1)	0.8
Silver Chub	<0.05 (<0.05)	0.8 (0.2)	0.2 (0.1)	0.1 (0.1)	0.1 (0.1)	0.3
River Carpsucker			0.1 (0.1)	0.2 (0.1)	0.1 (0.1)	<0.05
Quillback	<0.05 (<0.05)	0.3 (0.1)	0.5 (0.2)	0.4 (0.1)	0.3 (0.1)	0.5
Highfin Carpsucker					0.0 (0.0)	<0.05
Unidentified carpsucker		0.8 (0.1)	0.1 (0.1)			<0.05
White Sucker		0.2 (0.1)	0.3 (0.1)	0.2 (0.1)	0.6 (0.2)	0.4
Blue Sucker			0.1 (0.1)			<0.05
Northern Hogsucker		0.4 (0.2)	0.1 (0.1)			<0.05
Smallmouth Buffalo	0.3 (0.1)	0.5 (0.2)	0.4 (0.1)	0.2 (0.1)	0.4 (0.2)	0.6
Bigmouth Buffalo			<0.05 (<0.05)			0.1
Spotted Sucker						0.1
Silver Redhorse	0.7 (0.2)	0.4 (0.2)	1.3 (0.4)	1.0 (0.3)	0.5 (0.2)	0.6
Golden Redhorse	0.1 (0.1)	0.1 (0.1)	<0.05 (<0.05)		0.1 (0.1)	0.1
Shorthead Redhorse	1.1 (0.4)	2.3 (0.5)	3.4 (0.9)	2.5 (0.5)	2.5 (0.5)	1.4
Black Bullhead						<0.05
Yellow Bullhead						<0.05
Brown Bullhead						<0.05
Channel Catfish	7.4 (1.4)	4.5 (0.4)	4.1 (0.7)	2.8 (0.6)	1.8 (0.3)	4.0
Flathead Catfish	<0.05 (<0.05)	<0.05 (<0.05)		0.1 (0.1)	0.1 (0.1)	0.1
Burbot						<0.05
White Bass	9.1 (2.6)	8.3 (1.3)	6.9 (1.2)	4.9 (1.2)	5.0 (1.2)	5.8
Hybrid Sunfish						<0.05
Green Sunfish						<0.05
Pumkinseed						<0.05
Rock Bass	0.2 (0.1)	0.3 (0.2)	0.2 (0.1)	0.2 (0.1)	0.4 (0.4)	0.2
Orangespotted Sunfish						<0.05
Bluegill		0.2 0.10	<0.05 (<0.05)	0.1 (0.1)	0.0 (0.0)	<0.05
Smallmouth Bass		0.3 0.10	0.7 0.40	0.1 (0.1)	0.3 (0.2)	<0.05
Largemouth Bass			0.1 (0.1)	<0.05 (<0.05)		<0.05
Hybrid Crappie						<0.05
White Crappie	1.4 (0.8)	0.8 (0.2)	0.4 (0.2)	0.5 (0.2)	0.3 (0.2)	0.5
Black Crappie	3.4 (1.2)	1.0 (0.3)	0.5 (0.3)	3.7 (0.9)	2.2 (0.6)	1.0
Yellow Perch	2.0 (0.7)	2.9 (0.8)	2.4 (0.7)	1.6 (0.6)	5.2 (1.6)	3.3
Sauger	28.0 (4.5)	29.5 (2.8)	29.4 (4.2)	30.3 (3.1)	29.3 (4.0)	24.2
Walleye	5.7 (1.3)	8.6 (1.1)	6.8 (1.2)	5.3 (0.9)	5.0 (0.8)	5.1
Sauger x walleye hybrid				<0.05 (<0.05)		<0.05
Freshwater Drum	23.2 (4.8)	9.9 (1.6)	21.9 (4.5)	12.5 (1.9)	9.8 (1.8)	13.3
Number of lifts	24	24	24	24	24	

Table 27. Mean pounds per gill net lift from Pool 4, 2004-2008. One standard error in parentheses. The historical mean is from 1986-2007.

Species	2005	2006	2007	2008	2009	Historical mean
Lake Sturgeon	0.2 (0.1)	<0.05 (<0.05)				<0.05
Shovelnose Sturgeon						<0.05
Paddlefish		0.1 (0.1)				<0.05
Longnose Gar				<0.05 (<0.05)		<0.05
Shortnose Gar					0.1 (0.1)	<0.05
Bowfin			0.3 (0.2)	0.3 (0.2)		0.4
Skipjack Herring						<0.05
Gizzard Shad	7.3 (1.7)	4.7 (1.2)	8.0 (1.9)	1.6 (0.3)	3.0 (0.6)	5.3
Goldeye						<0.05
Mooneye	0.4 (0.2)	2.9 (0.8)	1.2 (0.4)	0.2 (0.1)	0.9 (0.5)	0.7
Northern Pike	1.3 (0.7)	5.4 (1.5)	2.5 (0.9)	4.6 (1.5)	2.5 (0.8)	2.5
Common Carp	0.3 (0.3)	0.3 (0.3)	1.0 (0.7)	0.9 (0.7)	0.5 (0.4)	2.7
Silver Chub	<0.05 (<0.05)	0.1 (<0.05)	<0.05 (<0.05)	<0.05 (<0.05)	0.0 (0.0)	<0.05
River Carpsucker			0.1 (0.1)	0.5 (0.3)	0.2 (0.1)	0.1
Quillback	0.1 (0.1)	0.3 (0.2)	0.7 (0.4)	0.5 (0.2)	0.5 (0.3)	0.7
Highfin Carpsucker					0.1 (0.1)	<0.05
Unidentified carpsucker		<0.05 (<0.05)	0.1 0.1			<0.05
White Sucker		0.2 (0.1)	0.4 (0.2)	0.3 (0.2)	1.3 (0.3)	0.6
Blue Sucker			0.6 (0.4)			<0.05
Northern Hogsucker		0.1 (0.1)	0.1 (<0.05)			<0.05
Smallmouth Buffalo	0.7 (0.4)	1.0 (0.7)	0.4 (0.3)	0.2 (0.1)	0.4 (0.2)	0.7
Bigmouth Buffalo			<0.05 (<0.05)			<0.05
Spotted Sucker						0.1
Silver Redhorse	2.1 (0.8)	1.1 (0.5)	3.3 (1.1)	2.9 (1.1)	1.4 (0.5)	1.5
Golden Redhorse	0.2 (0.1)	0.1 (0.1)	0.1 (0.1)		0.1 (0.1)	0.2
Shorthead Redhorse	1.4 (0.5)	2.0 (0.5)	3.6 (1.0)	3.3 (0.7)	3.5 (0.7)	1.6
Black Bullhead						<0.05
Yellow Bullhead						<0.05
Brown Bullhead						<0.05
Channel Catfish	10.3 (1.9)	9.7 (1.2)	7.5 (1.4)	4.7 (1.0)	5.3 (1.2)	5.4
Flathead Catfish	<0.05 (<0.05)	0.4 (0.4)		0.1 (0.1)	0.2 (0.2)	0.2
Burbot						<0.05
White Bass	7.9 (2.8)	9.1 (1.5)	7.8 (1.3)	4.9 (1.3)	5.7 (1.7)	4.6
Hybrid Sunfish						<0.05
Green Sunfish						<0.05
Pumkinseed						<0.05
Rock Bass	0.1 0.06	0.1 (0.1)	0.1 (<0.05)	0.1 (<0.05)	0.1 (0.1)	0.1
Orangespotted Sunfish						<0.05
Bluegill		<0.05 (<0.05)	<0.05 (<0.05)	<0.05 (<0.05)	0.0 (0.0)	<0.05
Smallmouth Bass		0.3 (0.1)	0.5 (0.2)	0.1 (0.1)	0.2 (0.1)	<0.05
Largemouth Bass			0.1 (0.1)	0.1 (0.1)		<0.05
Hybrid Crappie						<0.05
White Crappie	0.3 (0.1)	0.3 (0.1)	0.1 (<0.05)	0.1 (0.1)	0.1 (0.0)	0.1
Black Crappie	1.2 (0.4)	0.4 (0.2)	0.2 (0.1)	0.7 (0.3)	0.7 (0.2)	0.3
Yellow Perch	0.6 (0.2)	0.9 (0.3)	0.7 (0.2)	0.7 (0.3)	2.1 (0.8)	0.8
Sauger	31.3 (5.2)	46.7 (4.4)	43.8 (6.1)	37.0 (3.4)	33.5 (4.7)	27.9
Walleye	9.5 (2.2)	15.8 (2.6)	9.9 (1.7)	8.6 (1.5)	9.4 (2.5)	8.0
Sauger x walleye hybrid				0.2 (0.2)		<0.05
Freshwater Drum	8.4 (1.8)	4.1 (0.8)	7.4 (1.4)	4.6 (0.8)	5.2 (1.0)	5.2
Number of lifts	24	24	24	24	24	

Table 28. Length frequency distribution of fish captured with gill nets in Lake Pepin, 30 September – 7 October, 2009.

Total Length (in)	Shortnose gar	Mooneye	Gizzard shad	Common carp	Silver chub	River carpsucker	Quillback	Highfin carpsucker	White sucker
2.5-2.9									
3.0-3.4									
3.5-3.9									
4.0-4.4			2						
4.5-4.9			6						
5.0-5.4			38						
5.5-5.9			30	1					
6.0-6.4			28		1				
6.5-6.9			59						
7.0-7.4			26		2				
7.5-7.9			7						
8.0-8.4									
8.5-8.9									
9.0-9.4									
9.5-9.9									
10.0-10.4		1							
10.5-10.9		1							
11.0-11.4		1							
11.5-11.9		6							
12.0-12.9		12	2						1
13.0-13.9		6	3				2		
14.0-14.9		1					1		3
15.0-15.9						1	2	1	1
16.0-16.9			3			1			2
17.0-17.9			1						5
18.0-18.9			1						3
19.0-19.9				1					
20.0-20.9									
21.0-21.9							1		
22.0-22.9									
23.0-23.9									
24.0-24.9	1								
25.0-25.9				1					
26.0-26.9									
27.0-27.9									
28.0-28.9									
29.0-29.9									
30.0-30.9									
32.0-32.9									
34.0-34.9									
36.0-36.9									
Total	1	28	206	3	3	2	6	1	15
<u>Length statistics</u>									
Mean	24.8	12.4	6.7	17.0	6.9	15.7	15.6	15.1	16.4
SE		0.18	0.15	7.19	0.42	0.50	1.34		0.50
Min	24.8	10.3	4.3	5.8	6.2	15.4	13.1	15.1	12.1
Max	24.8	14.2	18.0	25.6	7.4	16.1	21.4	15.1	18.9

Continued next page

Table 28. Continued.

Total Length (in)	Smallmouth buffalo	Silver redhorse	Golden redhorse	Shorthead redhorse	Channel catfish	Flathead catfish	Northern pike	White bass	Rock bass
2.5-2.9									
3.0-3.4									
3.5-3.9									
4.0-4.4									
4.5-4.9								1	
5.0-5.4								6	
5.5-5.9	2							4	
6.0-6.4	3							4	1
6.5-6.9								1	1
7.0-7.4									2
7.5-7.9									3
8.0-8.4									3
8.5-8.9									
9.0-9.4				2				1	
9.5-9.9									
10.0-10.4		1						2	
10.5-10.9				1				11	
11.0-11.4		1						4	
11.5-11.9	2			1	1			3	
12.0-12.9				5	3			9	
13.0-13.9			1	12				36	
14.0-14.9	2	1		6	4			26	
15.0-15.9		3		13	3	1		11	
16.0-16.9			1	10	3			3	
17.0-17.9				6	4				
18.0-18.9		1		3	2		1		
19.0-19.9		1			2				
20.0-20.9	1	2			7	1			
21.0-21.9		2			6				
22.0-22.9		1			1				
23.0-23.9					5		2		
24.0-24.9							1		
25.0-25.9							2		
26.0-26.9									
27.0-27.9									
28.0-28.9					1		3		
29.0-29.9					1				
30.0-30.9									
32.0-32.9							1		
34.0-34.9							1		
36.0-36.9							1		
Total	10	13	2	59	43	2	12	122	10
<u>Length statistics</u>									
Mean	10.3	17.5	15.3	14.9	19.1	18.2	27.5	12.4	7.5
SE	1.70	1.14	2.34	0.3	0.62	3.42	1.55	0.27	0.18
Min	5.6	10.4	13.6	9.3	11.7	15.7	18.6	5.0	6.3
Max	20.4	22.1	16.9	18.9	29.3	20.6	36.5	16.7	8.1

Continued next page

Table 28. Continued.

Total Length (in)	Bluegill	Smallmouth bass	White crappie	Black crappie	Yellow perch	Sauger	Walleye	Freshwater drum
2.5-2.9								
3.0-3.4								1
3.5-3.9								2
4.0-4.4								2
4.5-4.9	1		2					5
5.0-5.4			1	1				13
5.5-5.9				2				3
6.0-6.4				3	2			
6.5-6.9				8	1			5
7.0-7.4		1		9	15	3	3	9
7.5-7.9				14	16	2	12	3
8.0-8.4			1	6	12	1	2	12
8.5-8.9			1	3	16	1	1	17
9.0-9.4			1		16	2	3	20
9.5-9.9					13	12		26
10.0-10.4		1		1	9	23		28
10.5-10.9		1			8	27		9
11.0-11.4		1		1	14	48		13
11.5-11.9				2	2	38		8
12.0-12.9		1	1	2		64	4	20
13.0-13.9		1				79	9	24
14.0-14.9						149	9	5
15.0-15.9						99	11	4
16.0-16.9						36	11	1
17.0-17.9						33	12	2
18.0-18.9						35	13	1
19.0-19.9						22	6	
20.0-20.9						17	3	1
21.0-21.9						10	10	
22.0-22.9						1	4	
23.0-23.9						1		
24.0-24.9							3	
25.0-25.9							1	
26.0-26.9								
27.0-27.9							1	
28.0-28.9								
29.0-29.9							1	
30.0-30.9								
32.0-32.9								
34.0-34.9								
36.0-36.9								
Total	1	6	7	52	124	703	119	234
<u>Length statistics</u>								
Mean	4.8	11.0	7.6	7.9	9.1	14.4	16.1	10.1
SE		0.97	1.2	0.22	0.12	0.11	0.45	0.19
Min	4.8	7.3	4.8	5.3	6.1	7.3	7.2	3.0
Max	4.8	13.6	12.7	13.0	11.8	23.0	29.2	20.2

Table 29. Age-length frequency and mean length at capture of adult and juvenile sauger (sexes combined) captured with 24 gill nets in Lake Pepin, 30 September – 7 October, 2009.

Total length (in)	Total no.	Age												
		0	1	2	3	4	5	6	7	8	9	10	11	12
6.5-6.9														
7.0-7.4	3	3												
7.5-7.9	2	2												
8.0-8.4	1	1												
8.5-8.9	1		1											
9.0-9.4	2		2											
9.5-9.9	12		12											
10.0-10.4	23		23											
10.5-10.9	27		26	1										
11.0-11.5	48		48											
11.5-11.9	38		32	6										
12.0-12.9	64		45	19										
13.0-13.9	79		5	74										
14.0-14.9	149			146	3									
15.0-15.9	99			79	20									
16.0-16.9	36			4	24	6	2							
17.0-17.9	33				24	7	2							
18.0-18.9	35				17	5	8	4		1				
19.0-19.9	22				1	2	10	2	1	5				1
20.0-20.9	17					1	6	5	1	3				1
21.0-21.9	10						2	4	2	1		1		
22.0-22.9	1											1		
23.0-23.9	1									1				
Total	703	6	194	329	89	21	30	15	4	11		2		2
<u>Aged subsample</u>														
Mean length		7.4	11.1	14.2	17.3	18.0	19.4	20.2	20.7	20.4		21.8	20.3	
SE		0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.4		0.7	0.9	
Min length		7.3	8.6	10.8	14.4	16.5	16.8	18.2	19.9	18.9		21.3	19.6	
Max length		7.4	13.7	16.3	19.1	20.5	21.4	21.9	21.5	23.0		22.3	20.9	
N		2	109	114	44	13	21	13	4	10		2	2	

Table 30. Mean length at age of sauger (sexes combined) captured with gill nets in Lake Pepin between 2005 and 2009. Historical means (1966-2009) and means for each decade are provided.

Age	2005	2006	2007	2008	2009	Historical	By Decade				
						Mean	1960's	1970's	1980's	1990's	2000's
0	7.6	8.4	8.2	7.5	7.4	7.4				6.7	7.7
1	11.2	12.3	12.3	10.9	11.1	10.4	9.8	10.3	9.9	10.2	11.4
2	14.1	15.1	15.5	14.9	14.2	13.3	12.1	13.0	12.9	13.1	14.4
3	16.5	17.0	17.4	16.8	17.3	15.5	14.4	15.4	15.4	15.1	16.7
4	17.7	18.0	17.9	18.9	18.0	17.1	16.4	17.2	16.8	16.4	17.9
5	19.0	19.5	19.6	19.2	19.4	18.4	18.2	18.0	18.4	17.9	19.1
6	19.2	19.8	19.3	20.3	20.2	19.3	19.8	19.3	19.6	18.8	19.6
7	19.7	19.2	20.4	20.3	20.7	20.0	20.6	19.8	20.5	19.4	19.9
8	20.9	20.9	19.6	20.5	20.4	20.7	21.5	20.8	21.2	20.1	20.6
9		20.5	20.9			21.0			20.9	21.0	21.1
10		21.5	19.8	22.1	21.8	21.6			22.4	21.9	21.4
11		20.0		21.3	20.3	20.3					20.3
12				21.9		21.9					21.9

Table 31. Mean length at age of female sauger captured with gill nets in Lake Pepin between 2005 and 2009. Historical means (1987-2009) and means for each decade are provided.

Age	2005	2006	2007	2008	2009	Historical	By Decade			
						Mean	1980's	1990's	2000's	
0	7.2	8.5	8.2	7.7	7.4	7.8				7.8
1	11.3	12.8	12.5	10.7	11.1	10.8	10.8	10.1		11.4
2	14.2	15.4	16.0	15.2	14.5	14.2	14.2	13.5		14.8
3	16.7	17.1	18.0	17.3	17.9	16.5	17.0	15.5		17.2
4	18.8	18.8	19.4	19.5	19.6	18.0	18.1	16.9		18.8
5	19.8	20.4	20.6	20.0	20.2	19.2	19.3	18.4		19.9
6	20.2	20.8	21.5	21.3	21.5	20.2	20.2	19.9		20.6
7	20.6	19.8	20.8	21.3	20.9	20.8	21.1	20.8		20.6
8	21.5	21.7		21.1	23.0	21.4	21.6	20.6		21.7
9		22.3	21.7			21.6	21.2	21.1		22.0
10				23.0	22.3	22.5	22.4	22.2		22.7
11										
12										

Table 32. Mean length at age of male sauger captured with gill nets in Lake Pepin between 2005 and 2009. Historical means (1987-2009) and means for each decade are provided.

Age	2005	2006	2007	2008	2009	Historical	By Decade		
						Mean	1980's	1990's	2000's
0		8.4		7.6		8.3			8.3
1	11.1	12.1	12.2	11.1	11.1	10.7	10.0	10.1	11.4
2	13.7	14.4	15.0	14.4	14.0	13.5	13.5	12.9	13.9
3	15.9	16.7	16.6	16.4	16.4	15.3	15.3	14.5	16.0
4	16.9	17.2	17.3	18.1	17.7	16.7	16.7	15.9	17.3
5	18.0	18.8	18.4	18.3	18.5	18.0	18.1	17.7	18.2
6	18.3	19.1	18.8	19.3	19.4	18.9	18.9	18.7	19.0
7	19.1	19.0	20.0	19.3	19.9	19.3	19.2	19.0	19.5
8	21.2	20.7	19.6	19.8	20.1	19.9	19.8	19.7	20.1
9		20.2	20.4			20.2	20.6	20.1	20.1
10		21.5	19.8	20.3	21.3	20.9		21.5	20.7
11		20.0		21.3	20.3	20.3			20.3
12				21.9		21.8			21.8

Table 33. Age-length frequency and mean length at capture of adult and juvenile walleye (sexes combined) captured with 24 gill nets in Lake Pepin, 30 September – 7 October, 2009.

Total length (in)	Total Number	Age (+)												
		0	1	2	3	4	5	6	7	8	9	10	11	12
7.0-7.4	3	3												
7.5-7.9	12	12												
8.0-8.4	2	2												
8.5-8.9	1	1												
9.0-9.4	3	3												
9.5-9.9														
10.0-10.4														
10.5-10.9														
11.0-11.4														
11.5-11.9														
12.0-12.9	4		4											
13.0-13.9	9		8	1										
14.0-14.9	9		5	4										
15.0-15.9	11		1	9	1									
16.0-16.9	11		1	8	2									
17.0-17.9	12			10	2									
18.0-18.9	13			2	8	3								
19.0-19.9	6				5	1								
20.0-20.9	3				3									
21.0-21.9	10				8	1			1					
22.0-22.9	4				1		2						1	
23.0-23.9														
24.0-24.9	3						1	1		1				
25.0-25.9	1							1						
26.0-26.9														
27.0-27.9	1													1
28.0-28.9														
29.0-29.9	1													1
Total	119	21	19	34	30	5	3	3			1		1	2
<u>Aged subsample</u>														
Mean length		8.5	13.8	16.4	19.5	19.2	22.9	23.9			24.6		22.9	28.6
SE		0.37	0.25	0.21	0.33	0.76	0.79	1.38						0.92
Min length		7.6	12.3	13.4	15.9	18.1	22.0	21.8			24.6		22.9	27.9
Max length		9.4	16.3	18.7	22.1	21.9	24.2	25.7			24.6		22.9	29.2
N		6	19	34	29	5	3	3			1		1	2

Table 34. Mean length at age of walleye (sexes combined) captured with gill nets in Lake Pepin between 2005 and 2009. Historical means (1966-2009) and means for each decade are provided.

Age	2005	2006	2007	2008	2009	Historical	By Decade				
						Mean	1960's	1970's	1980's	1990's	2000's
0	8.6	9.6	9.9	8.1	8.5	8.1			8.0	7.7	8.7
1	13.9	14.5	14.3	13.4	13.8	12.7	12.2	12.4	12.6	12.9	13.3
2	16.5	17.1	16.9	16.9	16.4	15.7	14.6	15.7	15.5	15.7	16.4
3	18.4	19.2	19.9	20.3	19.5	18.0	17.6	17.9	17.8	17.8	18.8
4	19.2	21.6	21.6	20.7	19.2	19.6	19.7	20.0	19.2	19.4	19.8
5	22.2	21.2	21.4	21.3	22.9	21.0	21.9	21.4	21.6	20.3	20.7
6	24.7	22.2		22.6	23.9	21.8	22.6	20.6	23.3	21.2	22.1
7	19.4		23.4			23.9		24.9	24.3	24.0	23.2
8		22.0	23.4			24.5	22.0	25.5	27.4	27.4	22.3
9	21.0	21.6	24.3		24.6	23.8		27.4			22.9
10		22.6	21.9			24.3		28.4			22.2
11					22.9	22.9					22.9
12				26.6	28.6	27.6					27.6

Table 35. Mean length at age of female walleye captured with gill nets in Lake Pepin between 2005 and 2009. Historical means (1966-2009) and means for each decade are provided.

Age	2005	2006	2007	2008	2009	Historical	By Decade		
						Mean	1980's	1990's	2000's
0	8.2	9.6	9.6		8.8	8.3	8.1	7.7	8.6
1	14.1	15.0	14.3	13.5	13.7	13.2	12.3	12.8	13.8
2	17.2	17.8	17.4	17.4	16.9	16.6	15.8	16.1	17.3
3	19.6	20.3	20.8	21.3	20.5	19.4	19.4	18.6	20.0
4		21.9	21.7	23.2		20.9	21.2	20.4	21.2
5	23.2	23.9		22.6	22.9	21.5	21.6	20.9	22.0
6	24.7	24.3		22.6	24.9	23.7	23.6	22.7	24.3
7			25.2			25.8	24.8	26.4	25.7
8						27.4	27.4		
9			24.3		24.6	24.4			24.4
10									
11									
12				26.6	28.6	27.6			27.6

Table 36. Mean length at age of male walleye captured with gill nets in Lake Pepin between 2005 and 2009. Historical means (1966-2009) and means for each decade are provided.

Age	2004	2005	2006	2007	2008	Historical	By Decade		
						Mean	1980's	1990's	2000's
0	9.0	9.5			9.2	8.4	7.9	7.8	8.9
1	13.7	14.1	14.3	13.4	13.9	13.2	12.7	12.8	13.8
2	16.1	16.5	16.4	16.5	16.2	15.8	15.5	15.5	16.2
3	17.6	18.2	17.6	18.3	17.8	17.6	18.0	17.2	17.9
4	19.2	19.6	21.2	19.5	19.2	18.9	18.8	18.6	19.2
5	20.2	20.0	21.4	21.0		19.8	19.2	19.5	20.2
6		20.1			21.8	20.2	21.0	20.1	20.2
7	19.4		21.5			20.4		18.5	21.1
8		22.0	23.4			22.3			22.3
9	21.0	21.6				21.3			21.3
10		22.6	21.9			22.3			22.3
11					22.9	22.9			22.9
12									

Table 37. Age-length frequency and mean length at capture of adult and juvenile white bass (sexes combined) captured with 24 gill nets in Lake Pepin, 30 September – 7 October, 2009.

Total length (in)	Total Number	Age (+)															
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
4.0-4.4																	
4.5-4.9	1	1															
5.0-5.4	6	6															
5.5-5.9	4	4															
6.0-6.4	4	4															
6.5-6.9	1		1														
7.0-7.4																	
7.5-7.9																	
8.0-8.4																	
8.5-8.9																	
9.0-9.4	1		1														
9.5-9.9																	
10.0-10.4	2		2														
10.5-10.9	11		11														
11.0-11.4	4		4														
11.5-11.9	3		3														
12.0-12.9	9		1	8													
13.0-13.9	36		1	15	13	5		2									
14.0-14.9	26			1	13	7	1	4									
15.0-15.9	11					5	1	1	2	2							
16.0-16.9	3									1							2
17.0-17.9																	
Total	122	15	24	24	26	17	2	7	2	3							2
<u>Aged subsample</u>																	
Mean length			10.8	13.2	13.9	14.5	14.7	14.5	15.4	16.1							16.5
SE			0.2	0.1	0.1	0.2	0.9	0.3	0.5	0.4							0.3
Min length			6.9	12.6	13.1	13.4	14.1	13.7	15.0	15.6							16.2
Max length			13.0	14.0	14.6	15.3	15.4	15.7	15.7	16.6							16.7
N			24	24	26	17	2	7	2	3							2

Table 38. Index of abundance of age 1, 2, and 3 sauger from original 20 gill net sites in Lake Pepin. Index calculated by dividing catch at age (x) by mean catch of age (x).

Year	Total catch	Catch			Index of abundance		
		Age 1	Age 2	Age 3	Age 1	Age 2	Age 3
1965	388	52	169	112	0.44	0.92	0.79
1966	368	68	63	141	0.57	0.34	1.00
1967	362	119	157	35	1.00	0.86	0.25
1968	760	45	346	315	0.38	1.89	2.23
1969	1253	117	184	757	0.99	1.01	5.35
1970	873	271	86	172	2.28	0.47	1.22
1971	952	262	404	83	2.21	2.21	0.59
1972	807	170	294	229	1.43	1.61	1.62
1973	869	148	341	253	1.25	1.86	1.79
1974	1005	432	243	182	3.64	1.33	1.29
1975	580	53	326	118	0.45	1.78	0.83
1976	771	166	162	300	1.40	0.89	2.12
1977	649	186	189	53	1.57	1.03	0.37
1978	568	35	318	123	0.29	1.74	0.87
1979	234	39	29	117	0.33	0.16	0.83
1980	598	184	126	99	1.55	0.69	0.70
1981	523	202	145	71	1.70	0.79	0.50
1982	465	83	63	213	0.70	0.34	1.51
1983	359	13	207	61	0.11	1.13	0.43
1984	561	120	173	125	1.01	0.95	0.88
1985	254	72	50	48	0.61	0.27	0.34
1986	496	108	162	95	0.91	0.89	0.67
1987	444	51	155	126	0.43	0.85	0.89
1988	514	231	138	92	1.95	0.75	0.65
1989	493	15	410	32	0.13	2.24	0.23
1990	611	76	84	411	0.64	0.46	2.90
1991*	366	117	98	24	0.99	0.54	0.17
1992	302	19	93	50	0.16	0.51	0.35
1993*	262	30	74	75	0.25	0.40	0.53
1994	238	29	107	29	0.24	0.58	0.20
1995	521	123	54	166	1.04	0.30	1.17
1996	421	46	157	55	0.39	0.86	0.39
1997	328	64	71	113	0.54	0.39	0.80
1998	337	10	179	231	0.08	0.98	1.63
1999	324	110	118	52	0.93	0.64	0.37
2000	749	55	492	126	0.46	2.69	0.89
2001 ^a	820	167	76	420	1.41	0.42	2.97
2002	442	106	179	29	0.89	0.98	0.20
2003	776	183	328	124	1.54	1.79	0.88
2004	475	131	192	92	1.10	1.05	0.65
2005	556	187	206	79	1.58	1.13	0.56
2006	638	96	244	131	0.81	1.33	0.93
2007	489	195	87	85	1.64	0.48	0.60
2008	544	194	192	61	1.64	1.05	0.43
2009	546	159	263	62	1.34	1.44	0.44
Mean	553.1	118.6	183.0	141.5	1.00	1.00	1.00
SD	224.7	84.4	108.8	132.8	0.7	0.6	0.9
CV	0.41	0.71	0.59	0.94	0.71	0.59	0.94

* 19 sets in 1991, 1993. a = numbers from 11 sets were extrapolated to 20 sets for comparison

Table 39. Index of abundance of age 1, 2, and 3 walleye from original 20 gill net sites in Lake Pepin. Index calculated by dividing catch at age (x) by mean catch of age (x).

Year	Total catch	Catch			Index of abundance		
		Age 1	Age 2	Age 3	Age 1	Age 2	Age 3
1965	53	11	16	15	0.41	0.73	1.13
1966	69	40	16	5	1.48	0.73	0.38
1967	72	17	37	9	0.63	1.68	0.68
1968	66	14	36	10	0.52	1.63	0.75
1969	75	6	17	41	0.22	0.77	3.08
1970	80	28	6	17	1.04	0.27	1.28
1971	71	22	26	5	0.81	1.18	0.38
1972	55	24	13	14	0.89	0.59	1.05
1973	73	40	20	1	1.48	0.91	0.08
1974	54	34	13	6	1.26	0.59	0.45
1975	47	13	16	9	0.48	0.73	0.68
1976	62	29	7	15	1.07	0.32	1.13
1977	60	18	25	7	0.67	1.13	0.53
1978	31	3	13	9	0.11	0.59	0.68
1979	68	17	17	21	0.63	0.77	1.58
1980	68	39	5	8	1.44	0.23	0.60
1981	61	36	16	4	1.33	0.73	0.30
1982	63	11	33	14	0.41	1.50	1.05
1983	54	16	14	15	0.59	0.64	1.13
1984	42	20	8	5	0.74	0.36	0.38
1985	33	7	5	6	0.26	0.23	0.45
1986	24	4	8	4	0.15	0.36	0.30
1987	88	38	29	11	1.41	1.32	0.83
1988	87	48	23	11	1.78	1.04	0.83
1989	51	3	40	2	0.11	1.81	0.15
1990	43	10	3	25	0.37	0.14	1.88
1991*	46	9	23	1	0.33	1.04	0.08
1992	47	13	10	8	0.48	0.45	0.60
1993*	29	8	8	8	0.30	0.36	0.60
1994	34	1	16	13	0.04	0.73	0.98
1995	113	62	12	16	2.30	0.54	1.20
1996	91	18	56	1	0.67	2.54	0.08
1997	62	10	15	27	0.37	0.68	2.03
1998	142	50	21	30	1.85	0.95	2.25
1999	51	19	18	8	0.70	0.82	0.60
2000	70	9	31	18	0.33	1.41	1.35
2001 ^a	180	38	12	51	1.41	0.54	3.83
2002	189	137	17	11	5.07	0.77	0.83
2003	149	28	95	9	1.04	4.31	0.68
2004	158	72	30	34	2.67	1.36	2.55
2005	93	23	43	12	0.85	1.95	0.90
2006	151	37	24	32	1.37	1.09	2.40
2007	129	77	21	6	2.85	0.95	0.45
2008	98	40	47	7	1.48	2.13	0.53
2009	90	16	31	19	0.59	1.41	1.43
Mean	77.2	27.0	22.0	13.3	1.0	1.0	1.0
SD	40.2	24.6	16.3	10.8	0.9	0.7	0.8
CV	0.52	0.91	0.74	0.81	0.91	0.74	0.81

* 19 sets in 1991, 1993. a = numbers from 11 sets were extrapolated to 20 sets for comparison

Table 40. Walleye and sauger mean gonadosomatic index by sex and age class collected from gill nets in Lake Pepin, 2006-2009. Sample sizes are provided in parentheses.

Age	2006	2007	2008	2009	2006-09
<u>Female Sauger</u>					
1					
2	2.46 (24)	2.51 (29)	1.98 (29)	1.61 (38)	2.08 (120)
3	3.17 (16)	3.21 (26)	2.17 (16)	1.88 (27)	2.58 (85)
4	3.48 (8)	4.16 (5)	2.44 (13)	1.73 (3)	2.95 (29)
5	4.98 (3)	2.97 (7)	2.97 (10)	2.31 (11)	2.93 (31)
6	4.79 (6)	3.31 (1)	2.87 (9)	2.35 (5)	3.32 (21)
7		3.24 (6)	2.08 (1)	1.96 (3)	2.74 (10)
8	4.64 (1)		4.01 (1)	2.51 (1)	3.72 (3)
9	4.55 (1)	2.75 (2)			3.35 (3)
10			3.32 (1)	1.19 (1)	2.26 (2)
<u>Male Sauger</u>					
1	1.46 (11)	1.42 (31)	1.36 (36)	0.74 (18)	1.27 (96)
2	2.10 (12)	1.85 (21)	1.64 (29)	1.05 (32)	1.55 (94)
3	2.49 (5)	2.09 (19)	2.04 (15)	1.45 (15)	1.93 (54)
4	2.36 (7)	2.42 (14)	2.25 (9)	1.38 (9)	2.13 (39)
5	3.01 (4)	2.48 (7)	2.01 (8)	1.37 (9)	2.07 (28)
6	2.58 (6)	3.23 (5)	1.99 (7)	1.38 (8)	2.18 (26)
7	3.33 (3)	2.98 (5)	2.95 (1)	1.58 (1)	2.94 (10)
8	3.03 (3)	2.24 (1)	2.04 (2)	1.48 (9)	1.91 (15)
9	2.70 (4)	2.28 (4)			2.49 (8)
10	2.49 (1)	2.88 (1)	3.10 (1)	1.62 (1)	2.52 (4)
11	2.57 (1)		1.72 (1)	1.11 (2)	1.63 (4)
12			2.36 (1)		2.36 (1)
<u>Female Walleye</u>					
1	0.50 (1)	1.08 (2)			0.89 (3)
2	3.52 (4)	3.70 (6)	2.70 (10)	1.73 (2)	3.04 (22)
3	4.12 (16)	3.17 (4)	3.16 (4)	2.23 (17)	3.15 (41)
4	4.83 (6)	4.25 (8)	2.65 (1)		4.38 (15)
5	5.17 (3)		3.66 (1)	3.39 (3)	4.19 (7)
6	5.15 (1)		5.13 (3)	3.09 (2)	4.45 (6)
7		4.82 (1)			4.82 (1)
8					
9		4.47 (2)		3.67 (1)	4.20 (3)
10					
11					
12			4.28 (1)	3.20 (2)	3.56 (3)
<u>Male Walleye</u>					
1	2.09 (13)	2.04 (23)	1.97 (10)	1.73 (1)	2.03 (47)
2	2.30 (14)	2.26 (13)	2.47 (23)	1.79 (15)	2.23 (65)
3	2.86 (18)	2.91 (2)	2.61 (2)	2.13 (10)	2.62 (32)
4	3.55 (1)	3.67 (3)	2.24 (2)	1.74 (5)	2.52 (11)
5	3.63 (7)	3.77 (1)	3.54 (4)		3.61 (12)
6	3.66 (1)			2.76 (1)	3.21 (2)
7		3.79 (1)			3.79 (1)
8	4.35 (2)	3.41 (1)			4.04 (3)
9	2.40 (2)				2.40 (2)
10	3.85 (1)	4.71 (1)			4.28 (2)
11				3.18 (1)	3.18 (1)

Table 41. Age-length frequency and mean length of adult and juvenile white bass (sexes combined) harvested by anglers in Lake Pepin, 2009.

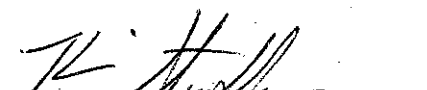
	Total length (in)	Total Number	Age (+)																
			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	9.0-9.4																		
	9.5-9.9	2		2															
	10.0-10.4	2		2															
	10.5-10.9	3		3															
	11.0-11.4																		
	11.5-11.9	3			3														
	12.0-12.4	11			10		1												
	12.5-12.9	18			16	2													
	13.0-13.4	19			9	9			1										
	13.5-13.9	22			1	17	3		1										
	14.0-14.4	29				9	10	3	5	1		1							
	14.5-14.9	14				1	5	1	4		2	1							
	15.0-15.4	23				1	3	1	4	2	2	4		5		1			
	15.5-15.9	31						1	4	3	4	3	1	11	2			2	
	16.0-16.4	10							1	2	1	1		2	1	1			1
	16.5-16.9	5										2						3	
	17.0-17.4	1																	1
	17.5-17.9																		
	Total	193																	
	<u>Aged subsample</u>																		
	Mean length		10.4	12.7	13.8	14.3	14.7	14.9	15.6	15.4	15.5	15.6	15.7	15.9	15.9		16.3	16.7	
	Min length		9.9	11.6	12.8	12.4	14.1	13.4	14.4	14.6	14.1	15.6	15.2	15.6	15.5		15.7	16.3	
	Max length		10.9	13.5	15.1	15.1	15.8	16.2	16.2	16.1	16.7	15.6	16.3	16.3	16.3		16.7	17.0	
	N		7	39	39	22	6	20	8	9	12	1	18	3	2		5	2	


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Large Lake Sampling Program Annual Completion Report:

Lake Pepin, 2009

Prepared by:  3-4-10
Large Lake Specialist Date

Approved by:  3-4-10
Area Fisheries Supervisor Date

Approved by:  5/6/10
Regional Fisheries Supervisor Date