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MINNESOTA DEPARTMENT OF NATURAL RESOURCES
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Completion Report

Large Lake Monitoring Program Annual Completion Report: Lake Pepin

2010

by

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Introduction

Annual monitoring of fish populations is valuable for detecting trends in population dynamics, and is a useful tool for predicting the future of the fishery. The Large Lake Monitoring Program within the Minnesota Department of Natural Resources (MN DNR) was initiated in 1983 to provide long-term monitoring information of fish populations in Minnesota's nine largest lakes and Minnesota's portion of Lake Superior (Wingate and Schupp 1984). Lake Pepin, a natural impoundment of the Mississippi River created by the delta formed at the confluence of the Chippewa and Mississippi Rivers, was added to the monitoring program in 1986. 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 approximately 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 declines further downstream in the lake and 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 2010 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 invading species and changes in aquatic habitat.

Methods

Pool 4 is divided into eight sampling stations; six within Lake Pepin and two in the riverine portions of Pool 4 above and below the lake. Stations were established spatially based on river miles and macrohabitats (e.g., riverine, up-lake, and down-lake). Fish populations were sampled via seine, trawl, gill net, and electrofishing gear. 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 July 15-30, 2010 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 August 16 - 24 when water temperatures were between 74 and 78 °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.

Daytime boat electrofishing was used to collect adult walleye, smallmouth bass, and largemouth bass. Electrofishing was conducted from September 17 to 27, with water temperatures ranging from 65 to 70 °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 October 10 -14. Water temperatures ranged from 55 to 60 °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 was conducted November 1- 9 when water temperatures ranged from 47 to 49 °F. Seven 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 and yellow perch 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 dorsal 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 2010 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).

Results and Discussion

2010 Water Elevation and Temperature

Water levels were above the historic mean for much of 2010 (Figure 1) which required changes to the sampling schedule and influenced sampling efficiency. From March 10 to April 10, water levels averaged 4.9 ft above the historic mean and then declined to an average of 2.0 ft below average from April 11 to June 17. Beginning June 18, water levels were above the historic mean for the remainder of 2010. Peak levels occurred on March 25 (9.3 ft above the mean) and

October 4 (10.7 ft above the mean). Water temperatures in 2010 were cooler than the historic mean from January through March, averaging 1.1 °F cooler than the mean (Figure 2). Temperatures increased in April, averaging 5.7 °F above the long term daily mean. Summer water temperatures were similar to the mean. Temperatures from September through December were lower than normal, averaging 2.8 °F below the historic mean.

Aquatic Vegetation

Submerged aquatic vegetation provides important cover for fishes, particularly centrarchids, which have recently shown increasing abundance in Lake Pepin. The Long-Term Resource Monitoring Program (LTRMP) of the United States Geological Survey has monitored aquatic vegetation abundance in portions of Lake Pepin since 1998 (USGS 2010). Sampling is conducted in the upper and lower portions of the lake. In upper Lake Pepin, percent frequency of occurrence of submerged vegetation declined from 1998 to 2001 (Figure 3). From 2001 to 2010, percent occurrence has varied annually, but has shown an increasing trend. In lower Lake Pepin, percent occurrence has been more variable over time; however an increasing trend has occurred since 2005. The highest frequency of occurrence for both upper and lower Lake Pepin occurred in 2010. The LTRMP program samples secchi depth at four fixed sites annually from June through September. Mean and maximum secchi depths in 2010 were the highest recorded since sampling began in 2003 (Figure 4). The maximum secchi depth (3.1 meters) coincided closely with the maximum depth at which aquatic vegetation was observed.

Shoreline Seining

Relative abundance of YOY fish populations are usually determined by shoreline seining and electrofishing. However, during each seine sampling period in 2010, water levels were above the historical daily mean. This necessitated moving the first seining sample back to the week of July 12 from the mean historical date of June 28. In addition to changing sampling dates, high water prevented sampling some sites on certain days, particularly during period 2. Therefore, seine catch in 2010 may not be an accurate reflection of YOY fish abundance. Mindful of sampling difficulties in 2010, gizzard shad accounted for 98% of the YOY seine catch (Table 1) and were below the historic mean for the third consecutive year (Table 3). 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 bluegill in 2010 were over five times higher than the historic mean and rebounded from below average numbers in 2009. Catch rates for YOY smallmouth bass were near the mean while largemouth bass catch was slightly above average. White bass YOY catch (2.2 per seine haul) was among the lowest recorded since 1986, and has remained below the historic mean since the excellent 1997 year class (307 per seine haul). Northern pike YOY catch in 2010 was similar to the historical mean. Yellow perch YOY catch in 2010 was below the historical mean but similar to recent years. Walleye and sauger YOY were virtually absent from the seine catch in 2010. Mean lengths of YOY gamefish sampled via shoreline seining were above average during July 19-23 for all monitored species, except smallmouth bass (Table 8).

Young-of-Year Electrofishing

Fall electrofishing for YOY walleye and sauger was conducted during November 1 – 9 (Table 9). YOY electrofishing catch rates were below average for both species (Table 10). However, fall YOY electrofishing efficiency was impacted by elevated water levels and the catch rates may not be an accurate depiction of abundance. Mean length of YOY walleye (7.7 inches) and sauger (5.7 inches) during fall shoreline electrofishing were below the historical means but similar to the two previous years (Table 11).

Trawling

Results from bottom trawling in 2010 are summarized in Tables 12 thru 20. In contrast to what was measured by seining, trawling catch rates of YOY gizzard shad were above average in 2010 (Table 13). Catch rates of YOY sauger and freshwater drum were far below average, but for YOY walleye, catch rate was similar to the historic mean. Catch of juvenile and adult fish was the highest observed since 2005 (Table 14). Freshwater drum, bluegill, sauger, and trout perch dominated the catch. The bluegill catch rate was the highest recorded since inception of the large lake program.

Adult Electrofishing

Electrofishing catch rates for adult and juvenile walleye, largemouth bass, and smallmouth bass were low in 2010 (Table 21). This is likely attributable to high water and somewhat turbid conditions which reduced sampling efficiency. However, largemouth bass CPUE has declined from an average of 23.3/hr in 2006-07 to 7.5/hr from 2008-10. A total of just 14 adults from four age classes were captured in 2010 (Table 22). Smallmouth bass were represented by six age classes, though ages 3 and 4 dominated the catch (Table 23). Seven age classes of walleye were captured, though no age 1 or 2 fish were collected (Table 24).

Gill Netting

Adult gamefish were abundant in gill net sampling and results are summarized in Tables 25 thru 41. Walleye gill net catch rate in 2010 was above the interquartile range for the tenth consecutive year (Figure 5). Sauger gill net catch rates in 2010 were within the interquartile range and have remained within or above the interquartile range for 11 consecutive years (Figure 6).

White bass gill net catch rate of 1.9/net was below the historic mean (Table 26). White bass were aged with otoliths for the first time in 2009. Results indicated a much older population than previously thought with fish to age 16 present. Aging also revealed that white bass growth slows dramatically beginning at age 3. In 2010, the mean length of fish at ages 3, 4 and 5 was identical at 14.1 inches (Table 37). Reduced growth is likely due to the onset of sexual maturity and production of gametes.

Yellow perch gill net catch was slightly above the historic mean in 2010. Yellow perch were aged using otoliths, and the sample was dominated by age 1 (36%) and age 2 (41%) fish (Table 38). The oldest yellow perch was an age 8 male. The growth rate of yellow perch is high with fish reaching 10 inches at age 2. Differences in growth based on gender were evident. Females were longer than males at each age with the largest difference (1.2 inches) occurring at age 2 (Table 39?).

Channel catfish gill net catch has declined annually since 2004 and was below the historic mean in 2010. Northern pike gill net catch rate in 2010 declined for the second straight year and was below the historic mean (Tables 26 and 28). Largemouth bass electrofishing catch rate in 2010 was the lowest observed since 1999 and the oldest fish collected was age 4 (Table 24). Smallmouth bass electrofishing catch rates in 2010 declined from the record high in 2009, but were similar to the historic mean (Table 24). Based on the age frequency distribution, there has been consistent smallmouth bass recruitment (Table 22). In summary, sampling from all gear types combined revealed some conflicting results, likely attributable to reduced electrofishing efficiency due to elevated water levels and increased turbidity.

Year-Class Strength Index

The 2010 relative year-class strength index showed a dramatic decline for both walleye and sauger, compared to 2009 (Figure 4). However, index levels for both species remained within the inter-quartile range. The size of YOY walleye and sauger in 2009 and 2010 was considerably smaller than what has been observed in the past decade. The 2010 walleye index of abundance from the 20 original gill net sets indicates a high abundance of age 1 walleye, but a low abundance of age 2 and 3 walleye (Table 41). Based on the index of abundance from each of the past 2 years, the 2008 year class has been the poorest since 1994. Age 1 sauger were abundant in the gill net catch in 2010, but were smaller than age 1 fish from the previous year. Mean length at age 1 was 11.1 inches in 2009 and declined to 10.3 inches in 2010. Based on the 2010 index of abundance, age 1 sauger were determined to be at their second highest level since 1965. Age 1 and 2 sauger catch rates have been above average seven out of the last eight years and represent consistently successful recruitment (Table 40).

Angling Forecast

Angling should continue to be excellent for smallmouth bass, walleye, and sauger during 2011 based on the numbers of adult fish sampled. White bass fishing success may decline due to continued poor recruitment. Crappie angling may improve as fish from the abundant 2008 year-class reach harvestable size. The consistent bluegill and yellow perch reproduction observed since 2004 should provide good angling opportunities with quality sized fish available in 2011.

Exotic Species

Numerous exotic and invasive species exist in the UMR system, including Pool 4. Zebra mussels are abundant and no die-offs have been reported since 2007. Bighead and silver carp invaded the lower Mississippi River system in the early 1980's and have grown to extremely large populations in the UMR below LD 19. Currently bighead carp are known to have established populations as far north as Pool 15 of the Mississippi River. 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. No bighead or silver carp were reported from Pool 4 in 2010.

Recommendations

Walleye, sauger, yellow perch, 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.

Acknowledgments

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Figures

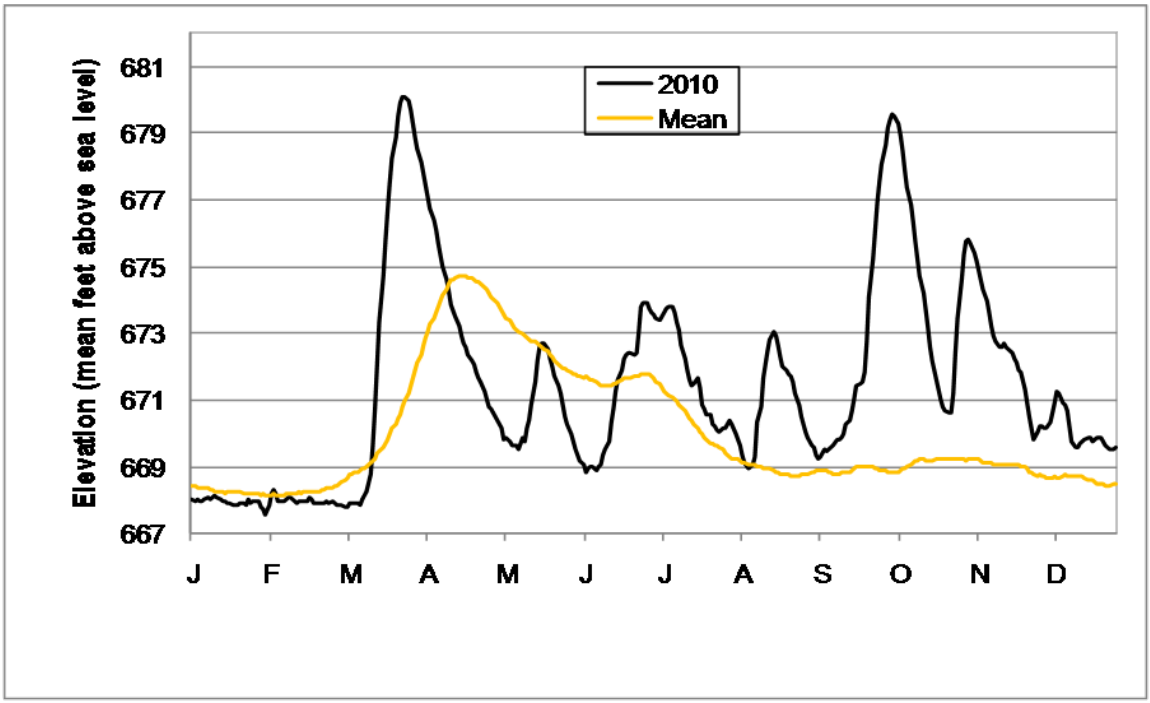

Figure 1. Water elevation at the tailwater of Lock and Dam 3 of the Mississippi River for 2010. Data from the US Army Corps of Engineers. Mean is from 1940-2010.

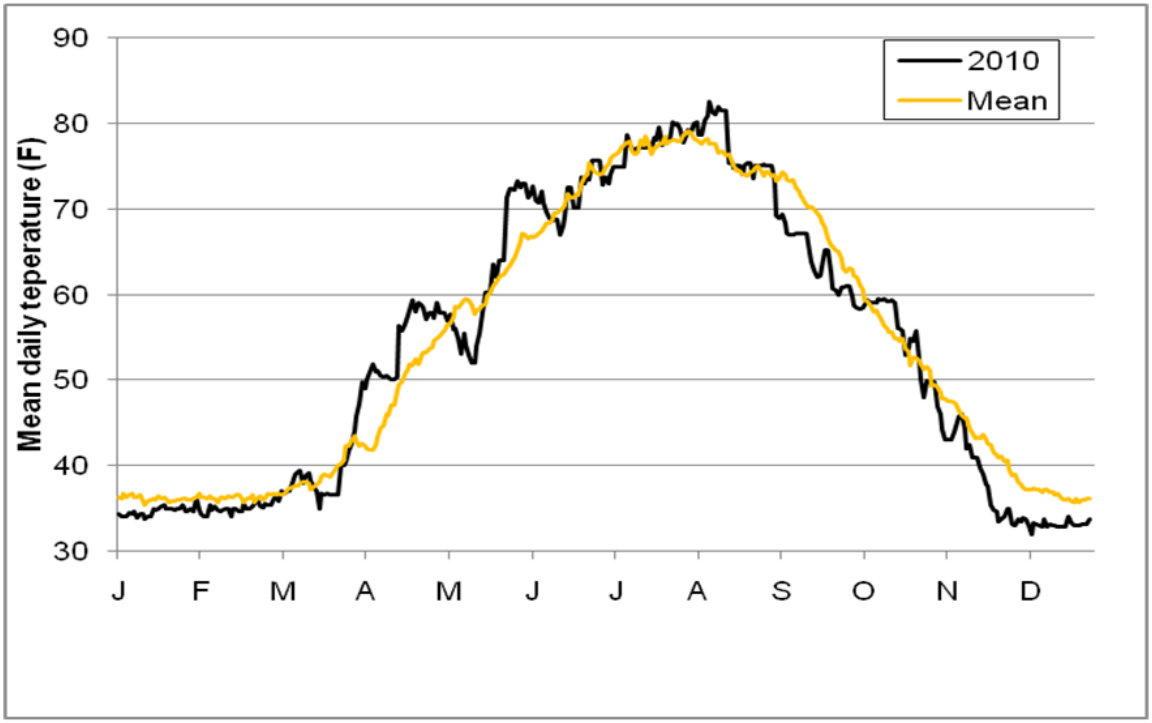

Figure 2. Water temperature at Lock and Dam 3 of the Mississippi River. Data from US Army Corps of Engineers. Mean is from 1998-2010.

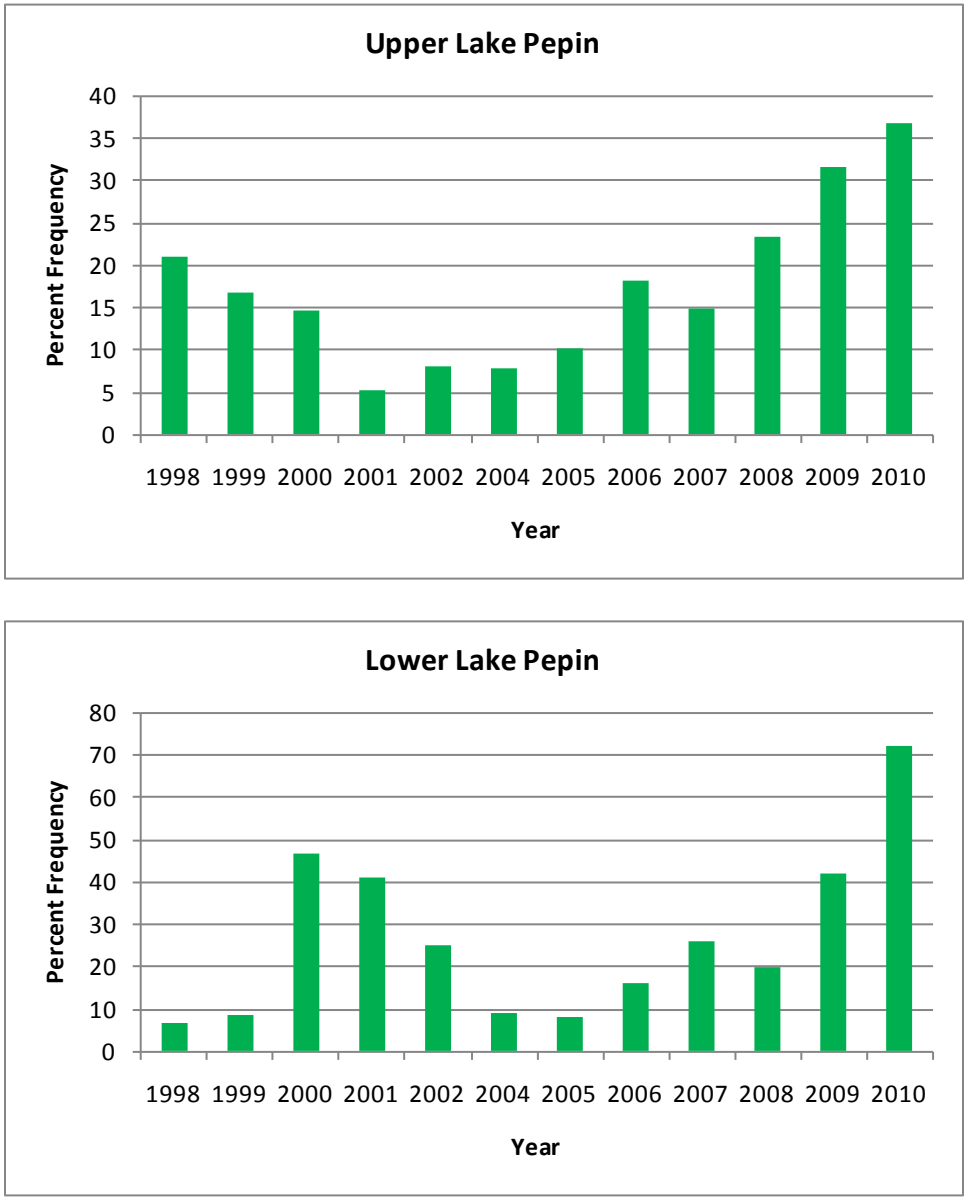

Figure 3. Percent frequency of submerged vegetation in upper and lower Lake Pepin from 1998 to 2010.
Note: Data obtained from the U.S.G.S. Long Term Resource Monitoring Program.

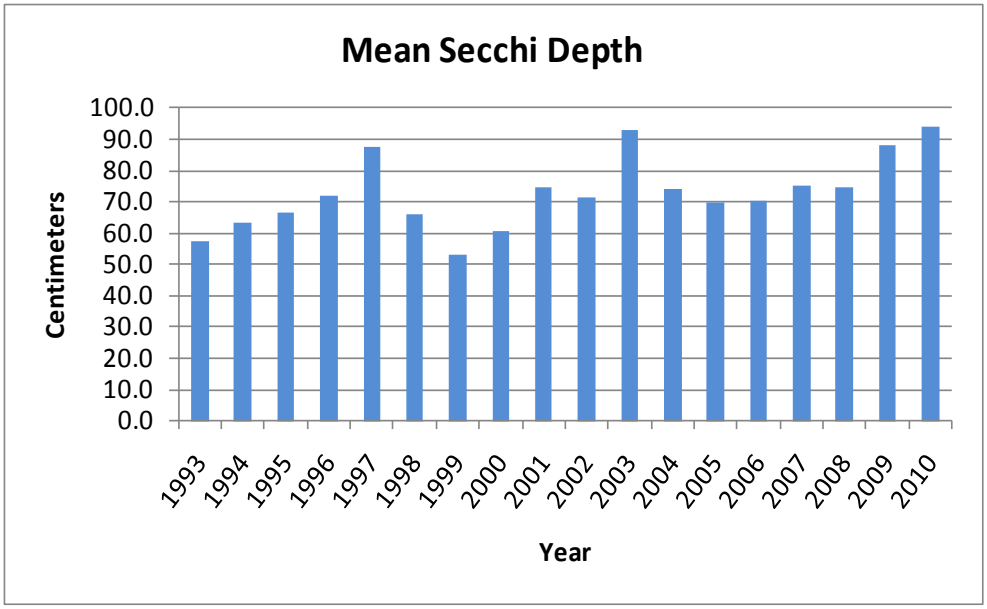

Figure 4. Mean secchi depth from four fixed sites on Lake Pepin sampled on various dates from June – September, 2010.
Note: Data obtained from the U.S.G.S. Long Term Resource Monitoring Program.

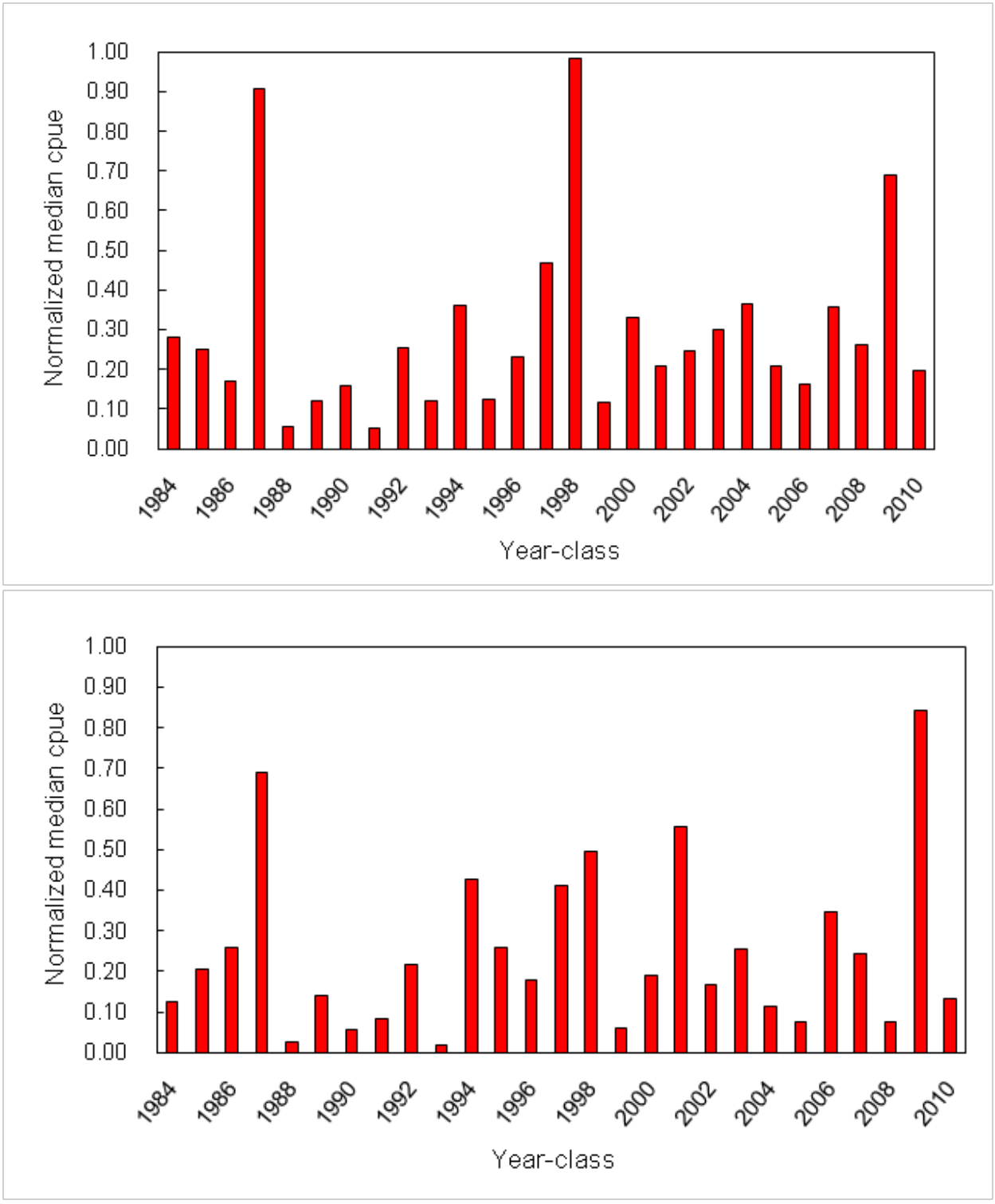

Figure 5. Relative year-class strength index for sauger (top) and walleye (bottom), Lake Pepin, 1984-2010.

Note: 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.

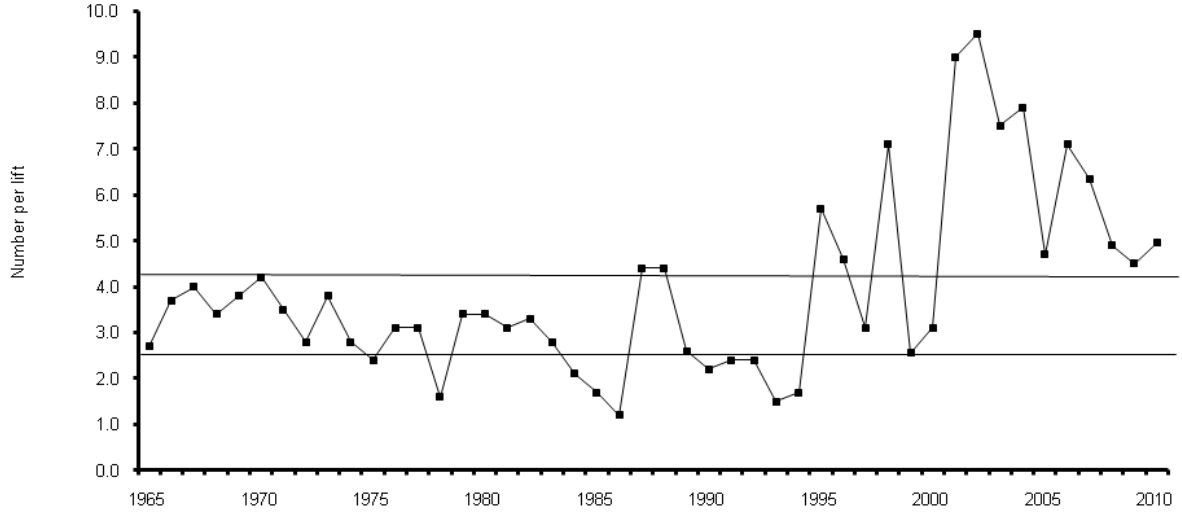

Figure 6. Mean number of walleye per gill net lift on Lake Pepin from 1965 to 2010. Note: Horizontal lines represent 1st and 3rd quartiles.

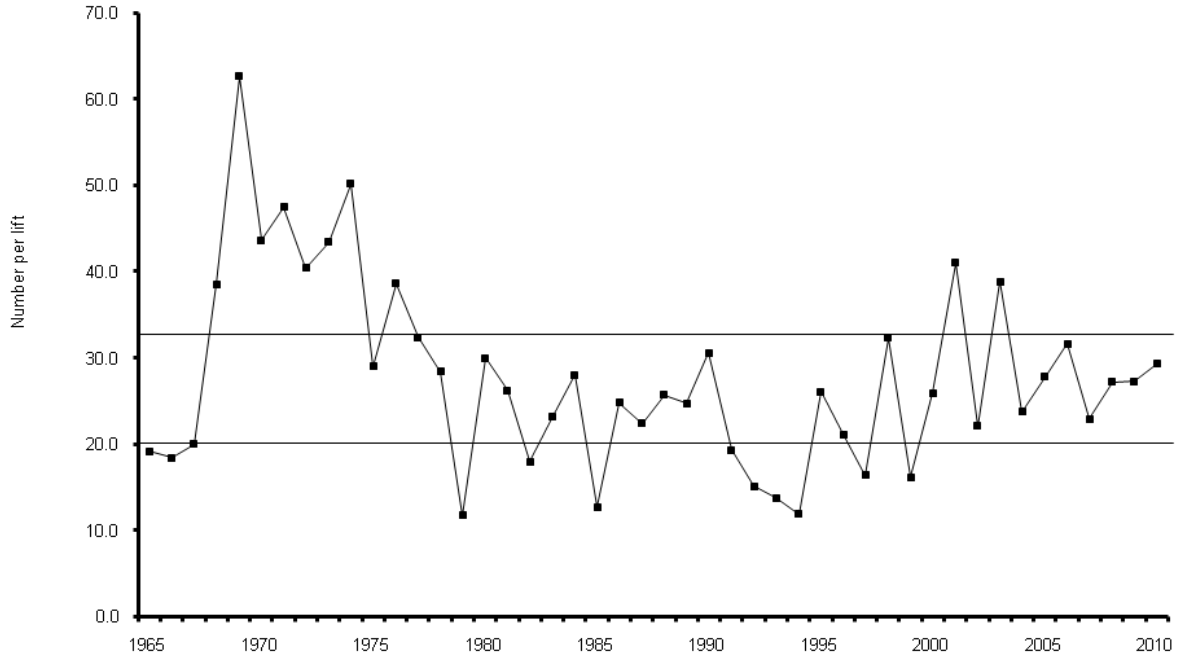

Figure 7. Mean number of sauger per gill net lift on Lake Pepin from 1965 to 2010. Note: Horizontal lines represent 1st and 3rd quartiles.

Tables

Table 1. Mean catch (SE) per seine haul (3 arcs) of young-of-year fish from Pool 4, 15-30 July, 2010.

	Station									
	1	2	3	4	5	6	7	8	Grand Mean	Percent of catch
Longnose gar	**0.2** 0.2	**0.2** 0.2	**0.6** 0.4	**0.8** 0.5	**0.1** 0.1	**0.3** 0.3			**0.3** (0.1)	0.1
Shortnose gar		**0.2** 0.2		**0.1** 0.1					**0.0** (0.0)	0.0
Gizzard shad	**341.9** 218.7	**8.2** 3.6	**434.1** 297.6	**523.0** 409.5	**651.9** 47.7	**5.3** 4.0	**195.0** 122.9	**1.7** 1.2	**353.9** (113.2)	97.9
Common carp							**0.7** 0.7		**0.0** (0.0)	0.0
Quillback			**10.3** 10.3	**1.0** 1.0					**1.7** (1.5)	0.5
Shorthead redhorse	**0.1** 0.1		**0.3** 0.3						**0.1** (0.0)	0.0
Channel catfish			**0.1** 0.1						**0.0** (0.0)	0.0
Northern pike	**0.4** 0.2			**0.3** 0.2			**4.0** 4.0		**0.4** (0.2)	0.1
White bass	**0.2** 0.2		**2.0** 1.3	**7.3** 2.5	**1.4** 0.7	**1.3** 1.3	**2.3** 1.2	**1.0** 1.0	**2.2** (0.6)	0.6
Rock bass				**0.3** 0.2			**0.3** 0.3		**0.1** (0.0)	0.0
Green sunfish						**0.3** 0.3	**1.3** 1.3		**0.2** (0.1)	0.1
Orangespotted sunfish							**0.3** 0.3		**0.0** (0.0)	0.0
Bluegill	**7.7** 2.9	**58.2** 21.4	**28.6** 11.9	**44.3** 23.8	**27.9** 22.0	**60.0** 27.7	**77.7** 55.8	**5.0** 2.9	**34.7** (7.0)	9.6
Smallmouth bass	**0.1** 0.1	**1.2** 0.7	**1.7** 0.8	**3.0** 1.1	**0.2** 2.2	**7.0** 4.5		**2.3** 1.2	**1.7** (0.5)	0.5
Largemouth bass	**0.1** 0.1	**1.2** 1.2	**0.3** 0.3	**4.3** 2.0	**3.1** 3.1	**17.3** 4.4	**4.3** 1.5	**2.3** 1.2	**3.4** (0.9)	0.9
White crappie				**0.1** 0.1			**0.3** 0.3		**0.0** (0.0)	0.0
Black crappie	**1.2** 1.0	**4.4** 2.2	**4.1** 2.4	**17.6** 11.0	**6.3** 3.2	**11.0** 6.8	**3.0** 1.5	**0.7** 0.3	**6.8** (2.3)	1.9
Yellow perch	**0.1** 0.1			**1.2** 0.6	**5.7** 1.6	**0.8** 0.8	**6.7** 4.3	**5.3** 4.4	**2.3** (0.7)	0.6
Sauger				**0.1** 0.1					**0.0** (0.0)	0.0
Walleye				**0.1** 0.1					**0.0** (0.0)	0.0
Freshwater drum	**0.1** 0.1						**2.0** 1.0		**0.1** 0.1	0.0
Total Catch per Haul	**352.2**	**73.6**	**482.1**	**603.7**	**696.7**	**103.0**	**298.0**	**18.3**	**408.0**	
Number of hauls	9	6	7	9	9	5	9	9	63	100

Table 2. Mean catch (± SE) per acre seined of young-of-year fish from Pool 4, 15-30 July, 2010.

	Station									
	1	2	3	4	5	6	7	8	Grand Mean	Percent of catch
Longnose gar	**0.4** (0.4)	**0.4** (0.4)	**1.1** (0.8)	**1.4** (0.9)	**0.2** (0.2)	**0.5** (0.5)			**0.6** (0.2)	0.1
Shortnose gar		**0.4** (0.4)		**0.2** (0.2)					**0.1** (0.1)	0.0
Gizzard shad	**633.1** (405.0)	**15.2** (6.7)	**804.0** (551.2)	**986.8** (756.7)	**1689.4** (736.8)	**10.6** (7.4)	**361.1** (227.7)	**4.6** (3.3)	**747.5** (226.6)	97.0
Common carp							**1.2** (1.2)		**0.1** (0.1)	0.0
Quillback			**19.0** (19.0)	**1.9** (1.9)					**3.1** (2.7)	0.4
Shorthead redhorse	**0.2** (0.2)		**0.5** (0.5)						**0.1** (0.1)	0.0
Channel catfish			**0.3** (0.3)						**0.0** (0.0)	0.0
Northern pike	**0.8** (0.4)			**0.7** (0.4)			**7.4** (7.4)		**0.7** (0.5)	0.1
White bass	**0.4** (0.4)		**3.7** (2.4)	**13.8** (4.6)	**3.1** (1.6)	**2.3** (2.3)	**4.3** (2.2)	**2.8** (2.8)	**4.3** (1.2)	0.6
Rock bass				**0.6** (0.4)			**0.6** (0.6)		**0.2** (0.1)	0.0
Green sunfish					**0.8** (0.8)	**0.5** (0.5)	**2.5** (2.5)		**0.3** (0.2)	0.0
Orangespotted sunfish							**0.6** (0.6)		**0.0** (0.0)	0.0
Bluegill	**14.2** (5.3)	**107.8** (39.6)	**52.9** (22.0)	**84.7** (43.9)	**62.9** (24.8)	**136.1** (68.8)	**143.8** (103.3)	**13.9** (8.0)	**69.0** (13.7)	9.0
Smallmouth bass	**0.2** (0.2)	**3.0** (1.5)	**3.2** (1.4)	**6.6** (2.9)	**0.6** (0.6)	**13.0** (8.4)		**5.6** (3.2)	**3.5** (1.0)	0.5
Largemouth bass	**0.2** (0.2)	**2.2** (2.2)	**0.5** (0.5)	**8.0** (3.6)	**8.7** (7.3)	**35.0** (7.7)	**8.0** (2.7)	**6.5** (3.3)	**7.2** (2.0)	0.9
White crappie				**0.2** (0.2)			**0.6** (0.6)		**0.1** (0.1)	0.0
Black crappie	**2.3** (1.8)	**8.1** (4.0)	**7.7** (4.4)	**35.1** (20.7)	**16.9** (9.7)	**20.6** (12.4)	**5.6** (2.8)	**1.9** (0.9)	**14.0** (4.5)	1.8
Yellow perch	**0.2** (0.2)			**2.5** (1.1)	**12.8** (6.4)	**1.4** (1.4)	**12.3** (7.9)	**14.8** (12.1)	**5.0** (1.6)	0.6
Sauger				**0.3** (0.3)					**0.1** (0.1)	0.0
Walleye				**0.2** (0.2)					**0.0** (0.0)	0.0
Freshwater drum	**0.2** (0.2)						**3.7** (1.9)		**0.3** (0.2)	0.0
Number of hauls	9	6	7	9	9	5	3	3	51	100.0

Table 3. Mean catch (SE) per seine haul (3 arcs) and percent total catch of young-of-year fish during July from Pool 4, 2005-2010.

Note: Historical mean is from 1986 to 2009.

Species	2005	%	2006	%	2007	%	2008	%	2009	%	2010	%	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	**0.3** (0.1)	0.1	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	**353.9** (113.2)	97.9	583.4
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	**0.0** (0.0)	0.0	1.3
Carpsucker 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	**1.7** (1.5)	0.5	6.0
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			1.3
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											**0.1** (0.0)	0	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** (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	**0.4** (0.2)	0.1	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	**2.2** (0.6)	0.6	62.2
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** (0.0)	0.0	0.1
Green sunfish					**0.0** (0.0)	0.0					**0.2** (0.1)	0	0.0
Orangespotted sunfish											**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	**34.7** (7.0)	9.6	6.6
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	**1.7** (0.5)	0.5	1.9
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	**3.4** (0.9)	0.9	2.0
Crappie spp.							**26.1** (4.8)	4.3	**4.7** (1.5)	1.4			1.5
White crappie			**0.3** (0.2)	0.0							**0.0** (0.0)	0.0	0.2
Black crappie	**3.2** (0.9)	0.3	**2.3** (0.8)	0.2	**2.0** (0.5)	0.3					**6.8** (2.3)	2	4.2
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	**2.3** (0.7)	0.6	4.3
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	**0.0** (0.0)	0.0	1.5
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	**0.0** (0.0)	0.0	1.1
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	**0.1** (0.1)	0.0	2.1
Total catch per haul	**1058.4**		**948.0**		**679.4**		**608.3**		**352.3**		**408.0**		
Number of hauls	63		71		72		72		72		51		

Table 4. Mean catch (SE) per seine haul (3 arcs) of juvenile and adult fish from Pool 4, 15-30 July, 2010.

	Station									
Species	1	2	3	4	5	6	7	8	Grand mean	Percent of catch
Longnose gar		**0.2** (0.2)	**0.3** (0.3)		**0.2** (0.1)				**0.1** (0.1)	0.1
Shortnose gar					**0.1** (0.1)				**0.0** (0.0)	0.0
Spotfin shiner		**0.2** (0.2)	**1.4** (0.8)		**1.6** (1.2)			**0.7** (0.7)	**0.5** (0.2)	0.4
Common carp					**0.2** (0.1)		**0.3** (0.3)		**0.1** (0.0)	0.0
Golden shiner						**0.2** (0.2)		**1.0** (1.0)	**0.1** (0.1)	0.1
Emerald shiner	**10.9** (3.7)	**41.2** (22.9)	**96.3** (42.0)	**167.8** (38.7)	**41.9** (10.4)	**35.8** (17.7)	**47.3** (35.5)	**20.3** (7.4)	**64.5** (12.0)	51.7
River shiner			**0.1** (0.1)	**0.1** (0.1)					**0.0** (0.0)	0.0
Bigmouth shiner					**0.2** (0.2)				**0.0** (0.0)	0.0
Spottail shiner	**0.2** (0.1)	**3.5** (2.0)	**7.0** (4.8)	**97.1** (49.3)	**55.7** (20.6)	**5.2** (3.6)	**3.7** (2.3)	**9.7** (9.7)	**29.7** (10.4)	23.8
Sand shiner		**1.3** (1.3)							**0.2** (0.2)	0.1
Weed shiner					**4.6** (4.6)	**1.2** (1.2)		**0.7** (0.7)	**1.0** (0.8)	0.8
Mimic shiner				**0.2** (0.1)	**0.2** (0.1)	**0.4** (0.4)		**6.3** (6.3)	**0.5** (0.4)	0.4
Bullhead minnow					**1.9** (1.9)		**1.7** (1.7)	**0.3** (0.3)	**0.5** (0.3)	0.4
Quillback		**2.3** (2.3)	**0.3** (0.3)		**0.1** (0.1)			**0.3** (0.3)	**0.4** (0.3)	0.3
Smallmouth buffalo	**0.1** (0.1)		**0.1** (0.1)						**0.0** (0.0)	0.0
Bigmouth buffalo							**0.3** (0.3)		**0.0** (0.0)	0.0
Silver redhorse							**3.7** (2.0)	**2.0** (2.0)	**0.3** (0.2)	0.3
Shorthead redhorse				**0.8** (0.8)			**0.3** (0.3)	**0.7** (0.3)	**0.2** (0.1)	0.2
Northern pike	**0.1** (0.1)	**0.2** (0.2)	**0.1** (0.1)					**0.3** (0.3)	**0.1** (0.0)	0.1
Trout perch							**0.3** (0.3)		**0.0** (0.0)	0.0
Brook silverside		**0.2** (0.2)	**0.3** (0.3)	**1.8** (1.0)	**6.4** (6.2)	**2.6** (1.6)	**0.7** (0.7)	**3.3** (3.3)	**2.0** (1.1)	1.6
White bass			**0.1** (0.1)				**1.3** (0.3)		**0.1** (0.1)	0.1
Rock bass								**0.3** (0.3)	**0.0** (0.0)	0.0
Green sunfish					**0.1** (0.1)		**0.3** (0.3)		**0.0** (0.0)	0.0
Orangespotted sunfish			**0.1** (0.1)				**0.3** (0.3)		**0.0** (0.0)	0.0
Bluegill	**0.1** (0.1)		**0.4** (0.3)	**5.9** (2.7)	**39.7** (39.0)	**11.2** (8.1)	**4.3** (1.5)	**2.7** (2.7)	**9.6** (6.9)	7.7
Smallmouth bass	**0.2** (0.1)			**0.9** (0.4)	**0.2** (0.1)	**0.2** (0.2)	**0.3** (0.3)	**2.3** (1.9)	**0.4** (0.1)	0.3
Largemouth bass	**0.2** (0.1)	**0.2** (0.2)		**0.2** (0.1)	**4.6** (4.2)	**0.2** (0.2)	**0.7** (0.7)	**3.3** (2.8)	**1.2** (0.8)	0.9
Black crappie	**0.2** (0.1)		**0.7** (0.5)	**3.3** (1.9)	**0.2** (0.1)		**0.3** (0.3)	**0.3** (0.3)	**0.8** (0.4)	0.6
Western sand darter		**0.5** (0.3)	**0.1** (0.1)						**0.1** (0.0)	0.1
Johnny darter							**0.3** (0.3)		**0.0** (0.0)	0.0
Yellow perch					**0.1** (0.1)	**1.0** (0.8)		**1.7** (1.7)	**0.2** (0.1)	0.2
Logperch	**0.8** (0.5)	**1.2** (1.0)	**2.0** (1.8)	**23.6** (19.7)	**25.0** (7.6)	**25.8** (18.1)	**0.7** (0.3)	**1.3** (1.3)	**11.8** (4.2)	9.4
River Darter	**0.1** (0.1)			**0.4** (0.4)	**0.3** (0.2)	**0.2** (0.2)			**0.2** (0.1)	0.1
Sauger							**0.7** (0.7)		**0.0** (0.0)	0.0
Freshwater drum					**0.2** (0.1)		**2.7** (0.3)	**0.3** (0.3)	**0.2** (0.1)	0.2
Total Catch per Haul	**13**	**51**	**110**	**302**	**184**	**84**	**70**	**58**	**124.8**	
Number of hauls	9	6	7	9	9	5	3	3	51	100

Table 5. Mean catch (SE) per acre seined of juvenile and adult fish from Pool 4, 15-30 July, 2010.

	Station									
Species	1	2	3	4	5	6	7	8	Grand mean	Percent of catch
Longnose gar		**0.3** (0.3)	**0.5** (0.5)		**0.4** (0.3)				**0.2** (0.1)	0.1
Shortnose gar					**0.2** (0.2)				**0.0** (0.0)	0.0
Spotfin shiner		**0.3** (0.3)	**2.6** (1.6)		**3.0** (2.2)			**1.9** (1.9)	**1.0** (0.5)	0.4
Common carp					**0.4** (0.3)		**0.6** (0.6)		**0.1** (0.1)	0.0
Golden shiner						**0.6** (0.6)		**2.8** (2.8)	**0.2** (0.2)	0.1
Emerald shiner	**20.2** (6.9)	**156.5** (116.3)	**178.3** (77.8)	**350.5** (103.8)	**85.9** (19.8)	**67.2** (32.4)	**87.7** (65.7)	**49.1** (20.2)	**138.1** (29.3)	50.9
River shiner			**0.3** (0.3)	**0.2** (0.2)					**0.1** (0.1)	0.0
Bigmouth shiner					**0.6** (0.6)				**0.1** (0.1)	0.0
Spottail shiner	**0.4** (0.3)	**10.2** (5.1)	**13.0** (8.9)	**183.1** (90.9)	**139.2** (55.0)	**13.1** (10.1)	**6.8** (4.3)	**26.9** (26.9)	**63.2** (21.0)	23.3
Sand shiner		**2.5** (2.5)							**0.3** (0.3)	0.1
Weed shiner					**12.7** (12.7)	**3.3** (3.3)		**1.9** (1.9)	**2.7** (2.3)	1.0
Mimic shiner				**0.4** (0.3)	**0.5** (0.3)	**0.7** (0.7)		**17.6** (17.6)	**1.3** (1.0)	0.5
Bullhead minnow					**3.5** (3.5)		**3.1** (3.1)	**0.9** (0.9)	**0.9** (0.6)	0.3
Quillback		**4.3** (4.3)	**0.5** (0.5)		**0.3** (0.3)			**0.6** (0.6)	**0.7** (0.5)	0.2
Smallmouth buffalo	**0.2** (0.2)		**0.3** (0.3)						**0.1** (0.1)	0.0
Bigmouth buffalo							**0.6** (0.6)		**0.0** (0.0)	0.0
Silver redhorse								**6.8** (3.8)	**5.6** (5.6)	**0.7** (0.4)	0.3
Shorthead redhorse				**1.4** (1.4)				**0.6** (0.6)	**1.5** (0.8)	**0.4** (0.3)	0.1
Northern pike	**0.2** (0.2)	**0.3** (0.3)	**0.3** (0.3)					**0.9** (0.9)	**0.2** (0.1)	0.1
Trout perch							**0.6** (0.6)		**0.0** (0.0)	0.0
Brook silverside		**0.3** (0.3)	**0.5** (0.5)	**4.2** (2.8)	**17.7** (17.2)	**5.0** (3.0)	**1.2** (1.2)	**9.3** (9.3)	**5.1** (3.1)	1.9
White bass			**0.3** (0.3)				**2.5** (0.6)		**0.2** (0.1)	0.1
Rock bass								**0.9** (0.9)	**0.1** (0.1)	0.0
Green sunfish					**0.3** (0.3)		**0.6** (0.6)		**0.1** (0.1)	0.0
Orangespotted sunfish			**0.3** (0.3)				**0.6** (0.6)		**0.1** (0.1)	0.0
Bluegill	**0.2** (0.2)		**0.8** (0.6)	**12.9** (6.4)	**109.8** (108.5)	**20.7** (15.0)	**8.0** (2.7)	**7.4** (7.4)	**24.7** (19.4)	9.1
Smallmouth bass	**0.4** (0.3)			**1.6** (0.8)	**0.5** (0.3)	**0.6** (0.6)	**0.6** (0.6)	**4.6** (3.3)	**0.8** (0.3)	0.3
Largemouth bass	**0.4** (0.3)	**0.3** (0.3)		**0.4** (0.3)	**12.3** (11.7)	**0.4** (0.4)	**1.2** (1.2)	**9.3** (7.9)	**3.0** (2.1)	1.1
Black crappie	**0.4** (0.3)		**1.3** (0.9)	**7.0** (3.9)	**0.4** (0.3)		**0.6** (0.6)	**0.9** (0.9)	**1.7** (0.8)	0.6
Western sand darter		**0.9** (0.6)	**0.3** (0.3)						**0.1** (0.1)	0.1
Johnny darter							**0.6** (0.6)		**0.0** (0.0)	0.0
Yellow perch					**0.3** (0.3)	**2.0** (1.4)		**4.6** (4.6)	**0.5** (0.3)	0.2
Number of hauls	9	9	9	9	9	9	9	9	72	100

Table 6. Mean catch (SE) per seine haul (3 arcs) and percent total catch of juvenile and adult fish during July from Pool 4, 2005-2010.

Note: Historical mean is from 1986 to 2009.

Species	2005	%	2006	%	2007	%	2008	%	2009	%	2010	%	Mean
Chestnut lamprey			**0.0** (0.0)	0.0							0.0		0.0
Longnose gar							**0.0** (0.0)	0.0			**0.1** (0.1)	0.1	0.0
Shortnose gar											0.0 (0.0)	0.0	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					0.6
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	0.5 (0.2)	0.4	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	0.1 (0.0)	0.0	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							0.1 (0.1)	0.1	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	64.5 (12.0)	51.7	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			0.0 (0.0)	0.0	2.5
Bigmouth shiner											0.0 (0.0)	0.0	0.0
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	29.7 (10.4)	23.8	7.1
Sand shiner			**0.0** (0.0)	0.0							0.2 (0.2)	0.1	0.3
Weed shiner	**0.1** (0.1)	0.1					**0.4** (0.2)	0.3	**0.8** (0.4)	0.4	1.0 (0.8)	0.8	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	0.5 (0.4)	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	0.5 (0.3)	0.4	0.9
Quillback	**0.1** (0.1)	0.1			**0.0** (0.0)	0.0	**0.0** (0.0)	0.0			0.4 (0.3)	0.3	0.0
Carpsucker 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	0.3 (0.2)	0.3	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	0.2 (0.1)	0.2	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	0.1 (0.0)	0.1	0.2
Muskellunge													0.0
Central mudminnow									**0.0** (0.0)	0.0			0.0

Table 6. Continued.

Species	2005	%	2006	%	2007	%	2008	%	2009	%	2010	%	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	0.0 (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	2.0 (1.1)	1.6	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	0.1 (0.1)	0.1	1.0
Rock bass	**0.1** (0.1)	0.1	**0.2** (0.1)	0.1	**0.2** (0.1)	0.1					0.0 (0.0)	0.0	0.1
Green sunfish							**0.0** (0.0)	0.0			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 (0.0)	0.0	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	9.6 (6.9)	7.7	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	0.4 (0.1)	0.3	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	1.2 (0.8)	0.9	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	0.8 (0.4)	0.6	0.3
Crystal darter													0.0
Western sand darter											0.1 (0.0)	0.1	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	0.0 (0.0)	0.0	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 (0.1)	0.2	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	11.8 (4.2)	9.4	4.6
Blackside darter											0.0		0.0
Slenderhead darter			**0.0** (0.0)	0.0			**0.1** (0.0)	0.1	**0.1** (0.0)	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	0.2 (0.1)	0.1	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	0.0 (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	0.2 (0.1)	0.2	0.6
Total catch per haul	**166.8**		**165.0**		**182.5**		**128.5**		**215.0**		**124.8**		
Number of hauls	63		71		72		72		72		51		

Table 7. Total length (mm), weight (g), and k-factor of young-of-year fish from weekly seining, Pool 4, 15-30 July, 2010.

		Length				Weight				K-factor			
Species	Week*	Mean	SE	Range	N	Mean	SE	Range	N	Mean	SE	Range	N
White bass	2	**46**	1.2	34 - 81	46	**1.3**	0.1	0.5 - 5.8	46	**1.15**	0.02	0.92 - 1.32	46
	3	**61**	1.9	43 - 90	33	**3.1**	0.3	0.9 - 8.7	33	**1.25**	0.02	0.89 - 1.41	33
	4	**74**	1.7	45 - 93	31	**5.3**	0.4	0.9 - 10.8	31	**1.25**	0.02	0.99 - 1.40	31
Bluegill	2	**26**	0.5	17 - 60	111	**0.3**	0.0	0.1 - 3.9	111	**1.53**	0.17	0.57 - 19.7	111
	3	**30**	0.4	20 - 40	124	**0.5**	0.0	0.1 - 1.3	124	**1.67**	0.03	0.59 - 2.89	124
	4	**33**	0.5	16 - 60	289	**0.7**	0.0	0.0 - 4.3	266	**1.36**	0.03	0.00 - 2.21	289
Smallmouth bass	2	**48**	2.6	33 - 61	12	**1.8**	0.3	0.5 - 3.7	12	**1.46**	1.46	1.16 - 1.71	12
	3	**47**	1.4	32 - 61	28	**1.6**	0.2	0.4 - 3.7	28	**1.40**	0.03	1.21 - 1.71	28
	4	**61**	1.7	41 - 89	46	**3.3**	0.3	0.8 - 10.6	46	**1.32**	0.02	1.07 - 1.60	46
Largemouth bass	2	**53**	1.3	33 - 72	40	**3.0**	0.6	0.6 - 25.0	40	**1.83**	0.34	1.01 - 15.03	40
	3	**59**	1.1	40 - 79	51	**3.5**	0.2	0.9 - 8.5	51	**1.57**	0.02	1.12 - 2.02	51
	4	**69**	1.6	42 - 104	62	**5.2**	0.4	1.2 - 17.9	62	**1.44**	0.02	1.18 - 2.16	62
Crappie spp.	2	**38**	0.9	22 - 54	79	**0.8**	0.0	0.2 - 1.9	79	**1.30**	0.03	0.74 - 1.88	79
	3	**53**	0.7	38 - 66	51	**2.0**	0.1	0.7 - 3.4	51	**1.33**	0.02	0.94 - 2.00	51
	4	**56**	0.7	41 - 74	111	**2.2**	0.1	0.7 - 5.1	111	**1.23**	0.01	0.88 - 2.08	111
Yellow perch	2	-	-	0 - 0	0	-	-	0.0 - 0.0	0	-	-	0.00 - 0.00	0
	3	**55**	1.3	45 - 71	22	**1.8**	0.1	45.0 - 71.0	22	**1.05**	0.04	0.55 - 1.34	22
	4	**69**	1.2	52 - 80	33	**4.2**	0.2	52.0 - 80.0	33	**1.24**	0.02	0.99 - 1.49	33
Sauger	2	-	-	0 - 0	0	-	-	0.0 - 0.0	0	-	-	0.00 - 0.00	0
	3	-	-	0 - 0	0	-	-	0.0 - 0.0	0	-	-	0.00 - 0.00	0
	4	**100**	-	100 - 100	1	**7.2**	-	7.2 - 7.2	1	**0.72**	-	0.72 - 0.72	1
Walleye	2	-	-	0 - 0	0	-	-	0.0 - 0.0	0	-	-	0.00 - 0.00	0
	3	-	-	0 - 0	0	-	-	0.0 - 0.0	0	-	-	0.00 - 0.00	0
	4	-	-	0 - 0	0	-	-	0.0 - 0.0	0	-	-	0.00 - 0.00	0

* Dates were: week 2, 12-16 July; week 3, 19-23 July; week 4, 26-30 July 2010.

Table 8. Mean (± SE) total length (mm) of young-of-year fish collected by shoreline seining in Pool 4.
Note: Means are given for 2010 sample and a historical mean from 1986 - 2009. Time period refers to the week of sampling noted in the footnotes.

		Time period				
Species		0	1	2	3	4
Gizzard shad	2010			53.4 (1.4)	72.6 (1.5)	64.8 (1.9)
	mean			**49.6 (2.0)**	**55.6 (2.8)**	**58.3 (3.3)**
Northern pike	2010			148.6 (18.9)	182.0	142.6 (5.7)
	mean			**137.1 (4.0)**	**150.5 (7.0)**	**160.2 (10.9)**
White bass	2010			46.5 (1.2)	61.2 (1.9)	73.7 (1.7)
	mean			**50.0 (2.0)**	**56.3 (1.6)**	**70.0 (2.6)**
Bluegill	2010			25.8 (0.5)	30.5 (0.4)	32.9 (0.5)
	mean			**23.4 (1.2)**	**25.3 (0.7)**	**30.3 (1.0)**
Smallmouth bass	2010			48.3 (2.6)	47.2 (1.4)	60.8 (1.7)
	mean			**47.3 (1.9)**	**53.6 (1.3)**	**65.0 (3.8)**
Largemouth bass	2010			53.3 (1.3)	59.3 (1.1)	68.5 (1.6)
	mean			**50.3 (1.9)**	**57.3 (1.9)**	**60.8 (3.2)**
Crappie spp.	2010			38.5 (0.9)	52.7 (0.7)	55.6 (0.7)
	mean			**39.2 (1.1)**	**45.0 (1.0)**	**50.4 (3.4)**
Yellow perch	2010			55.2 (1.3)	69.5 (1.2)	66.7 (1.0)
	mean			**49.0 (0.9)**	**54.6 (1.0)**	**58.3 (4.2)**
Sauger	2010			0.0 -	100.0 -	- -
	mean			**74.0 (2.0)**	**78.5 (1.6)**	**81.0 (2.1)**
Walleye	2010			o -	0.0 -	107.0 -
	mean			**84.0 (2.5)**	**91.0 (2.4)**	**101.7 (6.4)**
* Dates for each period are:		p0	p1	p2	p3	p4
		6/28-7/2	7/5-9	7/12-16	7/19-23	7/26-30

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, 1-9 November 2010.

		Temp.	Effort	Walleye		Sauger	
Station	Date	(°F)	Hours	N	N/hr	N	N/hr
1	9	44	1.03	16	15.5	92	89.0
2	2	47	1.35	9	6.7	1	0.7
3	2	47	0.82	8	9.8	22	26.9
4	1	48	2.03	44	21.6	59	29.0
5	2	47	1.00	47	47.0	99	99.0
6	1	48	1.32	62	47.1	44	33.4
7	9	43	0.53	13	24.4	25	46.9
	Total		8.08	199		342	
	Mean of all stations				24.6		46.4
	SE				6.2		13.4

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 2010.
Note: Overall mean is calculated from 1986 to 2009 data. Stations 7 and 8 are within Pool 4 but outside of Lake Pepin.

WALLEYE

Station	2005	2006	2007	2008	2009	2010	mean
1	24.3	0.0	104.2	2.7	32.3	15.5	24.7
2	14.1	15.0	255.4	1.1	47.1	6.7	30.8
3	13.7	1.8	75.3	32.5	45.2	9.8	24.9
4	36.0	31.2	145.1	23.1	391.1	21.6	62.4
5	68.9	39.2	78.6	1.1	52.9	47.0	44.2
6	32.3	29.1	88.6	12.5	80.9	47.1	37.9
7	17.5	30.0	3.9	8.3	44.4	24.4	19.4
8	38.8	5.0	65.3	1.5	42.6	no sample	34.5
Mean							
sta. 1-6	31.5	19.4	124.6	12.2	108.3	24.6	36.3
SE	8.3	7.3	30.8	5.9	62.4	8.1	10.6
sta. 1-8	30.7	18.9	102.1	10.3	92.1	24.6	34.6
SE	6.5	5.8	27.8	4.4	46.0	6.2	10.3

SAUGER

Station	2005	2006	2007	2008	2009	2010	mean
1	184.5	2.9	116.8	44.5	226.2	89.0	103.6
2	67.4	69.6	92.6	34.4	66.4	0.7	44.9
3	121.9	12.9	121.4	198.7	395.4	26.9	101.8
4	100.0	25.4	112.7	92.3	137.5	29.0	77.6
5	317.2	49.0	165.4	77.9	136.3	99.0	103.4
6	225.8	3.4	181.8	122.5	105.7	33.4	76.2
7	57.1	5.6	9.7	8.3	64.4	46.9	46.7
8	11.9	0.0	67.1	1.5	15.5	no sample	16.5
Mean							
sta. 1-6	169.5	27.2	131.8	95.1	177.9	46.4	81.4
SE	37.7	10.1	15.3	26.8	53.2	17.3	17.7
sta. 1-8	135.7	21.1	108.4	72.5	143.4	46.4	73.0
SE	35.6	9.6	20.5	24.8	45.3	13.4	19.5

Table 11. Length-frequency of measured young-of-year walleye and sauger captured by electrofishing in Pool 4, 2005 to 2010.

WALLEYE Total length (in)	2005	2006	2007	2008	2009	2010
3.5-3.9						
4.0-4.4						
4.5-4.9					1	1
5.0-5.4					6	
5.5-5.9	2		3		36	2
6.0-6.4	6	2	5		78	10
6.5-6.9	3	4	17	3	65	7
7.0-7.4	21	8	27	10	34	33
7.5-7.9	36	21	29	17	21	24
8.0-8.4	42	22	31	27	11	24
8.5-8.9	22	15	27	20	4	14
9.0-9.4	13	12	25	1	1	7
9.5-9.9	5	15	10			
10.0-10.4	4	3	5			
10.5-10.9						
Number	154	102	179	78	257	122
Length						
mean	8.1	8.4	8.1	8.0	7.7	7.7
SE	0.07	0.09	0.07	0.07	0.08	0.1
min	5.7	6.2	5.5	6.7	4.8	4.8
max	10.3	10.4	10.3	9.0	9.1	9.1

SAUGER Total length (in)	2005	2006	2007	2008	2009	2010
3.5-3.9						
4.0-4.4				1	12	2
4.5-4.9				10	53	23
5.0-5.4	2	3	16	67	92	47
5.5-5.9	35	18	58	104	68	37
6.0-6.4	68	26	58	58	24	24
6.5-6.9	39	30	29	38	5	14
7.0-7.4	29	13	18	6	4	4
7.5-7.9	12	4	1	4	1	2
8.0-8.4	1	1		1		2
8.5-8.9						1
9.0-9.4						
Number	186	95	180	289	259	156
Length						
mean	6.5	6.4	6.2	5.9	5.7	5.7
SE	0.04	0.06	0.04	0.04	0.06	0.06
min	5.3	5.2	5.1	4.4	4.3	4.3
max	8.3	8.1	7.6	8.1	7.6	7.6

Table 12. Mean catch per hour (SE) of young-of-year fish by trawling in Lake Pepin, 16-24 August, 2010.

Species	Station 2	3	4	5	6	Grand Mean	Percent of total catch
Gizzard shad	**145.5** (40.1)	**64.5** (27.7)	**211.5** (52.2)	**292.5** (146.6)	**163.5** (126.2)	**175.5** (30.7)	69.8
White sucker		**1.5** (1.5)				**0.3** (0.2)	0.1
Channel catfish		**3.0** (2.0)				**0.6** (0.3)	0.2
White bass	**1.5** (1.5)	**1.5** (1.5)	**1.5** (1.5)	**19.5** (16.2)		**4.8** (2.5)	1.9
Bluegill		**4.5** (4.5)	**1.5** (1.5)	**1.5** (1.5)	**3.0** (3.0)	**2.1** (0.8)	0.8
White crappie					**1.5** (1.5)	**0.3** (0.2)	0.1
Black crappie	**1.5** (1.5)	**1.5** (1.5)		**7.5** (6.0)		**2.1** (1.0)	0.8
Sauger		**7.5** (6.0)	**3.0** (2.0)	**10.5** (4.8)	**1.5** (1.5)	**4.5** (1.2)	1.8
Walleye	**1.5** (1.5)			**12.0** (8.8)		**2.7** (1.4)	1.1
All species	**192.0** (48.3)	**193.5** (75.6)	**274.7** (74.2)	**387.0** (146.3)	**175.5** (127.9)	**245.3** (44.5)	
Number of hauls	8	8	8	8	8	40	
Hours trawled	0.67	0.67	0.67	0.67	0.67	3.33	

Table 13. Mean catch per hour (SE) of young-of-year fish by trawling in Lake Pepin, August 2005–2010.
Note: Historical mean is from 1986-2009.

Species	2005	2006	2007	2008	2009	2010	Historical mean
Gizzard shad	**42.3** (14.7)	**402.6** (57.5)	**229.8** (35.9)	**300.9** (45.5)	**311.1** (53.3)	**175.5** (30.7)	**116.7** (28.8)
Northern pike	**0.6** (0.4)						**0.0** (0.0)
Common carp							**0.6** (0.6)
Carpsucker spp.					**0.3** (0.2)	**0.3** (0.2)	**0.0** (0.0)
Smallmouth buffalo							**1.0** (0.9)
Bigmouth buffalo							**0.0** (0.0)
Channel catfish	**6.2** (2.2)	**0.3** (0.2)				**0.6** (0.3)	**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							**0.1** (0.1)
White bass	**8.6** (2.5)	**11.4** (5.9)	**9.3** (2.7)	**0.3** (0.2)	**0.9** (0.4)	**4.8** (2.5)	**20.1** (6.8)
Bluegill	**9.9** (4.4)	**5.4** (3.6)	**0.3** (0.2)	**1.2** (0.4)	**0.0** (0.0)		**1.4** (0.5)
White crappie	**1.9** (1.0)	**1.2** (0.4)	**1.8** (0.6)	**37.2** (16.1)	**0.0** (0.0)		**6.3** (1.7)
Black crappie	**14.8** (4.1)	**15.6** (3.2)	**3.9** (1.0)	**14.4** (6.1)	**0.6** (0.3)		**6.9** (1.7)
Unidentified crappie					**6.9** (3.1)		**1.7** (0.7)
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)	**2.1** (1.0)	**5.9** (1.2)
Walleye	**0.9** (0.5)	**9.9** (4.6)	**9.0** (2.4)	**0.6** (0.3)	**15.9** (6.4)	**4.5** (1.2)	**4.1** (1.1)
Freshwater drum	**1284.8** (191.9)	**212.4** (91.0)	**99.0** (24.8)	**50.4** (14.3)	**34.5** (10.7)	**2.7** (1.4)	**294.1** (59.2)
All species	**1377.8** (196.7)	**662.1** (143.4)	**356.1** (65.4)	**408.6** (72.1)	**378.9** (71.5)	**245.3** (44.5)	**420.6** (61.7)
Number of hauls	39	40	40	40	40	40	
Hours trawled	3.26	3.33	3.33	3.33	3.33	3.33	

Table 14. Mean catch per hour (SE) of juvenile and adult fish by trawling in Lake Pepin, 16-24 August, 2010.

Species	Station 2	3	4	5	6	Grand Mean	Percent of total catch
Gizzard shad				**6.0** (6.0)	**7.5** (5.0)	**2.7** (1.6)	0.5
Common carp	**3.0** (3.0)	**1.5** (1.5)		**1.5** (1.5)	**4.5** (4.5)	**2.1** (1.1)	0.4
Silver chub	**4.5** (3.2)	**4.5** (3.2)				**1.8** (0.9)	0.3
Spottail shiner	**1.5** (1.5)	**4.5** (3.2)	**3.0** (3.0)			**1.8** (0.9)	0.3
Quillback	**3.0** (2.0)	**24.0** (20.8)				**5.4** (4.2)	1.0
River carpsucker			**1.5** (1.5)			**0.3** (0.3)	0.1
White sucker				**4.5** (2.2)		**0.9** (0.5)	0.2
Silver redhorse					**1.5** (1.5)	**0.3** (0.3)	0.1
Channel catfish		**1.5** (1.5)		**1.5** (1.5)	**1.5** (1.5)	**0.9** (0.5)	0.2
Tadpole madtom					**3.0** (2.0)	**0.6** (0.4)	0.1
Trout perch	**79.5** (36.7)	**112.5** (35.5)	**135.0** (43.3)	**145.5** (79.5)	**373.5** (70.3)	**169.2** (29.1)	30.7
White bass	**1.5** (1.5)			**1.5** (1.5)		**0.6** (0.4)	0.1
Bluegill	**1.5** (1.5)	**1.5** (1.5)	**1.5** (1.5)	**79.5** (31.1)	**171.0** (109.4)	**51.0** (24.1)	9.3
Black crappie	**6.0** (3.9)				**9.0** (9.0)	**3.0** (2.0)	0.5
Yellow perch		**1.5** (1.5)		**7.5** (3.2)	**10.5** (7.3)	**3.9** (1.7)	0.7
Logperch		**1.5** (1.5)		**1.5** (1.5)		**0.6** (0.4)	0.1
River darter			**1.5** (1.5)			**0.3** (0.3)	0.1
Sauger	**16.5** (3.9)	**36.0** (5.1)	**12.0** (3.2)	**7.5** (3.9)	**54.0** (22.9)	**25.2** (5.4)	4.6
Walleye	**6.0** (4.5)	**9.0** (5.9)	**10.5** (6.2)	**13.5** (6.6)	**15.0** (8.1)	**10.8** (2.7)	2.0
Freshwater drum	**195.0** (41.2)	**556.5** (199.0)	**390.0** (130.8)	**91.5** (59.8)	**114.0** (35.1)	**269.4** (55.5)	48.9
#N/A							
All species	**318.0** (49.6)	**754.5** (192.4)	**555.0** (158.4)	**361.5** (94.0)	**765.0** (166.3)	**550.8** (67.1)	
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 (SE) of juvenile and adult fish by trawling in Lake Pepin, 2005-2010.
Not: Historical mean is from 1986-2009.

Species	2005	2006	2007	2008	2009	2010	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)		**2.7** (1.60)	**1.1** (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)	**2.1** (1.10)	**18.4** (2.9)
Silver chub	**6.2** (3.3)	**3.3** (1.4)	**0.6** (0.4)	**3.9** (2.4)	**3.0** (2.18)	**1.8** (0.90)	**15.9** (5.7)
Emerald shiner	**3.1** (1.3)	**9.9** (7.6)	**8.1** (6.9)	**0.3** (0.3)			**3.8** (1.4)
River shiner							**0.0** (0.0)
Spottail shiner	**0.9** (0.7)				**0.3** (0.30)	**1.8** (0.90)	**0.3** (0.1)
Mimic shiner							**0.8** (0.7)
Bluntnose minnow	**207.0** (102.4)						**13.3** (9.1)
Bullhead minnow		**0.6** (0.6)					**0.4** (0.2)
River carpsucker						**0.3** (0.30)	**0.0** (0.0)
Quillback	**0.6** (0.4)	**0.6** (0.4)			**0.9** (0.51)	**5.4** (4.20)	**0.8** (0.2)
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)	**0.9** (0.50)	**4.7** (1.0)
Smallmouth buffalo	**1.2** (0.6)		**0.6** (0.4)	**1.2** (0.7)			**1.9** (0.7)
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)	**0.3** (0.30)	**3.3** (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** (0.5)
Channel catfish	**7.1** (3.4)	**6.0** (1.8)	**1.5** (1.0)	**4.2** (1.3)	**1.2** (0.72)	**0.9** (0.50)	**6.3** (0.9)
Slender madtom							**0.0** (0.0)
Tadpole madtom		**0.3** (0.3)				**0.6** (0.40)	**0.2** (0.1)
Flathead catfish	**2.2** (1.0)	**0.6** (0.4)					**1.1** (0.2)
Trout-perch	**30.0** (7.0)	**13.8** (3.9)	**24.9** (11.1)	**42.6** (13.5)	**71.7** (21.13)	**169.2** (29.10)	**43.8** (11.1)
Brook silverside							**0.0** (0.0)
White bass		**1.2** (0.7)	**25.2** (20.3)	**2.1** (1.0)	**2.4** (1.07)	**0.6** (0.40)	**9.3** (2.8)
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)	**51.0** (24.10)	**7.7** (1.3)
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)	**3.0** (2.00)	**10.5** (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)	**3.9** (1.70)	**5.6** (1.2)
Logperch		**1.5** (0.8)	**1.2** (0.6)		**0.6** (0.42)	**0.6** (0.40)	**0.9** (0.3)
River darter				**1.8** (0.8)	**0.3** (0.30)	**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)	**25.2** (5.40)	**41.7** (8.1)
Walleye	**10.8** (2.9)	**3.9** (1.2)	**6.0** (1.5)	**16.2** (4.7)	**7.2** (1.86)	**10.8** (2.70)	**20.8** (3.9)
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)	**269.4** (55.50)	**332.1** (39.2)
All species	**792.1** (125.3)	**208.2** (40.9)	**299.1** (50.8)	**272.7** (42.9)	**313.8** (49.21)	**422.5** (65.90)	**517.0** (56.7)
Number of hauls	39	40	40	40	40	**40**	
Hours trawled	3.26	3.33	3.33	3.33	3.33	3.33	

Table 16. Length-frequency of fish captured by trawling in Lake Pepin, 16-24 August, 2010.

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		2								
1.5-1.9		5								
2.0-2.4	1	1	2		1					
2.5-2.9	4	1								
3.0-3.4	3	1								
3.5-3.9	1	9				2			2	
4.0-4.4		11				4			6	
4.5-4.9		38				5			6	
5.0-5.4		27				5		3	2	
5.5-5.9		11						2		
6.0-6.4	1	13						1		
6.5-6.9	1	4				1		3		3
7.0-7.4						2		4		1
7.5-7.9		1				11				3
8.0-8.4		1				10				3
8.5-8.9	2					16		1	1	
9.0-9.4						6				1
9.5-9.9	3					5		3		
10.0-10.4			1			3		2		1
10.5-10.9						2		4		1
11.0-11.4								4		
11.5-11.9								4		
12.0-12.9	1					6		9		
13.0-13.9			1			11				
14.0-14.9						2		1		
15.0-15.9						5			1	
16.0-16.9						2		1		
17.0-17.9			1					3		
18.0-18.9						1				
19.0-19.9								1		
20.0-20.9						1				
21.0-21.9										
22.0-22.9										
23.0-23.9										
24.0-24.9										
25.0-25.9										
26.0-26.9										
>27.0										
Total	17	125	5	0	1	100	0	46	18	13
LENGTH										
Mean	5.7	4.8	9.3		2.8	9.6		10.5	5.3	8.0
SE	0.8	0.1	3.2			0.4		0.5	0.7	0.4
min	2.3	1.3	2.0	0.0	2.8	3.7	0.0	4.9	3.5	6.5
max	12.4	8.0	18.0	0.0	2.8	20.3	0.0	19.0	15.5	10.6

Table 17. Age-length frequency and length at capture of sauger captured by trawling, Lake Pepin, 16-24 August, 2010.
Note: Ages assigned using 2009 age key.

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	4	4					
4.5-4.9	5	5					
5.0-5.4	5	5					
5.5-5.9							
6.0-6.5							
6.5-6.9	1	1					
7.0-7.4	2	2					
7.5-7.9	11		11				
8.0-8.4	10		10				
8.5-8.9	16		16				
9.0-9.4	6		6				
9.5-9.9	5		3				
10.0-10.4	3		3				
10.5-10.9	2		2				
11.0-11.4							
11.5-11.9							
12.0-12.9	6			6			
13.0-13.9	11			3			
14.0-14.9	2			2			
15.0-15.9	5				5		
16.0-16.9	2				2		
17.0-17.9							
18.0-18.9	1					1	
19.0-19.9							
20.0-20.9	1					1	
Total	100	19	51	11	7	2	
Aged subsample							
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	0.0	
Max length		5.2	10.9	14.2	15.1	0.0	
N		29	26	10	1	0	

Table 18. Age-length frequency and length at capture of walleye captured by trawling, Lake Pepin, 16-24 August, 2010.
Note: Ages assigned using 2009 age key.

Total length(in)	Total Number	Age 0	1	2	3	4
4.5-4.9						
5.0-5.4	3	3				
5.5-5.9	2	2				
6.0-6.4	1	1				
6.5-6.9	3	3				
7.0-7.4	4	4				
7.5-7.9						
8.0-8.5						
8.5-8.9	1	1				
9.0-9.4						
9.5-9.9	3		3			
10.0-10.5	2		2			
10.5-10.9	4		4			
11.0-11.4	4		4			
11.5-11.9	4		4			
12.0-12.9	9		9			
13.0-13.9						
14.0-14.9	1			1		
15.0-15.9						
16.0-16.9	1			1		
17.0-17.9	3			3		
18.0-18.9						
19.0-19.9	1				1	
20.0-20.9						
21.0-21.9						
22.0-22.9						
23.0-23.9						
24.0-24.9						
25.0-25.9						
26.0-26.9						
Total	46	14	26	5	1	
Aged subsample						
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	0	

Table 19. Annual trawl catch per hour of sauger, by age, in Lake Pepin, August 1986-2010.

	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				
2010 catch=100; hrs.=3.33	30.0	5.7	15.3	3.3	2.1	0.6				
Mean 1986-2010	**47.0**	**6.2**	**16.4**	**14.6**	**6.1**	**2.3**	**0.9**	**0.4**	**0.1**	**<0.1**

Table 20. Annual trawl catch per hour of walleye, by age, in Lake Pepin, August 1986-2010.

	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				
2010 catch=46; hrs.=3.33	13.8	4.2	7.8	1.5	0.3					
Mean, 1986-2010	**24.3**	**4.2**	**10.8**	**6.0**	**2.2**	**0.5**	**0.4**	**0.1**	**<0.1**	**<0.1**

Table 21. Catch per hour of juvenile and adult smallmouth bass, largemouth bass, and walleye, by age, captured by electrofishing in Lake Pepin, September and October, 2006-2010.

			Age											
Year	Hours	All	1	2	3	4	5	6	7	8	9	10	11	12
						Smallmouth bass								
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	0.0	0.0	0.0	0.0	
2010	3.9	30.8	5.1	4.6	10.5	7.7	2.6		0.3					
						Largemouth bass								
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					
2010	3.9	3.6	1.8	0.5	0.5	0.8								
						Walleye								
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	0.0	1.7	0.2	0.0
2010	3.9	8.7			3.1	2.8	1.0	0.3	0.5	1.0				

Table 22. Age-length frequency and mean length at capture of adult and juvenile largemouth bass captured by electrofishing in Lake Pepin, 17-27 September, 2010.

		Age								
Total length (in)	Total Number	1	2	3	4	5	6	7	8	9
5.0-5.4	1	1								
5.5-5.9	1	1								
6.0-6.4	1	1								
6.5-6.9										
7.0-7.4										
7.5-7.9										
8.0-8.4										
8.5-8.9	1	1								
9.0-9.4	2	2								
9.5-9.9										
10.0-10.4	1	1								
10.5-10.9										
11.0-11.4										
11.5-11.9										
12.0-12.9										
13.0-13.9	1		1							
14.0-14.9	1				1					
15.0-15.9	3		1	2						
16.0-16.9	1				1					
17.0-17.9	1				1					
18.0-18.9										
19.0-19.9										
20.0-20.9										
Total	14	7	2	2	3	0	0	0	0	0
Aged subsample										
Mean length		10.4	14.5	15.5	16.0	-	-	-	-	-
SE		-	1.56	0.35	1.56	-	-	-	-	-
Min length		10.4	13.4	15.2	14.9	0.0	0.0	0.0	0.0	0.0
Max length		10.4	15.6	15.7	17.1	0.0	0.0	0.0	0.0	0.0
N		1	2	2	2	0	0	0	0	0

Table 23. Age-length frequency and mean length at capture of adult and juvenile smallmouth bass captured by electrofishing in Lake Pepin, 17-27 September, 2010.

		Age								
Total length (in)	Total no.	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										
5.5-5.9										
6.0-6.4										
6.5-6.9										
7.0-7.4										
7.5-7.9	1		1							
8.0-8.4	4		4							
8.5-8.9	1		1							
9.0-9.4	5		5							
9.5-9.9	4		3	1						
10.0-10.4	3		1	2						
10.5-10.9	8		2	6						
11.0-11.4	4		2	2						
11.5-11.9	4		1		3					
12.0-12.9	3			2	1					
13.0-13.9	22			2	15	3	2			
14.0-14.9	24			2	11	11				
15.0-15.9	20			1	7	10	2			
16.0-16.9	12				4	5	3			
17.0-17.9	4					1	3			
18.0-18.9	1								1	
19.0-19.9										
Total	120		20	18	41	30	10		1	
Aged subsample										
Mean length			11.8	14.2	14.4	15.4	16.2	-	17.2	14.6
SE			-	0.85	0.31	0.26	0.50	-		
Min length			11.8	11.4	11.3	13.6	13.7		16.3	14.6
Max length			11.8	16.9	16.6	17.1	17.3		18.0	14.6
N			1	6	20	16	7		2	1

Table 24. Age-length frequency and mean length at capture of adult and juvenile walleye captured by electrofishing in Lake Pepin, 17-27 September, 2010.

		Age											
Total length (in)	Total Number	1	2	3	4	5	6	7	8	9	10	11	12
11.0-11.5													
11.5-11.9													
12.0-12.9													
13.0-13.9													
14.0-14.9													
15.0-15.9													
16.0-16.9													
17.0-17.9													
18.0-18.9													
19.0-19.9	3			3									
20.0-20.9	6			5	1								
21.0-21.9	6			1	4			1					
22.0-22.9	7			3	4								
23.0-23.9	3				2				1				
24.0-24.9	1						1						
25.0-25.9	4					4							
26.0-26.9	3								3				
27.0-27.9													1
28.0-28.9	1							1					
29.0-29.9													
Total	34			12	11	4	1	2	4				1
Aged subsample													
Mean length		-	-	20.8	22.1	25.1	24.4	24.9	24.9				
SE		-	-	0.43	0.30	-	-		4.40	1.50			
Min length				19.2	20.4	25.1	24.4	21.8	23.9				27.3
Max length				22.8	23.7	25.1	24.4	28.0	26.0				27.3
N				9	12	1	1	2	2				1

Table 25. Number and pounds per gill net lift in Lake Pepin, by station 10-14 October, 2010.
Note: One standard error in parentheses.

		Goldeye		**Mooneye**		**Gizzard shad**		**Common carp**		**River carpsucker**	
Station	No. sets	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift
1	4			3.00 (2.4)	2.05 (1.7)	2.25 (1.7)	0.17 (0.1)				
2	4			1.50 (1.4)	1.23 (1.1)	18.75 (6.8)	4.73 (2.9)				
3	4			0.75 (0.6)	0.53 (0.5)	40.25 (40.2)	0.04 (0.0)				
4	4	0.25 (0.3)	0.47 (0.5)	1.50 (0.7)	0.86 (0.5)	24.50 (15.0)	1.38 (0.6)				
5	5			0.40 (0.3)	0.20 (0.1)	10.20 (3.5)	1.31 (1.4)	0.60 (0.3)	3.38 (2.3)	0.20 (0.2)	0.55 (0.6)
6	3			0.33 (0.4)	0.39 (0.5)	15.00 (5.1)	2.20 (1.3)	1.67 (1.5)	1.75 (2.0)		
Mean		**0.04 (0.0)**	**0.08 (0.1)**	**1.25 (0.4)**	**0.87 (0.3)**	**18.29 (6.3)**	**1.60 (0.6)**	**0.33 (0.2)**	**0.89 (0.5)**	**0.04 (0.0)**	**0.11 (0.1)**

		Quillback		**Highfin carpsucker**		**White sucker**		**Smallmouth buffalo**		**Silver redhorse**	
Station	No. sets	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)	0.12 (0.1)			0.25 (0.3)	1.71 (2.0)		
3	4										
4	4	0.25 (0.3)	0.48 (0.6)			1.25 (1.1)	1.90 (1.5)	0.75 (0.9)	0.68 (0.8)	0.75 (0.6)	1.89 (1.9)
5	5					0.40 (0.3)	0.38 (0.4)			0.80 (0.9)	1.56 (1.7)
6	3					2.33 (1.8)	5.16 (3.7)			0.67 (0.8)	1.16 (1.4)
Mean		**0.04 (0.0)**	**0.08 (0.1)**	**0.04 (0.0)**	**0.02 (0.0)**	**0.58 (0.3)**	**1.04 (0.5)**	**0.17 (0.1)**	**0.40 (0.3)**	**0.38 (0.2)**	**0.78 (0.4)**

		Shorthead redhorse		**Greater redhorse**		**Channel catfish**		**Northern pike**		**White bass**	
Station	No. sets	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift
1	4	0.50 (0.3)	0.97 (0.6)							2.50 (1.5)	2.52 (1.5)
2	4	0.50 (0.6)	0.82 (0.9)							0.75 (0.6)	0.79 (0.7)
3	4	0.25 (0.3)	0.07 (0.1)			2.00 (1.4)	2.11 (1.5)			0.75 (0.6)	0.33 (0.3)
4	4	2.75 (1.7)	2.87 (1.5)			1.25 (0.6)	1.92 (1.0)			3.00 (1.4)	1.72 (1.1)
5	5	1.80 (0.8)	2.45 (0.9)	0.60 (0.7)	1.44 (1.6)	3.80 (1.9)	11.01 (5.8)	0.20 (0.2)	0.46 (0.5)	3.20 (1.6)	4.15 (2.4)
6	3	2.67 (1.5)	3.01 (1.6)	0.33 (0.4)	0.58 (0.7)			0.67 (0.8)	0.95 (1.2)	0.67 (0.8)	1.02 (1.3)
Mean		**1.38 (0.4)**	**1.67 (0.4)**	**0.17 (0.1)**	**0.37 (0.3)**	**1.33 (0.5)**	**2.96 (1.4)**	**0.13 (0.1)**	**0.21 (0.2)**	**1.92 (0.5)**	**1.88 (0.6)**

Table 25. Continued.

Station	No. sets	Rock bass		Bluegill		Smallmouth bass		Largemouth bass		White crappie	
		No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift
1	4										
2	4										
3	4			0.50 (0.6)	0.05 (0.1)						
4	4									0.25 (0.3)	0.01 (0.0)
5	5	1.60 (1.8)	0.60 (0.7)	0.80 (0.7)	0.15 (0.1)	1.40 (1.3)	1.41 (1.4)				
6	3							0.33 (0.4)	0.07 (0.1)	0.33 (0.4)	0.36 (0.4)
Mean		**0.33 (0.3)**	**0.12 (0.1)**	**0.25 (0.2)**	**0.04 (0.0)**	**0.29 (0.3)**	**0.29 (0.3)**	**0.04 (0.0)**	**0.01 (0.0)**	**0.08 (0.1)**	**0.05 (0.0)**

Station	No. sets	Black crappie		Yellow perch		Sauger		Walleye		Freshwater drum	
		No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift	No./lift	Lbs./lift
1	4					10.00 (2.4)	11.26 (3.6)	6.00 (1.9)	6.22 (2.1)	19.25 (7.6)	8.21 (3.2)
2	4			0.25 (0.3)	0.09 (0.1)	58.00 (17.3)	65.83 (19.5)	4.50 (0.7)	7.22 (2.4)	9.25 (6.6)	1.46 (1.2)
3	4			0.50 (0.3)	0.21 (0.2)	24.00 (10.4)	20.18 (10.2)	7.25 (3.7)	7.99 (4.7)	14.00 (9.4)	6.52 (4.3)
4	4	0.75 (0.6)	0.37 (0.3)	4.50 (1.7)	1.78 (0.9)	55.25 (21.0)	57.68 (23.0)	4.75 (2.5)	5.09 (2.6)	4.00 (1.4)	0.96 (0.1)
5	5	2.00 (1.3)	0.77 (0.4)	10.00 (5.3)	4.13 (2.4)	56.20 (23.4)	42.79 (15.8)	4.00 (1.3)	4.48 (1.6)	5.00 (0.9)	3.46 (1.3)
6	3			7.67 (8.2)	2.78 (2.8)	33.33 (5.0)	29.57 (3.4)	1.67 (0.4)	4.29 (3.7)	3.00 (0.7)	0.32 (0.3)
Mean		**0.54 (0.3)**	**0.22 (0.1)**	**3.92 (1.5)**	**1.55 (0.6)**	**40.42 (6.9)**	**38.43 (6.5)**	**4.79 (0.8)**	**5.89 (1.0)**	**9.17 (2.2)**	**3.62 (1.0)**

Table 26. Mean number per gill net lift from Pool 4, 2006-2010. One standard error in parentheses.
Note: The historical mean is from 1986-2009.

Species	2006	2007	2008	2009	2010	Historical Mean
Lake Sturgeon	<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	16.8 (4.2)	25.3 (6.4)	18.4 (4.8)	28.7 (6.2)	18.3 (6.3)	27.2
Goldeye					<0.05 (<0.05)	<0.05
Mooneye	4.3 (1.2)	1.8 (0.6)	0.3 (0.1)	1.2 (0.6)	1.3 (0.4)	1.1
Northern Pike	1.0 (0.2)	0.5 (0.2)	0.9 (0.3)	0.5 (0.1)	0.1 (0.1)	0.6
Common Carp	0.8 (0.1)	0.3 (0.2)	0.1 (0.1)	0.1 (0.1)	0.3 (0.2)	0.8
Silver Chub	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 (<0.05)	<0.05
Quillback	0.3 (0.1)	0.5 (0.2)	0.4 (0.1)	0.3 (0.1)	<0.05 (<0.05)	0.4
Highfin Carpsucker				0.0 (0.0)	<0.05 (<0.05)	<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)	0.6 (0.3)	0.4
Blue Sucker		0.1 (0.1)				<0.05
Northern Hogsucker	0.4 (0.2)	0.1 (0.1)				<0.05
Smallmouth Buffalo	0.5 (0.2)	0.4 (0.1)	0.2 (0.1)	0.4 (0.2)	0.2 (0.1)	0.6
Bigmouth Buffalo		<0.05 (<0.05)				0.0
Spotted Sucker						0.0
Silver Redhorse	0.4 (0.2)	1.3 (0.4)	1.0 (0.3)	0.5 (0.2)	0.4 (0.2)	0.6
Golden Redhorse	0.1 (0.1)	<0.05 (<0.05)		0.1 (0.1)		0.1
Shorthead Redhorse	2.3 (0.5)	3.4 (0.9)	2.5 (0.5)	2.5 (0.5)	1.4 (0.4)	1.5
Black Bullhead						<0.05
Yellow Bullhead						<0.05
Brown Bullhead						<0.05
Channel Catfish	4.5 (0.4)	4.1 (0.7)	2.8 (0.6)	1.8 (0.3)	1.3 (0.5)	3.8
Flathead Catfish	<0.05 (<0.05)		0.1 (0.1)	0.1 (0.1)		0.1
Burbot						<0.05
White Bass	8.3 (1.3)	6.9 (1.2)	4.9 (1.2)	5.0 (1.2)	1.9 (0.5)	5.6
Hybrid Sunfish						<0.05
Green Sunfish						<0.05
Pumkinseed						<0.05
Rock Bass	0.3 (0.2)	0.2 (0.1)	0.2 (0.1)	0.4 (0.4)	0.3 (0.3)	0.2
Orangespotted Sunfish						<0.05
Bluegill	0.2 0.10	<0.05 (<0.05)	0.1 (0.1)	0.0 (0.0)	0.3 (0.2)	<0.05
Smallmouth Bass	0.3 0.10	0.7 0.40	0.1 (0.1)	0.3 (0.2)	0.3 (0.3)	<0.05
Largemouth Bass		0.1 (0.1)	<0.05 (<0.05)		0.0 (0.0)	<0.05
Hybrid Crappie						<0.05
White Crappie	0.8 (0.2)	0.4 (0.2)	0.5 (0.2)	0.3 (0.2)	0.1 (0.1)	0.4
Black Crappie	1.0 (0.3)	0.5 (0.3)	3.7 (0.9)	2.2 (0.6)	0.5 (0.3)	1.0
Yellow Perch	2.9 (0.8)	2.4 (0.7)	1.6 (0.6)	5.2 (1.6)	3.9 (1.5)	3.4
Sauger	29.5 (2.8)	29.4 (4.2)	30.3 (3.1)	29.3 (4.0)	40.4 (6.9)	25.0
Walleye	8.6 (1.1)	6.8 (1.2)	5.3 (0.9)	5.0 (0.8)	4.8 (0.8)	5.1
Sauger x walleye hybrid			<0.05 (<0.05)			<0.05
Freshwater Drum	9.9 (1.6)	21.9 (4.5)	12.5 (1.9)	9.8 (1.8)	9.2 (2.2)	13.0
Number of lifts	24	24	24	24	24	

Table 27. Mean pounds per gill net lift from Pool 4, 2006-2010. One standard error in parentheses.
Note: The historical mean is from 1986-2010.

Species	2006	2007	2008	2009	2010	Historical mean
Lake Sturgeon	<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	4.7 (1.2)	8.0 (1.9)	1.6 (0.3)	3.0 (0.6)	1.6 (0.6)	5.2
Goldeye					0.1 (0.1)	<0.05
Mooneye	2.9 (0.8)	1.2 (0.4)	0.2 (0.1)	0.9 (0.5)	0.9 (0.3)	0.7
Northern Pike	5.4 (1.5)	2.5 (0.9)	4.6 (1.5)	2.5 (0.8)	0.2 (0.2)	2.5
Common Carp	0.3 (0.3)	1.0 (0.7)	0.9 (0.7)	0.5 (0.4)	0.9 (0.5)	2.6
Silver Chub	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 (0.1)	0.1
Quillback	0.3 (0.2)	0.7 (0.4)	0.5 (0.2)	0.5 (0.3)	0.1 (0.1)	0.7
Highfin Carpsucker				0.1 (0.1)	0.0 (0.0)	<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)	1.0 (0.5)	0.7
Blue Sucker		0.6 (0.4)				<0.05
Northern Hogsucker	0.1 (0.1)	0.1 (<0.05)				<0.05
Smallmouth Buffalo	1.0 (0.7)	0.4 (0.3)	0.2 (0.1)	0.4 (0.2)	0.4 (0.3)	0.7
Bigmouth Buffalo		<0.05 (<0.05)				<0.05
Spotted Sucker						0.1
Silver Redhorse	1.1 (0.5)	3.3 (1.1)	2.9 (1.1)	1.4 (0.5)	0.8 (0.4)	1.5
Golden Redhorse	0.1 (0.1)	0.1 (0.1)		0.1 (0.1)		0.2
Shorthead Redhorse	2.0 (0.5)	3.6 (1.0)	3.3 (0.7)	3.5 (0.7)	1.7 (0.4)	1.6
Greater Redhorse					0.4 (0.3)	0.0
Black Bullhead						<0.05
Yellow Bullhead						<0.05
Brown Bullhead						<0.05
Channel Catfish	9.7 (1.2)	7.5 (1.4)	4.7 (1.0)	5.3 (1.2)	3.0 (1.4)	5.4
Flathead Catfish	0.4 (0.4)		0.1 (0.1)	0.2 (0.2)		0.2
Burbot						<0.05
White Bass	9.1 (1.5)	7.8 (1.3)	4.9 (1.3)	5.7 (1.7)	1.9 (0.6)	4.7
Hybrid Sunfish						<0.05
Green Sunfish						<0.05
Pumkinseed						<0.05
Rock Bass	0.1 (0.1)	0.1 (<0.05)	0.1 (<0.05)	0.1 (0.1)	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)	0.0 (0.0)	<0.05
Smallmouth Bass	0.3 (0.1)	0.5 (0.2)	0.1 (0.1)	0.2 (0.1)	0.3 (0.3)	<0.05
Largemouth Bass		0.1 (0.1)	0.1 (0.1)		0.0 (0.0)	<0.05
Hybrid Crappie						<0.05
White Crappie	0.3 (0.1)	0.1 (<0.05)	0.1 (0.1)	0.1 (0.0)	0.0 (0.0)	0.1
Black Crappie	0.4 (0.2)	0.2 (0.1)	0.7 (0.3)	0.7 (0.2)	0.2 (0.1)	0.4
Yellow Perch	0.9 (0.3)	0.7 (0.2)	0.7 (0.3)	2.1 (0.8)	1.6 (0.6)	0.9
Sauger	46.7 (4.4)	43.8 (6.1)	37.0 (3.4)	33.5 (4.7)	38.4 (6.5)	28.1
Walleye	15.8 (2.6)	9.9 (1.7)	8.6 (1.5)	9.4 (2.5)	5.9 (1.0)	8.1
Sauger x walleye hybrid			0.2 (0.2)			<0.05
Freshwater Drum	4.1 (0.8)	7.4 (1.4)	4.6 (0.8)	5.2 (1.0)	3.6 (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, 10-14 October, 2010.

Total Length (in)	Goldeye	Mooneye	Gizzard shad	Common carp	Unidentified minnow	Quillback	Highfin carpsucker	White sucker	Smallmouth buffalo
2.5-2.9									
3.0-3.4									
3.5-3.9									
4.0-4.4									
4.5-4.9									
5.0-5.4			6						
5.5-5.9			19						
6.0-6.4			16						
6.5-6.9			24						
7.0-7.4			2						
7.5-7.9			1						
8.0-8.4				1					
8.5-8.9								1	
9.0-9.4									
9.5-9.9		1		1					
10.0-10.4		2		1			1		
10.5-10.9		5							1
11.0-11.4		2	1	1					
11.5-11.9				1				1	1
12.0-12.9		9		1					1
13.0-13.9	1	10	4					2	
14.0-14.9		1	3					1	
15.0-15.9						1		2	
16.0-16.9			2					2	
17.0-17.9			4		1			4	
18.0-18.9			4					1	
19.0-19.9									
20.0-20.9				1					
21.0-21.9									
22.0-22.9									1
23.0-23.9									
24.0-24.9									
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	30	86	8	1	1	1	14	4
Length statistics									
Mean	13.6	12.3	8.2	13.8	17.7	15.7	10.1	15.5	14.3
SE		0.25	0.44	2.36	#DIV/0!	#DIV/0!	#DIV/0!		3.01
Min	13.6	9.7	5.1	8.3	17.7	15.7	10.1	8.8	10.8
Max	13.6	14.5	18.8	26.1	17.7	15.7	10.1	18.7	22.0

Continued next page

Table 28. Continued.

Total Length (in)	Silver redhorse	Shorthead redhorse	Greater redhorse	Channel catfish	Northern pike	White bass	Rock bass	Bluegill	Smallmouth bass
2.5-2.9									
3.0-3.4									
3.5-3.9									
4.0-4.4								1	
4.5-4.9									
5.0-5.4								3	
5.5-5.9						7			
6.0-6.4						1			
6.5-6.9						1		1	
7.0-7.4							3	1	
7.5-7.9							2		
8.0-8.4							3		
8.5-8.9		1							
9.0-9.4		1							
9.5-9.9		1							
10.0-10.4		1				2			
10.5-10.9		3				5			1
11.0-11.4		2				1			2
11.5-11.9		1		1					2
12.0-12.9	1	3		2		2			
13.0-13.9		1				15			
14.0-14.9		2		2		9			1
15.0-15.9	3	4		6		1			1
16.0-16.9	3	9	1	5		2			
17.0-17.9		4	1	4	1				
18.0-18.9			2	1	1				
19.0-19.9	1								
20.0-20.9				3					
21.0-21.9	1			2	1				
22.0-22.9				3					
23.0-23.9									
24.0-24.9				2					
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	9	33	4	32	3	46	8	6	7
Length statistics									
Mean	16.7	14.1	17.7	17.9	18.9	11.8	7.8	5.6	12.3
SE	0.83	0.49	0.57	0.7	1.54	0.49	0.15	0.48	0.70
Min	12.8	8.6	16.5	11.9	17.0	5.6	7.3	4.4	10.9
Max	21.1	17.6	18.8	26.1	21.3	16.4	8.5	7.1	15.3

Continued next page

Table 28. Continued.

Total Length (in)	Largemouth bass	White crappie	Black crappie	Yellow perch	Sauger	Walleye	Freshwater drum
2.5-2.9							
3.0-3.4							
3.5-3.9							1
4.0-4.4			1				
4.5-4.9		1					10
5.0-5.4				1			27
5.5-5.9							8
6.0-6.4			1	1			
6.5-6.9			1				1
7.0-7.4	1			12		1	11
7.5-7.9			2	12	4	3	5
8.0-8.4			1	8	7		6
8.5-8.9			1	12	31	1	7
9.0-9.4			1	11	38		7
9.5-9.9				14	37	1	23
10.0-10.4			3	4	69		22
10.5-10.9			2	8	89		14
11.0-11.4				5	79	1	6
11.5-11.9				5	46	1	7
12.0-12.9				1	44	18	23
13.0-13.9					64	37	12
14.0-14.9		1			137	19	4
15.0-15.9					148	7	2
16.0-16.9					62	5	
17.0-17.9					44	5	
18.0-18.9					27	5	
19.0-19.9					11	4	1
20.0-20.9					14	2	
21.0-21.9					12	2	
22.0-22.9					7		
23.0-23.9						2	
24.0-24.9							
25.0-25.9							
26.0-26.9							
27.0-27.9						1	
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	2	13	94	970	115	197
Length statistics							
Mean	7.3	9.5	8.5	9.1	13.5	14.6	9.4
SE		6.74	0.6	0.15	0.10	0.29	0.21
Min	7.3	4.7	4.2	5.4	7.9	7.5	3.9
Max	7.3	14.3	10.9	12.0	22.8	27.6	19.7

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, 10-14 October, 2010.

Total length (in)	Total no.	Age 0	1	2	3	4	5	6	7	8	9	10
6.5-6.9												
7.0-7.4												
7.5-7.9	4		4									
8.0-8.4	7		7									
8.5-8.9	31		31									
9.0-9.4	38		38									
9.5-9.9	37		37									
10.0-10.4	69		69									
10.5-10.9	89		83	6								
11.0-11.5	79		79									
11.5-11.9	46		46									
12.0-12.9	44		28	16								
13.0-13.9	64			45	19							
14.0-14.9	137			125	12							
15.0-15.9	148			96	52							
16.0-16.9	62			25	33	4						
17.0-17.9	44				5	26	11			2		
18.0-18.9	27			3	6	5	6	2	5			
19.0-19.9	11					3		3	3			2
20.0-20.9	14					5	2	3	1	1	1	1
21.0-21.9	12					1		4	5	1		
22.0-22.9	7							1	1	3		2
23.0-23.9												
≥24.0												
Total	970		422	316	127	44	19	13	15	7	1	5
Aged subsample												
Mean length			10.3	14.7	16.1	19.0	19.2	20.5	20.1	21.2	21.3	20.7
SE			0.1	0.1	0.2	0.3	0.5	0.3	0.4	0.7	1.2	0.7
Min length			7.9	10.7	13.1	16.9	18.0	18.7	18.1	17.8	20.4	19.1
Max length			12.6	18.1	18.9	21.5	20.9	22.8	22.0	22.2	22.1	22.2
N			102	83	45	19	7	13	14	7	2	5

Table 30. Mean length at age of sauger (sexes combined) captured with gill nets in Lake Pepin between 2006 and 2010.
Note: Historical means (1966-2010) and means for each decade are provided.

						Historical			By Decade		
Age	2006	2007	2008	2009	2010	Mean	1960's	1970's	1980's	1990's	2000's
0	8.4	8.2	7.5	7.4		7.4				6.7	7.7
1	12.3	12.3	10.9	11.1	10.3	10.4	9.8	10.3	9.9	10.2	11.4
2	15.1	15.5	14.9	14.2	14.8	13.3	12.1	13.0	12.9	13.1	14.4
3	17.0	17.4	16.8	17.3	16.1	15.6	14.4	15.4	15.4	15.1	16.7
4	18.0	17.9	18.9	18.0	19	17.1	16.4	17.2	16.8	16.4	17.9
5	19.5	19.6	19.2	19.4	19.2	18.4	18.2	18.0	18.4	17.9	19.1
6	19.8	19.3	20.3	20.2	20.5	19.4	19.8	19.3	19.6	18.8	19.6
7	19.2	20.4	20.3	20.7	20.1	20.0	20.6	19.8	20.5	19.4	19.9
8	20.9	19.6	20.5	20.4	21.2	20.7	21.5	20.8	21.2	20.1	20.6
9	20.5	20.9			21.3	21.1			20.9	21.0	21.1
10	21.5	19.8	22.1	21.8	20.7	21.5			22.4	21.9	21.4
11	20.0		21.3	20.3		20.3					20.3
12			21.9			21.9					21.9
13											
14					19.8						

Table 31. Mean length at age of female sauger captured with gill nets in Lake Pepin between 2006 and 2010.
Note: Historical means (1987-2010) and means for each decade are provided.

						Historical	By Decade		
Age	2006	2007	2008	2009	2010	Mean	1980's	1990's	2000's
0	8.5	8.2	7.7	7.4		7.8			7.8
1	12.8	12.5	10.7	11.1	10.2	10.8	10.8	10.1	11.4
2	15.4	16.0	15.2	14.5	15.1	14.2	14.2	13.5	14.8
3	17.1	18.0	17.3	17.9	16.9	16.5	17.0	15.5	17.2
4	18.8	19.4	19.5	19.6	19.9	18.1	18.1	16.9	18.8
5	20.4	20.6	20.0	20.2	20.2	19.3	19.3	18.4	19.9
6	20.8	21.5	21.3	21.5	21.7	20.3	20.2	19.9	20.6
7	19.8	20.8	21.3	20.9	21.3	20.8	21.1	20.8	20.6
8	21.7		21.1	23.0	22	21.4	21.6	20.6	21.7
9	22.3	21.7			22	21.6	21.2	21.1	22.0
10			23.0	22.3	22.1	22.4	22.4	22.2	22.7

Table 32. Mean length at age of male sauger captured with gill nets in Lake Pepin between 2006 and 2010.
Note: Historical means (1987-2010) and means for each decade are provided.

						Historical	By Decade		
Age	2006	2007	2008	2009	2010	Mean	1980's	1990's	2000's
0	8.4		7.6			8.3			8.3
1	12.1	12.2	11.1	11.1	10.3	10.7	10.0	10.1	11.4
2	14.4	15.0	14.4	14.0	14.2	13.5	13.5	12.9	13.9
3	16.7	16.6	16.4	16.4	15.3	15.3	15.3	14.5	16.0
4	17.2	17.3	18.1	17.7	17.5	16.7	16.7	15.9	17.3
5	18.8	18.4	18.3	18.5	18.3	18.0	18.1	17.7	18.2
6	19.1	18.8	19.3	19.4	19.5	18.9	18.9	18.7	19.0
7	19.0	20.0	19.3	19.9	19.3	19.3	19.2	19.0	19.5
8	20.7	19.6	19.8	20.1	20.1	19.9	19.8	19.7	20.1
9	20.2	20.4			20.4	20.2	20.6	20.1	20.1
10	21.5	19.8	20.3	21.3	19.7	20.7		21.5	20.7
11	20.0		21.3	20.3		20.3			20.3
12			21.9			21.8			21.8
13									
14					19.8				

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, 10-14 October, 2010.

Total length (in)	Total Number	Age (+)													
		0	1	2	3	4	5	6	7	8	9	10	11	12	13
7.0-7.4	1	1													
7.5-7.9	3	3													
8.0-8.4															
8.5-8.9	1	1													
9.0-9.4															
9.5-9.9	1	1													
10.0-10.4															
10.5-10.9															
11.0-11.4	1		1												
11.5-11.9	1		1												
12.0-12.9	18		18												
13.0-13.9	37		37												
14.0-14.9	19		19												
15.0-15.9	7		3	3	1										
16.0-16.9	5			4	2										
17.0-17.9	5			1	6										
18.0-18.9	5				4	1									
19.0-19.9	4				3										1
20.0-20.9	2					1	1								
21.0-21.9	2				1	2									
22.0-22.9															
23.0-23.9	2				1	2									
24.0-24.9															
25.0-25.9															
26.0-26.9															
27.0-27.9											1				
28.0-28.9															
29.0-29.9															
Total	114	6	79	8	18	6	1				1				
Aged subsample															
Mean length		7.7	13.4	16.3	18.4	20.9	20.0				27.6				19.8
SE		0.11	0.13	0.31	0.45	1.13									
Min length		7.6	8.9	15.2	15.6	18.7	20.0				27.6				19.8
Max length		7.8	15.5	17.9	23.5	23.2	20.0				27.6				19.8
N		3	68	8	18	4	3				1				1

Table 34. Mean length at age of walleye (sexes combined) captured with gill nets in Lake Pepin between 2006 and 2010.
Note: Historical means (1966-2010) and means for each decade are provided.

						Historical	By Decade				
Age	2006	2007	2008	2009	2010	Mean	1960's	1970's	1980's	1990's	2000's
0	9.6	9.9	8.1	8.5	7.7	8.1			8.0	7.7	8.7
1	14.5	14.3	13.4	13.8	13.4	12.7	12.2	12.4	12.6	12.9	13.3
2	17.1	16.9	16.9	16.4	16.3	15.7	14.6	15.7	15.5	15.7	16.4
3	19.2	19.9	20.3	19.5	18.4	18.0	17.6	17.9	17.8	17.8	18.8
4	21.6	21.6	20.7	19.2	20.9	19.6	19.7	20.0	19.2	19.4	19.8
5	21.2	21.4	21.3	22.9	20.0	21.0	21.9	21.4	21.6	20.3	20.7
6	22.2		22.6	23.9		21.8	22.6	20.6	23.3	21.2	22.1
7		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	21.6	24.3		24.6	27.6	24.4		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
13					19.8						

Table 35. Mean length at age of female walleye captured with gill nets in Lake Pepin between 2006 and 2010.
Note: Historical means (1966-2010) and means for each decade are provided.

						Historical	By Decade		
Age	2006	2007	2008	2009	2010	Mean	1980's	1990's	2000's
0	9.6	9.6		8.8	7.8	8.2	8.1	7.7	8.6
1	15.0	14.3	13.5	13.7	13.8	13.2	12.3	12.8	13.8
2	17.8	17.4	17.4	16.9	17.9	16.7	15.8	16.1	17.3
3	20.3	20.8	21.3	20.5	19.9	19.4	19.4	18.6	20.0
4	21.9	21.7	23.2		21.7	20.9	21.2	20.4	21.2
5	23.9		22.6	22.9		21.5	21.6	20.9	22.0
6	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	27.6	25.5			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 2006 and 2010.
Note: Historical means (1966-2010) and means for each decade are provided.

						Historical	By Decade		
Age	2006	2007	2008	2009	2010	Mean	1980's	1990's	2000's
0			9.2	9.2		8.4	7.9	7.8	8.9
1	14.3	13.4	13.9	13.9	13.3	13.2	12.7	12.8	13.8
2	16.4	16.5	16.2	16.2	16.1	15.8	15.5	15.5	16.2
3	17.6	18.3	17.8	17.8	16.4	17.6	18.0	17.2	17.9
4	21.2	19.5	19.2	19.2	18.7	18.9	18.8	18.6	19.2
5	21.4	21.0				19.8	19.2	19.5	20.2
6			21.8	21.8		20.2	21.0	20.1	20.2
7	21.5					20.4		18.5	21.1
8	23.4					22.3			22.3
9						21.3			21.3
10	21.9					22.3			22.3
11			22.9	22.9		22.9			22.9
12									
13					19.8	19.8			

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, 10-14 October, 2010.

Total length (in)	Total Number	Age (+) 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
4.0-4.4																		
4.5-4.9																		
5.0-5.4																		
5.5-5.9	7	7																
6.0-6.4	1	1																
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																		
9.5-9.9																		
10.0-10.4	2		2															
10.5-10.9	5		2															
11.0-11.4	1		1															
11.5-11.9																		
12.0-12.9	2		1	1														
13.0-13.9	15			9	4	1	1											
14.0-14.9	9				6	2	1											
15.0-15.9	1											1						
16.0-16.9	2								1									1
17.0-17.9																		
Total	46	9	6	10	10	3	2		1			1						
Aged subsample																		
Mean length			10.8	13.3	14.1	14.1	14.1		16.0	14.2		15.1						16.4
SE			0.2	0.1	0.1	0.2	0.9											
Min length			10.1	12.8	13.3	13.9	13.4		16.0	14.2		15.1						16.4
Max length			12.1	13.7	14.6	14.3	14.7		16.0	14.2		15.1						16.4
N			9	8	11	3	2		1	1		1						1

Table 38. Age-length frequency and mean length at capture of adult and juvenile yellow perch (sexes combined) captured with 24 gill nets in Lake Pepin, 10-14 October, 2010.

Total length (in)	Total Number	Age (+) 0	1	2	3	4	5	6	7	8	9	10
4.0-4.4	0											
4.5-4.9	0											
5.0-5.4	1	1										
5.5-5.9	0											
6.0-6.4	1		1									
6.5-6.9	0											
7.0-7.4	12		9	3								
7.5-7.9	12		9	3								
8.0-8.4	8		5	3								
8.5-8.9	12		8	4								
9.0-9.4	11		2	7	2							
9.5-9.9	14			8	6							
10.0-10.4	4			3	1							
10.5-10.9	8			6	1	1						
11.0-11.4	5			1	1	1		1		1		
11.5-11.9	5			1	1	1		1		1		
12.0-12.9	1						1					
13.0-13.9	0											
14.0-14.9	0											
15.0-15.9	0											
16.0-16.9	0											
17.0-17.9	0											
Total	94	1	34	39	12	3	1	2		2		
Aged subsample												
Mean length		5.4	7.9	9.5	10.0	11.1	12.0	11.8		11.0		
SE			0.1	0.2	0.2	0.4		0.1				
Min length		5.4	6.1	7.1	9.3	10.6	12.0	11.7		11.0		
Max length		5.4	9.3	11.7	11.5	11.8	12.0	11.8		11.0		
N		1.0	27.0	35.0	12.0	3.0	1.0	2.0		1.0		

Table 39. Mean length at age of female and male yellow perch captured with 24 gill nets in Lake Pepin, 10-14 October, 2010.

	Mean Length	
Age	Female	Male
1	8.4	7.7
2	10.0	8.8
3	10.3	9.8
4	11.8	10.8
5	12.0	11.8
6		
7		
8		11.0

Table 40. Index of abundance of age 1, 2, and 3 sauger from original 20 gill net sites in Lake Pepin.
Note: Index calculated by dividing catch at age (x) by mean catch of age (x).

		Catch			Index of abundance		
Year	Total catch	Age 1	Age 2	Age 3	Age 1	Age 2	Age 3
1965	388	52	169	112	0.42	0.92	0.80
1966	368	68	63	141	0.55	0.34	1.00
1967	362	119	157	35	0.96	0.85	0.25
1968	760	45	346	315	0.36	1.88	2.24
1969	1253	117	184	757	0.95	1.00	5.38
1970	873	271	86	172	2.20	0.47	1.22
1971	952	262	404	83	2.12	2.19	0.59
1972	807	170	294	229	1.38	1.60	1.63
1973	869	148	341	253	1.20	1.85	1.80
1974	1005	432	243	182	3.50	1.32	1.29
1975	580	53	326	118	0.43	1.77	0.84
1976	771	166	162	300	1.35	0.88	2.13
1977	649	186	189	53	1.51	1.03	0.38
1978	568	35	318	123	0.28	1.73	0.87
1979	234	39	29	117	0.32	0.16	0.83
1980	598	184	126	99	1.49	0.68	0.70
1981	523	202	145	71	1.64	0.79	0.50
1982	465	83	63	213	0.67	0.34	1.51
1983	359	13	207	61	0.11	1.12	0.43
1984	561	120	173	125	0.97	0.94	0.89
1985	254	72	50	48	0.58	0.27	0.34
1986	496	108	162	95	0.88	0.88	0.67
1987	444	51	155	126	0.41	0.84	0.89
1988	514	231	138	92	1.87	0.75	0.65
1989	493	15	410	32	0.12	2.23	0.23
1990	611	76	84	411	0.62	0.46	2.92
1991*	366	117	98	24	0.95	0.53	0.17
1992	302	19	93	50	0.15	0.51	0.36
1993*	262	30	74	75	0.24	0.40	0.53
1994	238	29	107	29	0.24	0.58	0.21
1995	521	123	54	166	1.00	0.29	1.18
1996	421	46	157	55	0.37	0.85	0.39
1997	328	64	71	113	0.52	0.39	0.80
1998	337	10	179	231	0.08	0.97	1.64
1999	324	110	118	52	0.89	0.64	0.37
2000	749	55	492	126	0.45	2.67	0.89
2001[a]	820	167	76	420	1.35	0.41	2.98
2002	442	106	179	29	0.86	0.97	0.21
2003	776	183	328	124	1.48	1.78	0.88
2004	475	131	192	92	1.06	1.04	0.65
2005	556	187	206	79	1.52	1.12	0.56
2006	638	96	244	131	0.78	1.32	0.93
2007	489	195	87	85	1.58	0.47	0.60
2008	544	194	192	61	1.57	1.04	0.43
2009	546	159	263	62	1.29	1.43	0.44
2010	738	335	237	109	2.72	1.29	0.77
Mean	**557.2**	**123.3**	**184.2**	**140.8**	**1.00**	**1.00**	**1.00**
SD	**223.8**	**89.3**	**107.9**	**131.4**	**0.7**	**0.6**	**0.9**
CV	**0.40**	**0.72**	**0.59**	**0.93**	**0.72**	**0.59**	**0.93**

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

Table 41. Index of abundance of age 1, 2, and 3 walleye from original 20 gill net sites in Lake Pepin.
Note: Index calculated by dividing catch at age (x) by mean catch of age (x).

		Catch			Index of abundance		
Year	Total catch	Age 1	Age 2	Age 3	Age 1	Age 2	Age 3
1965	53	11	16	15	0.39	0.74	1.13
1966	69	40	16	5	1.44	0.74	0.38
1967	72	17	37	9	0.61	1.70	0.68
1968	66	14	36	10	0.50	1.66	0.75
1969	75	6	17	41	0.22	0.78	3.09
1970	80	28	6	17	1.00	0.28	1.28
1971	71	22	26	5	0.79	1.20	0.38
1972	55	24	13	14	0.86	0.60	1.05
1973	73	40	20	1	1.44	0.92	0.08
1974	54	34	13	6	1.22	0.60	0.45
1975	47	13	16	9	0.47	0.74	0.68
1976	62	29	7	15	1.04	0.32	1.13
1977	60	18	25	7	0.65	1.15	0.53
1978	31	3	13	9	0.11	0.60	0.68
1979	68	17	17	21	0.61	0.78	1.58
1980	68	39	5	8	1.40	0.23	0.60
1981	61	36	16	4	1.29	0.74	0.30
1982	63	11	33	14	0.39	1.52	1.05
1983	54	16	14	15	0.57	0.64	1.13
1984	42	20	8	5	0.72	0.37	0.38
1985	33	7	5	6	0.25	0.23	0.45
1986	24	4	8	4	0.14	0.37	0.30
1987	88	38	29	11	1.36	1.34	0.83
1988	87	48	23	11	1.72	1.06	0.83
1989	51	3	40	2	0.11	1.84	0.15
1990	43	10	3	25	0.36	0.14	1.88
1991*	46	9	23	1	0.32	1.06	0.08
1992	47	13	10	8	0.47	0.46	0.60
1993*	29	8	8	8	0.29	0.37	0.60
1994	34	1	16	13	0.04	0.74	0.98
1995	113	62	12	16	2.22	0.55	1.20
1996	91	18	56	1	0.65	2.58	0.08
1997	62	10	15	27	0.36	0.69	2.03
1998	142	50	21	30	1.79	0.97	2.26
1999	51	19	18	8	0.68	0.83	0.60
2000	70	9	31	18	0.32	1.43	1.36
2001[a]	180	38	12	51	1.36	0.55	3.84
2002	189	137	17	11	4.92	0.78	0.83
2003	149	28	95	9	1.00	4.37	0.68
2004	158	72	30	34	2.58	1.38	2.56
2005	93	23	43	12	0.83	1.98	0.90
2006	151	37	24	32	1.33	1.11	2.41
2007	129	77	21	6	2.76	0.97	0.45
2008	98	40	47	7	1.44	2.16	0.53
2009	90	16	31	19	0.57	1.43	1.43
2010	93	67	7	11	2.40	0.32	0.83
Mean	**77.5**	**27.9**	**21.7**	**13.3**	**1.0**	**1.0**	**1.0**
SD	**39.8**	**25.0**	**16.3**	**10.7**	**0.9**	**0.7**	**0.8**
CV	**0.51**	**0.90**	**0.75**	**0.80**	**0.90**	**0.75**	**0.80**

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

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Area F317
Study 2
Job 4
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MINNESOTA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF FISH AND WILDLIFE

Completion Report

Large Lake Monitoring Program Annual Completion Report: Lake Pepin

2010

by

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Approved by: _____ April 8, 2011
Area Fisheries Supervisor — Date

Approved by: _____ 5-12-11
Regional Fisheries Manager — Date