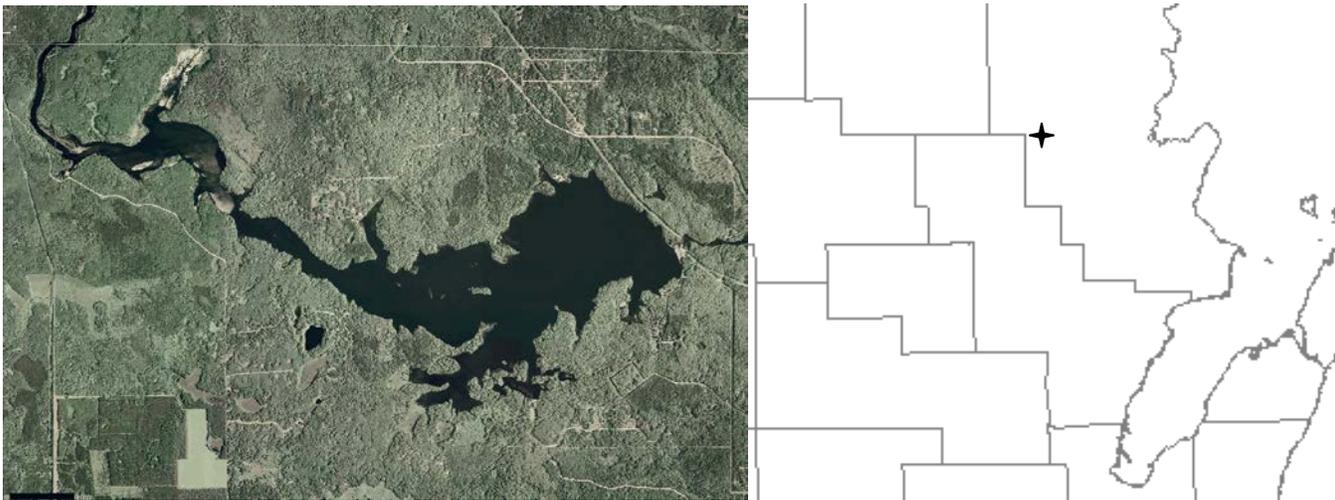


CALDRON FALLS RESERVOIR
Marinette County
2012 Fish Management Report

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Caldron Falls Reservoir - Marinette County, Wisconsin
2012 Fish Management Report

Christopher C. Long, Fisheries Biologist, Date

Michael Donofrio, Fisheries Supervisor, Date

Randy Schumacher, Eastern District Supervisor, Date

Steve Hewett, Bureau of Fisheries Management, Date

SUMMARY

Lake and location:

Caldron Falls Reservoir, Marinette County, T33N R18E Sec 10

Physical / chemical attributes (Wisconsin DNR, 1975):

Surface acres: 1,018

Maximum depth (ft): 40

Average depth (ft): 15

Shoreline length (mi): 22.6

Lake type: Impoundment on the Peshtigo River

Basic water chemistry: hard water, slightly alkaline, stained water of moderate transparency.

Littoral substrate: 60% sand, 15% muck, 15% gravel, and 10% rock.

Aquatic vegetation: Moderate amount of submergent vegetation is found in many areas of the lake.

Aquatic invasive species: Eurasian water milfoil, a non-native invasive plant, is present in most shallow coves and along wind-swept shorelines.

Other features: A majority of the shoreline is upland hardwoods and conifers with limited areas of coniferous bog wetland. Most of the shoreline is publically owned and lies within the Peshtigo River State Forest and Governor Thompson State Park.

Purpose of survey:

Determine the current status of fishery.

Surveys:

WDNR Survey ID: 327076207 – Late spring bass and panfish (5/30/2012)

WDNR Survey ID: 327076209 – Fall juvenile walleye/muskellunge (10/15/12 – 10/16/2012)

WDNR Survey ID: 325945973 – Spring fyke netting (3/27/2012 – 4/9/2012)

Fishery:

The Caldron Falls fishery is comprised of panfish species (bluegill, yellow perch, black crappie, pumpkinseed, and rock bass) and gamefish species (walleye, largemouth bass, muskellunge and northern pike).

EXECUTIVE SUMMARY

- At 1,018 acres, Caldron Falls offers a variety of recreational opportunities in addition to fishing and has become a popular destination because of its natural, scenic beauty and undeveloped shoreline.
- The WDNR has been stocking small fingerling walleye every other year (odd numbered years) at various rates (fish/acre) since the mid 1990's. Additionally, WDNR has consistently been stocking muskellunge (1fish/acre) since 1980.
- Overall, 8,183 fish representing 15 species and 1 hybrid were collected during the 2012 sampling season (Table 4). The five most abundant species collected by number were bluegill (56%), black crappie (14%), yellow perch (11%), pumpkinseed (7%) and rock bass (4%).
- A total of 4,581 bluegill was collected that ranged in length from 2.7 to 7.5 in and averaged 5.5 in. Thirty percent of the bluegill collected were 6 inches or greater and considered harvestable. Growth was average up to age 5 and below average at older ages.
- During the survey, 1,163 black crappie were collected that ranged in length from 4.6 to 13.2 in and averaged 7.1 in. Thirty-two percent of the crappie aged were age 7 and averaged 8.1 in. Crappie growth was below average compared to the mean length at age for northeast Wisconsin.
- One hundred sixty-four largemouth bass were collected during the 2012 survey. Bass ranged in length from 4.2 to 20.5 in and averaged 12.8 in. Forty-three percent of largemouth bass collected were over the 14-in minimum length limit. Bass are reaching legal size between ages 5 and 6.
- Overall, 153 walleye were collected during both electrofishing and fyke netting (0.7/NN). Walleye ranged in length from 7.5 to 29.9 in and averaged 23.2 in across all samples. Walleye were reaching legal size (15 in) by age 4. The Schumacher-Eschmeyer fyke net population estimate for walleye 12 inches and larger was 654 or approximately 0.6 walleye/acre.
- One hundred muskellunge were collected in 2012. Muskellunge ranged in length from 11.3 to 46.7 in. Age-7 and age-8 muskie averaged 33.5 and 34.8 in, respectively.
- Caldron Falls Reservoir is drawn down 6 to 8 feet annually each spring to accommodate spring runoff. In 2012, the reservoir was not drawn down due to the lack of snow and projected precipitation. Therefore, the reservoir was at full pool during the entire fisheries survey which substantially increased the amount of shallow-water habitat. As a result, comparisons between relative abundance, CPUE and overall abundance may not be truly reflective of changes in the fishery.
- It is recommended that large fingerling walleye be stocked annually at a rate of 5 / acre (5,090 total). Increasing the frequency of walleye stocking and the size at stocking will provide a better fishing opportunity and consistent year class strength. Additionally, this strategy (increasing stocking frequency and size at stocking) should provide increased predation on panfish.

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INTRODUCTION

Caldron Falls Reservoir is located in west-central Marinette County. At 1,018 acres, the lake offers a variety of recreational opportunities in addition to fishing and has become a popular destination because of its natural, scenic beauty and undeveloped shoreline. There are multiple boat landings around the lake including within Governor Thompson State Park.

Caldron Falls is located within the Ceded Territory (22,400 square miles of northern Wisconsin that was ceded to the United States by the Lake Superior Chippewa Tribes in 1837 and 1842) and therefore eligible for tribal, off-reservation spearing harvest. No fish were harvested during the 2012 season.

The Wisconsin Department of Natural Resources (WDNR) has been stocking small fingerling walleye every other year (odd numbered years) at various rates (fish/acre) since the mid 1990's (Table 1). Additionally, WDNR has consistently been stocking muskellunge since 1980. Recently, local clubs have also supplement the WDNR's walleye stocking by stocking fish in even numbered years.

The last fisheries survey of Caldron Falls was conducted in 2006 (Hasz 2008). The survey indicated healthy populations of panfish and gamefish. Compared to previous survey (1991 and 2000), the 2006 survey reported a decline in walleye density (fish / acre) and an increase in northern pike density (Hasz 2008). It was also noted that the contribution of stocked muskellunge had declined from 33 to 25% between 1991 and 2006, respectively.

The goal of the 2012 comprehensive fisheries survey was to assess the status of the fishery by characterizing gamefish populations based on relative abundance, proportional stock density (PSD), relative stock density (RSD), catch per unit effort (CPUE) and mean length at capture (age). Comparisons to the 2006 survey were made where applicable.

METHODS

Data collection:

Standard fyke nets (3-foot hoop, $\frac{3}{4}$ -bar, 1.5-inch stretch), mini-fyke nets ($\frac{1}{4}$ -inch stretch with turtle exclusion) and a standard Wisconsin Department of Natural Resources (WDNR) Direct Current electrofishing boat were used to collect fish on Caldron Falls Reservoir. Sampling gear, effort, date, and target species for the survey are listed in Table 2. All fish collected were measured to the nearest 0.1 inch total length (TL) and separated into half-inch groups (X.0-X.4 for

inch group and X.5-X.9 for half-inch group). A sub-sample of scales or dorsal spines was collected for age and growth analysis from all gamefish. Aging structures (scales or spines) were collected from 5 non young-of-the-year (YOY) per half inch group. If gender could be determined, structures from 5 fish per sex were collected per half inch group. Aging structures for panfish and nongame fish consisted of 10 samples per half inch group when gender could not be established. Ages were assigned to each fish using standard WDNR procedures. Passive integrated transponders (PIT tags) were implanted in all muskellunge collected.

Data analysis:

Relative abundance was calculated as the percentage each species represented from the total sample (i.e. 22 fish of a single species from a sample of 100 total fish = 22% relative abundance). Catch per unit effort (CPUE) was calculated as catch by gear divided by sampling effort for each species collected. Length frequency distributions were tabulated for dominant gamefish and consisted of combined April and May electrofishing samples as well as fyke net data. Proportional stock density (PSD) and relative stock density for preferred length fish (RSD^P) were calculated for dominant gamefish (Anderson and Neumann 1996). Preferred lengths of various gamefish have a minimum length between 45 and 55% of the world record length for that species (Anderson and Neumann 1996). Stock, quality, and preferred lengths were used as proposed by Gabelhouse (1984). Mean length at capture data was calculated for dominant gamefish and compared to the average of mean length at age for northeast Wisconsin. Population estimates for walleye, northern pike, largemouth bass, and smallmouth bass were obtained during the spring fyke net survey by giving each captured fish a top caudal fin clip. Marks (fin clips) were noted in subsequent collections until the survey was complete. The Schumacher-Eschmeyer formulas for multiple census were used to generate population estimates (Schneider 1998).

RESULTS

Overall, 8,183 fish representing 15 species and 1 hybrid were collected during the 2012 sampling season (Table 4). The five most abundant species collected by number were bluegill (56%), black crappie (14%), yellow perch (11%), pumpkinseed (7%) and rock bass (4%).

A total of 4,581 bluegill was collected which accounted for 56% of the fish collected (Table 4). Bluegill ranged in length from 2.7 to 7.5 in and averaged 5.5 in (Figure 1). Thirty percent of the bluegill collected were 6 in (inches) or greater and considered harvestable. Bluegill

PSD was 33 and within the desirable range for a balanced population but RSD^P was 0 and below the desirable range of 5 to 20 (Table 3). Electrofishing CPUE was 51.6/h and fyke net CPUE was 28.3/NN (Tables 5 & 6). A subsample of 41 bluegill was aged from 2 to 7 years old. Twenty-five percent of bluegill were age 3 and averaged 4.2 in. Growth was average up to age 5 and below average at age 6 and age 7 compared to the mean length at age of bluegill in northeast Wisconsin (Figure 2). Successful reproduction and recruitment of bluegill was evident.

During the survey, 1,163 black crappie were collected yielding an electrofishing CPUE of 3.4/h and a fyke net CPUE of 7.5/NN (Tables 5 & 6). Crappie ranged in length from 4.6 to 13.2 in and averaged 7.1 in (Figure 3). Black crappie PSD was 7 and RSD^P was 3. A subsample of 63 crappie was aged from 2 to 11 years. Thirty-two percent of the crappie aged were age 7 and averaged 8.1 in. Crappie growth was below average compared to the mean length at age for northeast Wisconsin (Figure 4).

Yellow perch made up 11% of the fish collected totaling 856 fish (Table 4). Perch ranged in length from 4.2 to 9.5 in and averaged 6.0 in (Figure 5). Electrofishing CPUE was 16.6/h and fyke net CPUE was 5.1/NN (Tables 5 & 6). A subsample of 58 yellow perch was aged from 3 to 8 years old. Forty-one percent of the perch aged were age 4 and averaged 6.0 in and 28% were age 5 and averaged 7.7 in. Growth was slightly below average compared to the mean length at age of yellow perch in northeast Wisconsin (Figure 6). Successful reproduction and recruitment of yellow perch was also evident.

A total of 356 rock bass was collected and ranged in length from 3.5 to 9.9 in and averaged 6.6 in (Figure 7). Electrofishing CPUE was 3.6/h and fyke net CPUE was 2.2/NN (Tables 5 & 6). Rock bass PSD was 44 and RSD^P was 7. A subsample of 47 rock bass was aged from 3 to 10 years old. Age-4 rock bass averaged 5.3 inches and accounted for 36% of the rock bass aged. Overall, rock bass growth remained unchanged since 2006. The length frequency suggests that the rock bass population is well balanced in terms of age and size structure.

One hundred sixty-four largemouth bass were collected during the 2012 survey (Table 4). Electrofishing yielded a CPUE of 25.5/h and fyke netting a CPUE of 0.3/NN (Tables 5 & 6). Bass ranged in length from 4.2 to 20.5 in and averaged 12.8 in (Figure 8). Largemouth bass PSD was 55 and RSD^P was 29. Bass PSD and RSD^P are within the desirable range for a balanced population (Table 3). Forty-three percent of largemouth bass collected were over the 14-in minimum length limit. A subsample of 70 largemouth bass was aged from 1 to 13 years old.

Largemouth bass growth was average at all ages compared to the average mean length at age for bass in northeast Wisconsin (Figure 9). Bass are reaching legal size (14 in) between ages 5 and 6. Successful reproduction and recruitment of largemouth bass was evident.

Northern pike accounted for 2% of the fish collected in 2012 (Table 4). A total of 155 pike was collected and ranged in length from 14.0 to 33.5 in, while averaging 21.8 in (Figure 10). Northern pike electrofishing CPUE in was 0.5/h and fyke netting CPUE was 0.9/NN (Tables 5 & 6). Pike PSD was 53 and RSD^P was 7. A subsample of 134 northern pike was aged from 2 to 8 years old (Figure 11). Age-3 pike averaged 19.6 in and represented 35% of the sample and age-4 pike averaged 22.7 in and represented 22% of the pike aged. The growth of northern pike was average compared to the mean length at age for northeast Wisconsin (Figure 11). The Schumacher-Eschmeyer fyke net population estimate was 1,003 northern pike or approximately 1.0 pike/acre.

Overall, 153 walleye were collected during both electrofishing and fyke netting (0.7/NN). This does not include recaptured fish. Electrofishing for walleye was conducted in May and October with CPUE's of 6.4/h and 0.3/h, respectively. Walleye ranged in length from 7.5 to 29.9 in and averaged 23.2 in across all samples (Figure 12). Walleye PSD and RSD^P from the spring fyke net sample was 100 and 88, respectively. Walleye PSD was well above the desirable range of 30 to 60 (Table 3). A subsample of 129 walleye from fyke nets was aged from 2 to 19 years old. Walleye were reaching legal size (15 in) by age 4 (Figure 13). Compared to the average length at age for northeast Wisconsin, walleye growth was below average at ages 2, 3 and 4 but average at age 5 and older (Figure 13). The Schumacher-Eschmeyer fyke net population estimate for walleye 12 inches and larger was 654 or approximately 0.6 walleye/acre.

One hundred muskellunge were collected in 2012. Muskellunge ranged in length from 11.3 to 46.7 in (Figure 14). Seventy-two of the 100 muskellunge collected were aged. Ages ranged from 1 to 15 years old (Figure 15). Age-7 and age-8 muskie averaged 33.5 and 34.8 in, respectively. Muskellunge were reaching the 40-inch minimum length between ages 11 and 12. Overall, muskellunge growth was slightly below average compared to other lakes in northeast Wisconsin (Figure 15).

Additionally, smallmouth bass, hybrid sunfish, pumpkinseed, bullhead species (yellow, black and brown), and white sucker were also collected during the 2012 survey and accounted for approximately 1.0% of all fish collected (Table 4).

DISCUSSION

While Caldron Falls is moderately fertile, the fishery offers anglers a wide variety of fishing opportunities. Good populations of panfish (bluegill, yellow perch, black crappie and rock bass) and gamefish (northern pike, walleye, largemouth bass and muskellunge) are present.

Caldron Falls Reservoir is drawn down 6 to 8 feet annually each spring to accommodate snow melt and projected spring runoff. In 2012, the reservoir was not drawn down due to the lack of snow and projected precipitation. Therefore, the reservoir was at full pool during the entire fisheries survey (spring, summer and fall) which substantially increased the amount of shallow-water habitat available during the 2012 survey compared to the 2006 fisheries survey. As a result, comparisons between relative abundance, CPUE and overall abundance may not be truly reflective of changes in the fishery.

Bluegill was the most abundant species collected in both 2006 and 2012 (Table 7) however, PSD declined between years from 42 to 33, respectively. The decline in PSD was simply the result of collecting more fish between 3 and 6 inches (Figure 1). Bluegill growth, while below average compared to other lakes in northeast Wisconsin, remained relatively unchanged between surveys.

Black crappie increased in abundance between the 2006 and 2012 surveys (Figure 3) and were the second most abundant species collected in 2012 (Table 7). Crappie are cyclic spawners meaning that successful reproduction and recruitment can be highly variable or unpredictable from year to year. The 2012 survey indicated a strong year class of crappie that are around 7 inches in length and 5 years old (Figures 3 & 4). This is the same year class represented in 2006 that was around 3 inches long (Figure 3). Good crappie fishing should continue for the next several years but due to their cyclic-spawning nature, continued successful spawning and recruitment will be necessary. Unfortunately, below average growth will prevent many fish from reaching larger sizes.

Yellow perch comprised 11% of fish collected in 2012 and 12% 2006 (Table 7) and the size structure of perch was about the same between surveys (Figure 5). The abundance of perch declines dramatically above 6.0 inches. It is unclear if this decline is due to predation or angler

harvest. Good reproduction and recruitment of yellow perch was evident. Perch growth was average compared to other northeast Wisconsin lakes but fluctuated at older ages (Figure 6).

Largemouth bass are the most abundant predator species in Caldron Falls Reservoir. Since the 2006 survey, the relative abundance of bass decreased from 3% to 2% in 2012 (Table 7). Additionally, PSD and RSD^P declined between surveys. In 2006 a large number of bass between 10 and 12 inches inflated bass PSD whereas in 2012, fewer bass were collected. Overall, the number of largemouth bass collected over the 14-inch minimum length limit remained unchanged. Good reproduction and recruitment of largemouth bass is sustaining the population. Bass fishing on Caldron Falls should continue to provide the same consistent opportunity that it has in previous years.

Walleye are a popular sportfish in Wisconsin. Small fingerling walleye have been stocked by WDNR in Caldron Falls in alternate years since the mid-1990's (Table 1). Private stockings of large fingerling walleye have also been permitted. Stocking efforts have failed to produce a quality walleye fishery. Walleye density declined between 2006 and 2012 from 0.8 to 0.6 walleye/acre, respectively. Currently the population is dominated by large, old individuals (Figures 12 & 13). Due to the infertility of Caldron Falls, walleye growth is below average at most ages compared to other lakes in northeast Wisconsin (Figure 13).

Only 100 muskellunge were collected during the 2012 survey which was down considerably from the 227 fish collected during the 2006 survey. Caldron Falls is drawn down annually (mid-March) to accommodate for runoff. The amount of snowpack and moisture predictions (precipitation forecast) dictates how far the reservoir is drawn down (typically 8 feet). In 2012 no drawdown occurred. The increased littoral (shallow water) habitat available to muskellunge during the 2012 survey is the only plausible explanation for the decreased collection of muskellunge between surveys.

The relative abundance of northern pike decreased from 5 to 2% between 2006 and 2012, respectively. However, population estimates determined that the density of pike was the same between survey years (1.0/acre). Northern pike growth appeared to decline between 2006 and 2012 (Figure 11). However, pike are extremely difficult to age using scales. The discrepancy between years can likely be attributed to different readers. A more consistent, non-lethal approach to aging northern pike should be evaluated (fin rays vs. scales).

Blackspot was found in most panfish and gamefish species. Blackspot is a common fish disease/parasite in lakes is caused by a parasite (larval trematode) that burrows into the skin of a fish causing the formation of a black cyst approximately one millimeter in diameter. This parasite has a complex life cycle that requires fish eating birds or mammals, snails, and fish at different stages in order to survive. While not aesthetically pleasing, this parasite is not harmful to humans and fish with blackspot can still be eaten. Skinning panfish filets will remove most of the blackspot and proper preparation will kill any remaining parasites.

CONCLUSIONS & RECOMMENDATIONS

The fact that no drawdown occurred, and the spring of 2012 was unusually warm, diminished the efficiency of spring fyke netting and the overall comparability of data between survey years. Even so, the 2012 fisheries survey of Caldron Falls Reservoir indicated good numbers of gamefish including panfish species such as bluegill, yellow perch, and black crappie and predator species such as largemouth bass, northern pike, and walleye. All species showed good size and age structure and good recruitment. Growth for most species was below average compared to other lakes in northeast Wisconsin.

Walleye have been stocked in alternate years in Caldron Falls since the mid-1990's (Table 1). Stocking small fingerling walleye has produced varied results during that time. It was recommended in 2006 to stock large fingerling walleye (Hasz, 2008). Stocking large fingerling walleye at the rate of 5/acre/year would produce more consistent year class strength and improve the walleye population and fishing opportunities. Caldron Falls would also be a good candidate lake to research the effect of increasing the stocking rate of small fingerling walleye (i.e. from 35/acre to between 50 and 100/acre) on adult densities. Previous reports have also cited that obtaining an accurate population estimate is difficult because a majority of the population is upstream in the riverine portion of the flowage, presumably spawning and unsusceptible to capture. A sampling strategy should be developed to sample this portion of the population to augment the fyke netting sampling.

Stocking of muskellunge in Caldron Falls Reservoir should continue at the rate of 1/acre. Fin clips should also be utilized to identify stocked fish to those that may be the result of natural reproduction. All fish collected during sampling should continue to be tagged with PIT (passive

integrated transponder) tags. Tagging fish with PIT tags will provide data for known age fish in the population making it easier to assess age and growth in future surveys.

Panfish populations (bluegill, black crappie, yellow perch, rock bass) exhibited good abundance but poor growth. The low fertility of Caldron Falls is due to the lack of nutrient inputs and low retention time of the flowage. Panfish growth may improve if additional predators are stocked (or stocked at higher numbers) or angler harvest increases. In theory, reduced panfish abundance would reduce competition, thereby improving growth. However, some sacrifice to predator size structure may be compromised to reach this goal. Therefore, I recommend an annual stocking of large fingerling walleye at a rate of 5 / acre (5,090 total). Increasing the frequency of walleye stocking and the size at stocking will provide a better fishing opportunity and consistent year class strength. Additionally, this strategy (increasing stocking frequency and size at stocking) should provide increased predation on panfish.

The current fishing regulations (Table 8) are adequate to provide quality fishing opportunities. The next comprehensive fisheries survey (fyke netting, spring and fall electrofishing) of Caldron Falls Reservoir is scheduled for 2018 and will focus on the age, growth, abundance, and recruitment of the dominant gamefish. Access to Caldron Falls is adequate; anglers have 5 boat landings to choose from. Control of Eurasian watermilfoil, a non-native species of aquatic vegetation, is recommended in order to reduce the spread to other local lakes. Boaters are reminded to remove all vegetation from their boat and trailer before leaving to limit the spread of this and other invasive species. A map of Caldron Falls can be found at the following internet address; <http://dnr.wi.gov/lakes/maps/DNR/0545400a.pdf>

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APPENDIX I – TABLES

Table 1. Stocking history of Caldron Falls Reservoir from 1980-2011; Marinette County, WI.

Year	Species	Strain	Age Class	Number Stocked	Average Length	Source
1980	MUSKELLUNGE	UNSPECIFIED	FINGERLING	2,000	7.0	DNR
1982	MUSKELLUNGE	UNSPECIFIED	FINGERLING	835	11.0	DNR
1983	MUSKELLUNGE	UNSPECIFIED	FINGERLING	2,227	11.0	DNR
1986	MUSKELLUNGE	UNSPECIFIED	FINGERLING	1,000	13.0	DNR
1987	MUSKELLUNGE	UNSPECIFIED	FINGERLING	3,000	9.0	DNR
1988	MUSKELLUNGE	UNSPECIFIED	FINGERLING	1,000	10.0	DNR
1989	MUSKELLUNGE	UNSPECIFIED	FINGERLING	1,000	11.0	DNR
1990	MUSKELLUNGE	UNSPECIFIED	FINGERLING	1,000	8.0	DNR
1991	MUSKELLUNGE	UNSPECIFIED	FINGERLING	747	12.0	DNR
1992	MUSKELLUNGE	UNSPECIFIED	FINGERLING	1,000	11.0	DNR
1993	MUSKELLUNGE	UNSPECIFIED	FINGERLING	274	10.0	DNR
1993	MUSKELLUNGE	UNSPECIFIED	FINGERLING	730	10.8	DNR
1995	MUSKELLUNGE	UNSPECIFIED	FINGERLING	908	10.8	DNR
1996	MUSKELLUNGE	UNSPECIFIED	FINGERLING	500	10.9	DNR
1999	MUSKELLUNGE	UNSPECIFIED	LARGE FINGERLING	1,000	10.9	DNR
2000	MUSKELLUNGE	UNSPECIFIED	LARGE FINGERLING	850	11.4	DNR
2001	MUSKELLUNGE	UNSPECIFIED	LARGE FINGERLING	1,000	10.6	DNR
2002	MUSKELLUNGE	UNSPECIFIED	LARGE FINGERLING	998	9.9	DNR
2003	MUSKELLUNGE	UNSPECIFIED	LARGE FINGERLING	1,000	10.5	DNR
2004	MUSKELLUNGE	UNSPECIFIED	LARGE FINGERLING	999	10.5	DNR
2005	MUSKELLUNGE	UNSPECIFIED	LARGE FINGERLING	999	11.1	DNR
2006	MUSKELLUNGE	UPPER WISCONSIN R	LARGE FINGERLING	219	10.8	DNR
2007	MUSKELLUNGE	UPPER CHIPPEWA R	LARGE FINGERLING	667	12.4	DNR
2008	MUSKELLUNGE	UPPER WISCONSIN R	LARGE FINGERLING	997	10.3	DNR
2009	MUSKELLUNGE	UPPER WISCONSIN R	LARGE FINGERLING	999	9.1	DNR
2010	MUSKELLUNGE	UPPER WISCONSIN R	LARGE FINGERLING	617	13.2	DNR
2011	MUSKELLUNGE	UPPER WISCONSIN R	LARGE FINGERLING	1,000	9.2	DNR
2012	MUSKELLUNGE	UPPER WISCONSIN R	LARGE FINGERLING	1,000	10.2	DNR
1982	WALLEYE	UNSPECIFIED	FINGERLING	50,000	4.3	DNR
1983	WALLEYE	UNSPECIFIED	FRY	2,000,000	1.0	DNR
1993	WALLEYE	UNSPECIFIED	FINGERLING	7,644	2.4	DNR
1996	WALLEYE	UNSPECIFIED	FINGERLING	18,692	1.6	DNR
1998	WALLEYE	UNSPECIFIED	SMALL FINGERLING	20,000	1.7	DNR
1999	WALLEYE	UNSPECIFIED	SMALL FINGERLING	20,000	1.3	DNR
2001	WALLEYE	UNSPECIFIED	SMALL FINGERLING	30,000	1.6	DNR
2003	WALLEYE	LAKE MICHIGAN	SMALL FINGERLING	20,000	1.3	DNR
2005	WALLEYE	LAKE MICHIGAN	SMALL FINGERLING	24,905	1.4	DNR
2007	WALLEYE	UNSPECIFIED	LARGE FINGERLING	2,940	8.0	PRIVATE
2009	WALLEYE	LAKE MICHIGAN	SMALL FINGERLING	16,612	1.7	DNR
2009	WALLEYE	MISSISSIPPI HEADWATERS	SMALL FINGERLING	5,311	1.7	DNR
2010	WALLEYE	UNSPECIFIED	LARGE FINGERLING	1,865	6.5	PRIVATE
2011	WALLEYE	LAKE MICHIGAN	SMALL FINGERLING	35,360	1.8	DNR

Table 2. Sampling gear, date, target species, sampling effort, and location (distance) for 2012 fisheries survey on Caldron Falls Reservoir in Marinette County, WI.

Gear	Date	Target Species	Sampling Effort hours (h) or net night (NN)	Shoreline Distance (mi)
Fyke net	March 28 - April 9	All fish	154 NN	*
Electrofishing	18-Apr	Walleye, Muskellunge	5.0 h	10.1
Electrofishing	30-May Station A	All fish	0.3 h	0.5
		Gamefish	0.8 h	1.5
Electrofishing	30-May Station B	All fish	0.3 h	0.5
		Gamefish	0.8 h	1.5
Electrofishing	30-May Station C	All fish	0.3 h	0.5
		Gamefish	0.8 h	1.5
Electrofishing	30-May Station D	All fish	0.3 h	0.5
		Gamefish	0.8 h	1.5
Electrofishing	15-Oct	YOY Walleye YOY Muskellunge	2.0 h	4.0
Electrofishing	16-Oct	YOY Walleye YOY Muskellunge	1.9 h	4.0

GPS coordinates for sampling locations located in APPENDIX III.

Table 3. Proposed length categories for various fish species. Measurements are total lengths for each category in inches. Updated from Anderson and Neumann (1996), Bister et al. (2000), Hyatt and Hubert (2001).

Species	PSD	RSD-P	Stock	Quality	Preferred	Memorable	Trophy
Black crappie			5	8	10	12	15
Bluegill	20 - 40	5 - 20*	3	6	8	10	12
Brown bullhead			5	8	11	14	17
Largemouth bass	40 - 70	10 - 40*	8	12	15	20	25
Muskellunge	30 - 60		20	30	38	42	50
Northern pike	30 - 60		14	21	28	34	44
Pumpkinseed	20 - 40		3	6	8	10	12
Rock bass	20 - 60		4	7	9	11	13
Smallmouth bass	30 - 60		7	11	14	17	20
Walleye	30 - 60		10	15	20	25	30
Yellow perch	30 - 50		5	8	10	12	15
Yellow bullhead			4	7	9	11	14

*Range based on management strategy for balanced populations.

Table 4. Number, relative abundance (%), and length range (in) of fishes collected in 2012 from Caldron Falls Reservoir in Marinette County, WI.

SPECIES AND RELATIVE ABUNDANCE OF FISHES COLLECTED BY NUMBER			
*COMMON NAME OF FISH	NUMBER	PERCENT	LENGTH RANGE (inches)
Bluegill	4581	56.0%	2.7 - 7.5
Black crappie	1163	14.2%	4.6 - 13.2
Yellow perch	856	10.5%	4.2 - 9.5
Pumpkinseed	557	6.8%	3.7 - 8.2
Rock bass	356	4.4%	3.5 - 9.9
Largemouth bass	164	2.0%	4.2 - 20.5
Northern pike	155	1.9%	14.0 - 33.5
Walleye	153	1.9%	7.5 - 29.9
Muskellunge	100	1.2%	11.3 - 46.7
Bluegill X Pumpkinseed	54	0.7%	4.0 - 7.4
Smallmouth bass	15	0.2%	6.5 - 17.8
Yellow bullhead	13	0.2%	7.0 - 12.2
Golden shiner	9	0.1%	6.2 - 7.1
White sucker	3	< 0.1%	13.5 - 18.6
Black bullhead	2	< 0.1%	7.8 - 7.9
Brown bullhead	2	< 0.1%	7.7 - 13.2
Total	8,183		

* Common names of fishes recognized by the American Fisheries Society.

Table 5. Comparison of spring fyke netting data between 2006 and 2012 collected from Caldron Falls Reservoir in Marinette County, WI.

Species	2012 Fyke Netting (154*)		2006 Fyke Netting (variable*)		
	Total Catch	Mean Catch per net night	Total Catch	Mean Catch per net night	(NN*)
Bluegill	4354	28.3	4824	62.6	77
Black crappie	1148	7.5	241	2.5	97
Yellow perch	783	5.1	873	11.2	78
Pumpkinseed	511	3.3	594	7.7	77
Rock bass	340	2.2	1284	16.7	77
Largemouth bass	52	0.3	55	0.4	127
Northern pike	131	0.9	469	3.7	127
Walleye	114	0.7	135	1.1	127
Muskellunge	62	0.4	180	1.4	127
Smallmouth bass	9	0.1	38	0.3	127

* Sampling effort in net nights for each corresponding year.

Table 6. Seasonal electrofishing summary between 2006 and 2012 surveys on Caldron Falls Reservoir, Marinette County, WI.

Species	Spring electrofishing						Summer electrofishing						Fall electrofishing					
	2012 April			2006 April			2012 May			* 2006 May/June			2012 October			2005 October		
	Total Catch	CPUE / hour	CPUE / mile	Total Catch	CPUE / hour	CPUE / mile	Total Catch	CPUE / hour	CPUE / mile	Total Catch	CPUE / hour	CPUE / mile	Total Catch	CPUE / hour	CPUE / mile	Total Catch	CPUE / hour	CPUE / mile
Bluegill							227	51.6	113.5							492	149.1	328.0
Yellow perch							73	16.6	36.5							346	104.8	230.7
Northern pike	22	4.4	2.2	4	3.1	1.8	2	0.5	0.3	8	1.3	0.6				15	4.5	2.5
Black crappie							15	3.4	7.5							172	52.1	114.7
Walleye	32	6.4	3.2	9	6.9	4.1	6	1.4	0.8	23	3.6	1.8	1	0.3	0.1	13	3.9	2.2
Largemouth bass				13	10.0	5.9	112	25.5	14.0	156	24.5	12.1				89	27.0	14.8
Pumpkinseed							46	10.5	23.0							13	3.9	8.7
Smallmouth bass				1	0.8	0.5	6	1.4	0.8	10	1.6	0.8				1	0.3	0.2
Rock Bass							16	3.6	8.0							21	6.4	14.0
Muskellunge	14	2.8	1.4	7	5.4	3.2	3	0.7	0.4	15	2.4	1.2	21	5.4	2.6	25	7.6	4.2

* Electrofishing surveys combined from May 22nd, 2006 and June 6th, 2006

Table 7. Comparison of species relative abundance between 2006 and 2012 surveys on Caldron Falls Reservoir, Marinette County, WI.

2012			2006		
Species	No.	%	Species	No.	%
Bluegill	4581	56.0%	Bluegill	5316	52.0%
Black crappie	1163	14.2%	Rock bass	1305	12.8%
Yellow perch	856	10.5%	Yellow perch	1221	11.9%
Pumpkinseed	557	6.8%	Pumpkinseed	607	5.9%
Rock bass	356	4.4%	Northern pike	496	4.9%
Largemouth bass	164	2.0%	Black crappie	413	4.0%
Northern pike	155	1.9%	Largemouth bass	313	3.1%
Walleye	153	1.9%	Muskellunge	227	2.2%
Muskellunge	100	1.2%	Walleye	180	1.8%
Bluegill X Pumpkinseed	54	0.7%	Smallmouth bass	50	0.5%
Smallmouth bass	15	0.2%	Common shiner	29	0.3%
Yellow bullhead	13	0.2%	Golden Shiner	28	0.3%
Golden shiner	9	0.1%	Yellow bullhead	24	0.2%
White sucker	3	< 0.1%	Black bullhead	7	0.1%
Black bullhead	2	< 0.1%	Northern hogsucker	4	< 0.1%
Brown bullhead	2	< 0.1%	Bluntnose minnow	3	< 0.1%
			White sucker	2	< 0.1%
			Bluegill X Pumpkinseed	1	< 0.1%
Total	8,183		Total	10,226	

Table 8. Current fishing regulations for Caldron Falls Reservoir, Marinette County, WI.

Species	Fishing Season	Daily Limit	Minimum Length
Largemouth bass Smallmouth bass	1st Saturday in May - June 18	0	Catch and release
Largemouth bass Smallmouth bass	June 19 - 1st Sunday in March	5 in total	14 inches
Northern pike	1st Saturday in May - 1st Sunday in March	5	None
Muskellunge	Last Saturday in May - November 30th	1	40 inches
Walleye	1st Saturday in May - 1st Sunday in March	variable*	15 inches
Panfish (bluegill, pumpkinseed, crappie, and yellow perch)	Open all year	25 in total	None
Bullheads	Open all year	None	None
Rock bass	Open all year	None	None
Trout species	1st Sunday in May - 1st Saturday in March	5 in total	7 inches

* Daily bag limit adjusted annually based on tribal declarations.

APPENDIX II – FIGURES

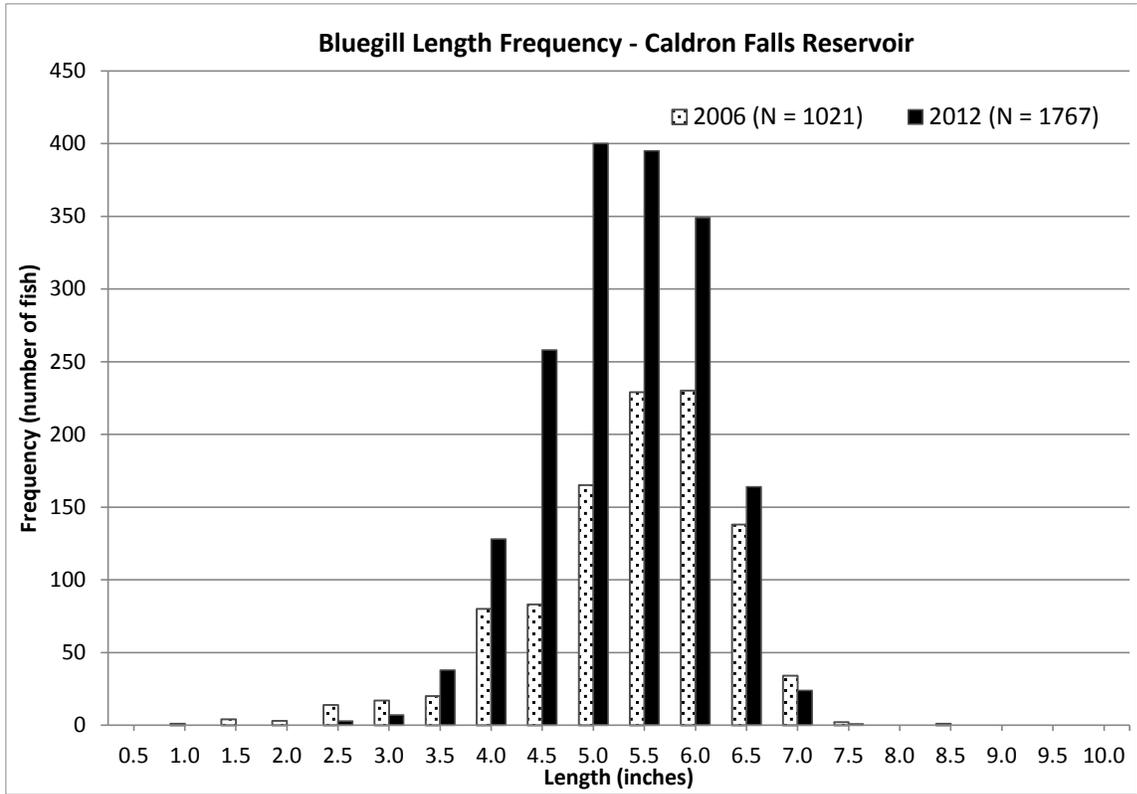


Figure 1. Bluegill length frequency from 2006 and 2012 fisheries surveys at Caldron Falls Reservoir, Marinette County, WI.

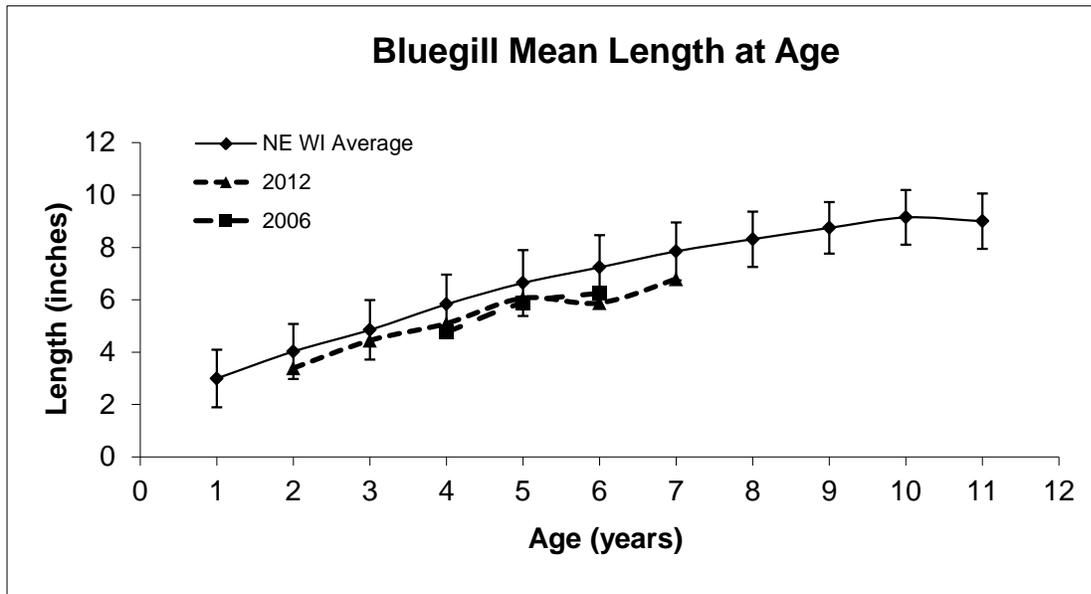


Figure 2. Bluegill mean length at age comparison from Caldron Falls Reservoir; Marinette County, WI.

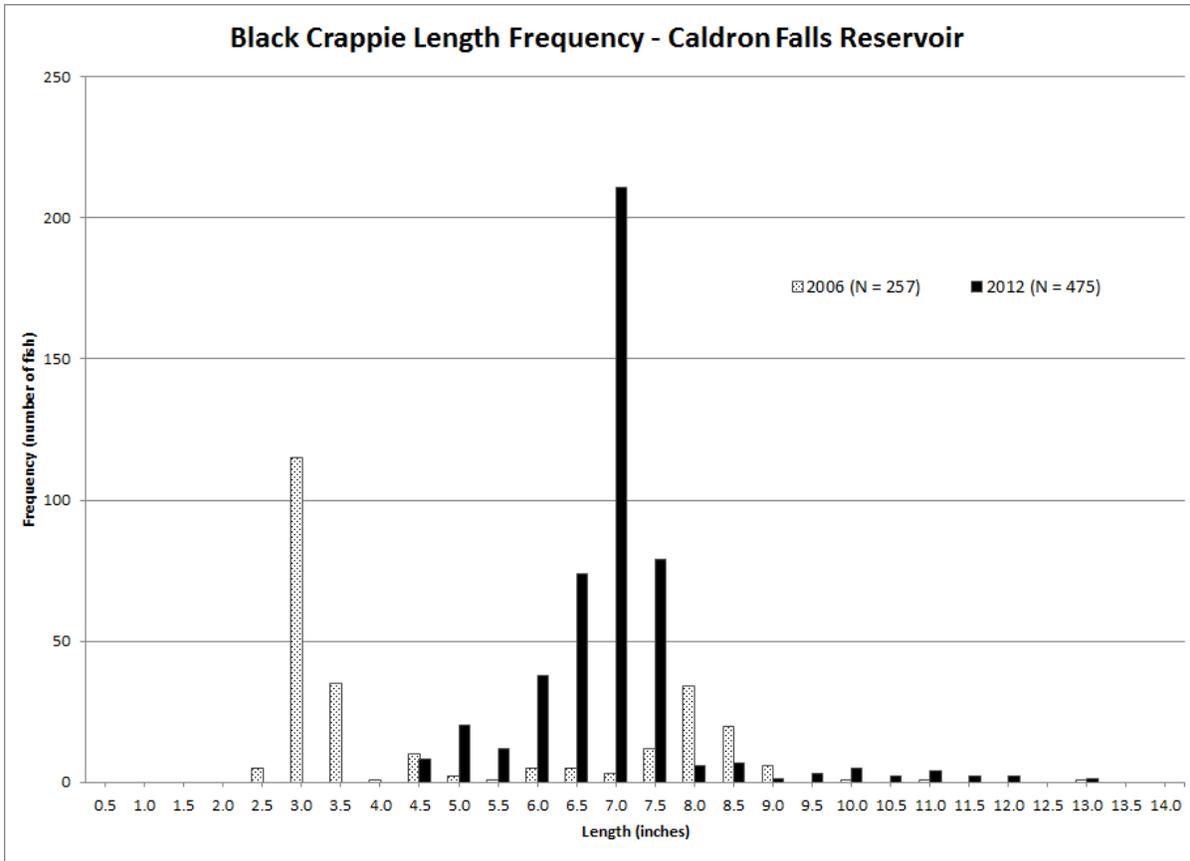


Figure 3. Black crappie length frequency from 2006 and 2012 fisheries surveys at Caldron Falls Reservoir, Marinette County, WI.

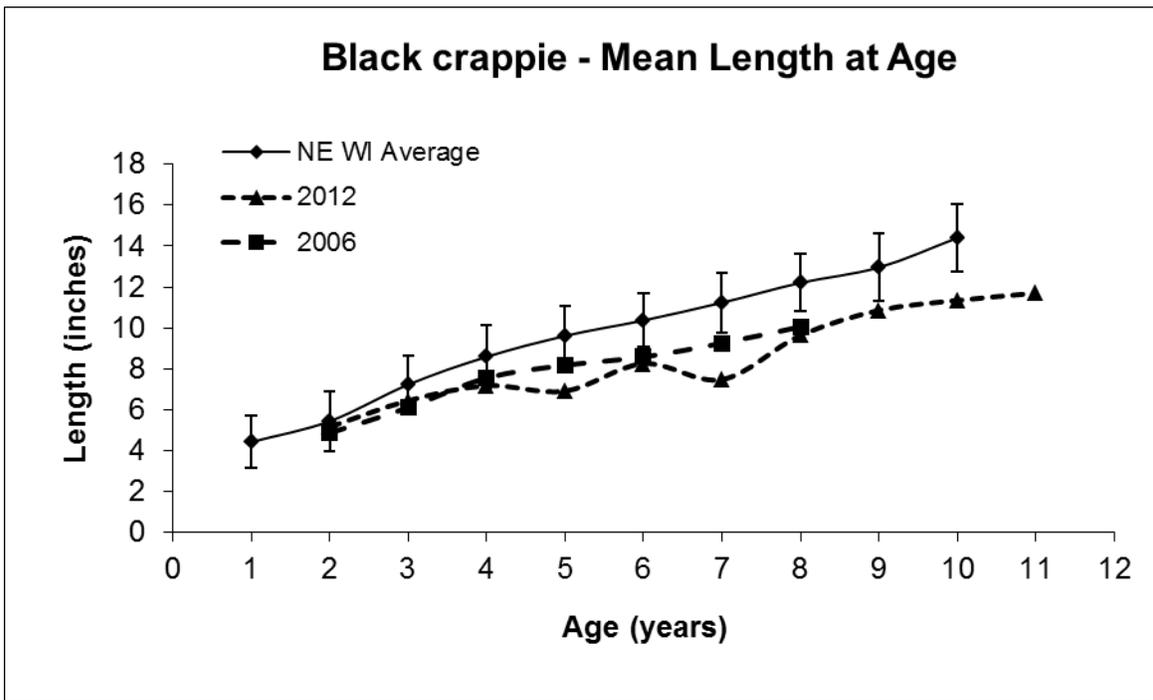


Figure 4. Black crappie mean length at age comparison from Caldron Falls Reservoir; Marinette County, WI.

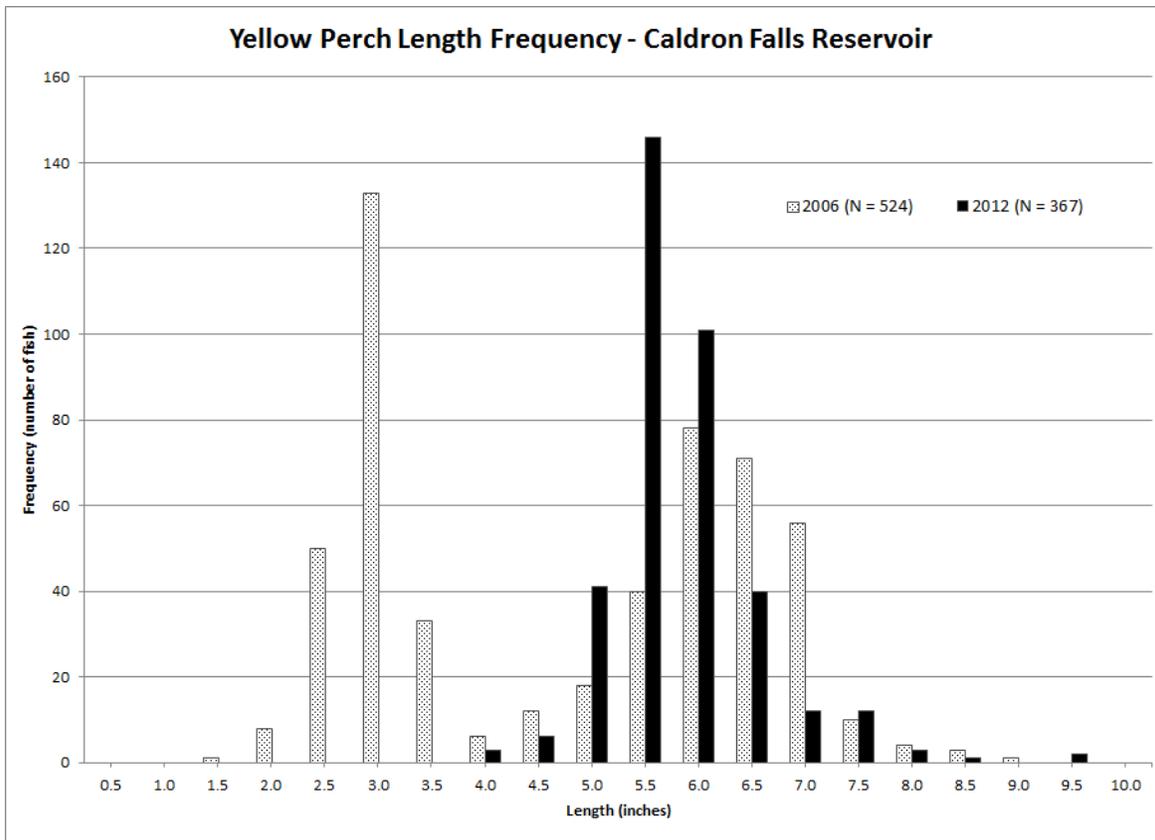


Figure 5. Yellow perch length frequency from 2006 and 2012 fisheries surveys at Caldron Falls Reservoir, Marinette County, WI.

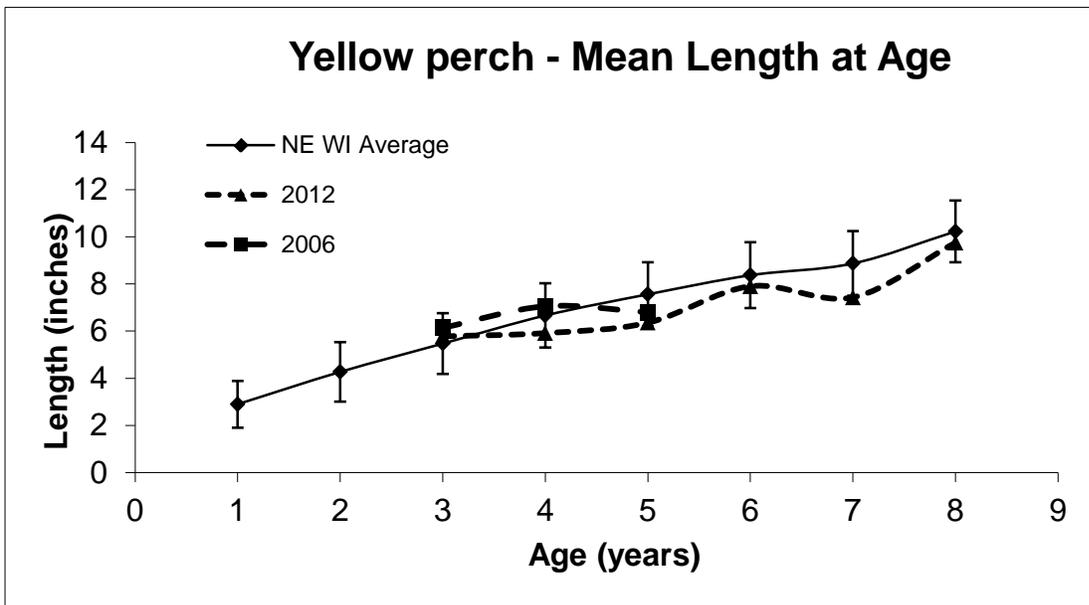


Figure 6. Yellow perch mean length at age comparison from Caldron Falls Reservoir; Marinette County, WI.

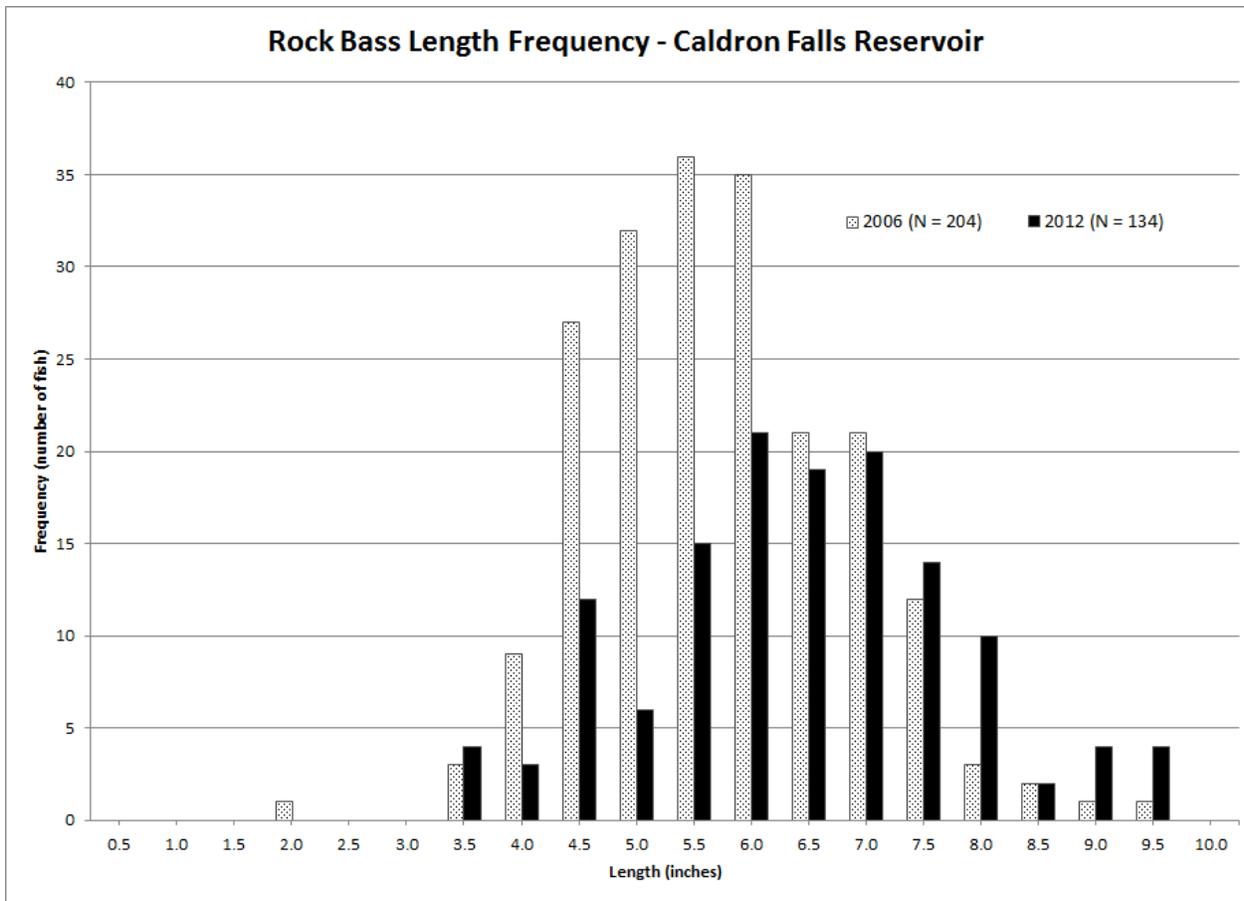


Figure 7. Rock bass length frequency from 2006 and 2012 fisheries surveys at Caldron Falls Reservoir, Marinette County, WI.

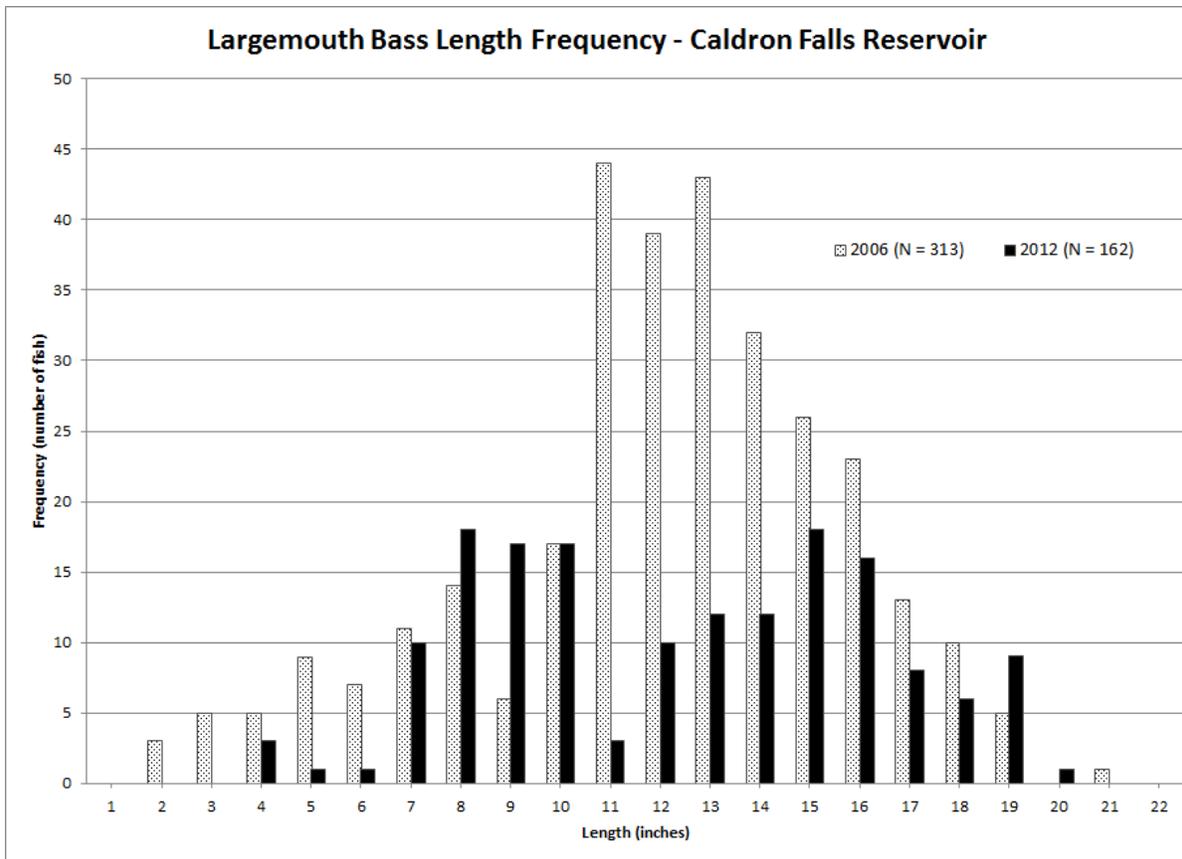


Figure 8. Largemouth bass length frequency from 2006 and 2012 fisheries surveys at Caldron Falls Reservoir, Marinette County, WI.

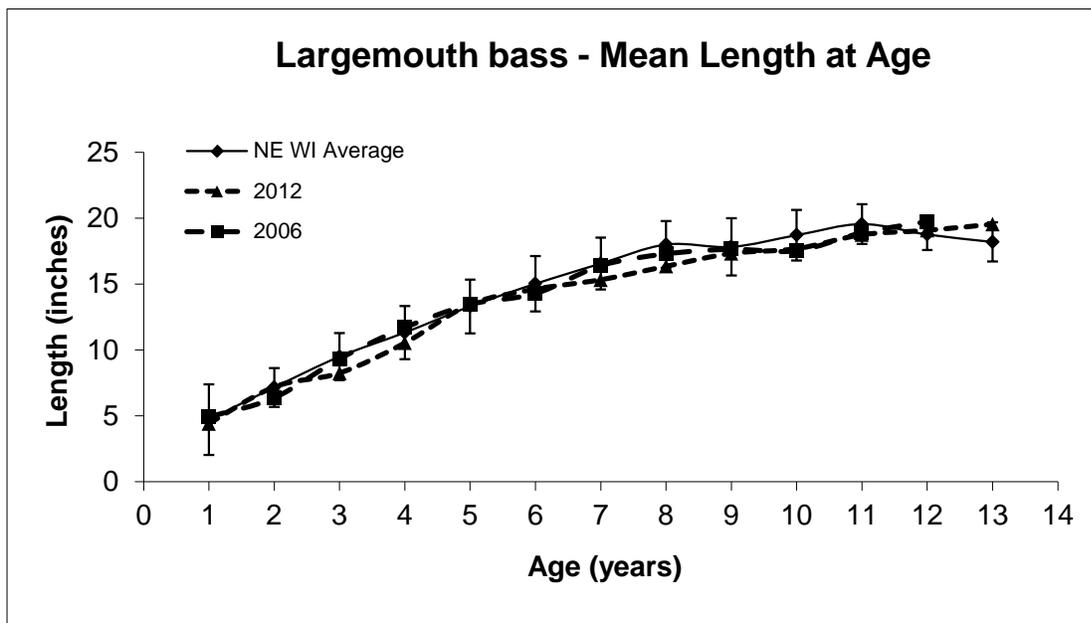


Figure 9. Largemouth bass mean length at age comparison from Caldron Falls Reservoir; Marinette County, WI.

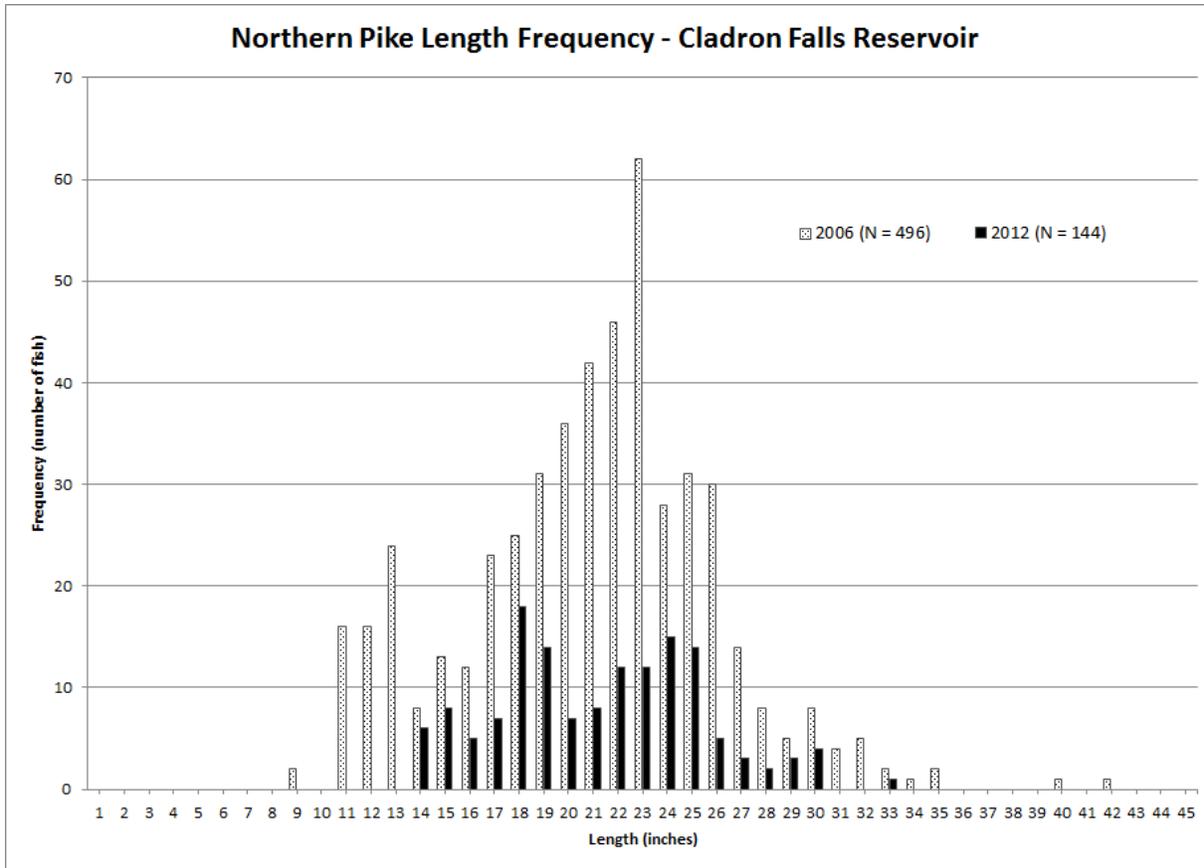


Figure 10. Northern pike length frequency from 2006 and 2012 fisheries surveys at Cladron Falls Reservoir, Marinette County, WI.

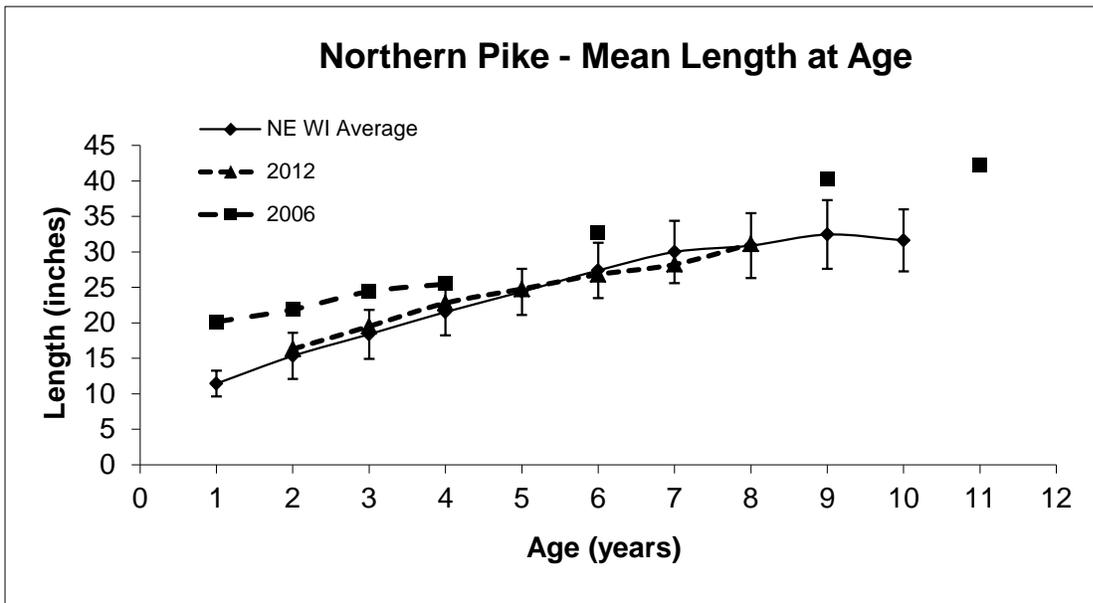


Figure 11. Northern pike mean length at age comparison from Cladron Falls Reservoir; Marinette County, WI.

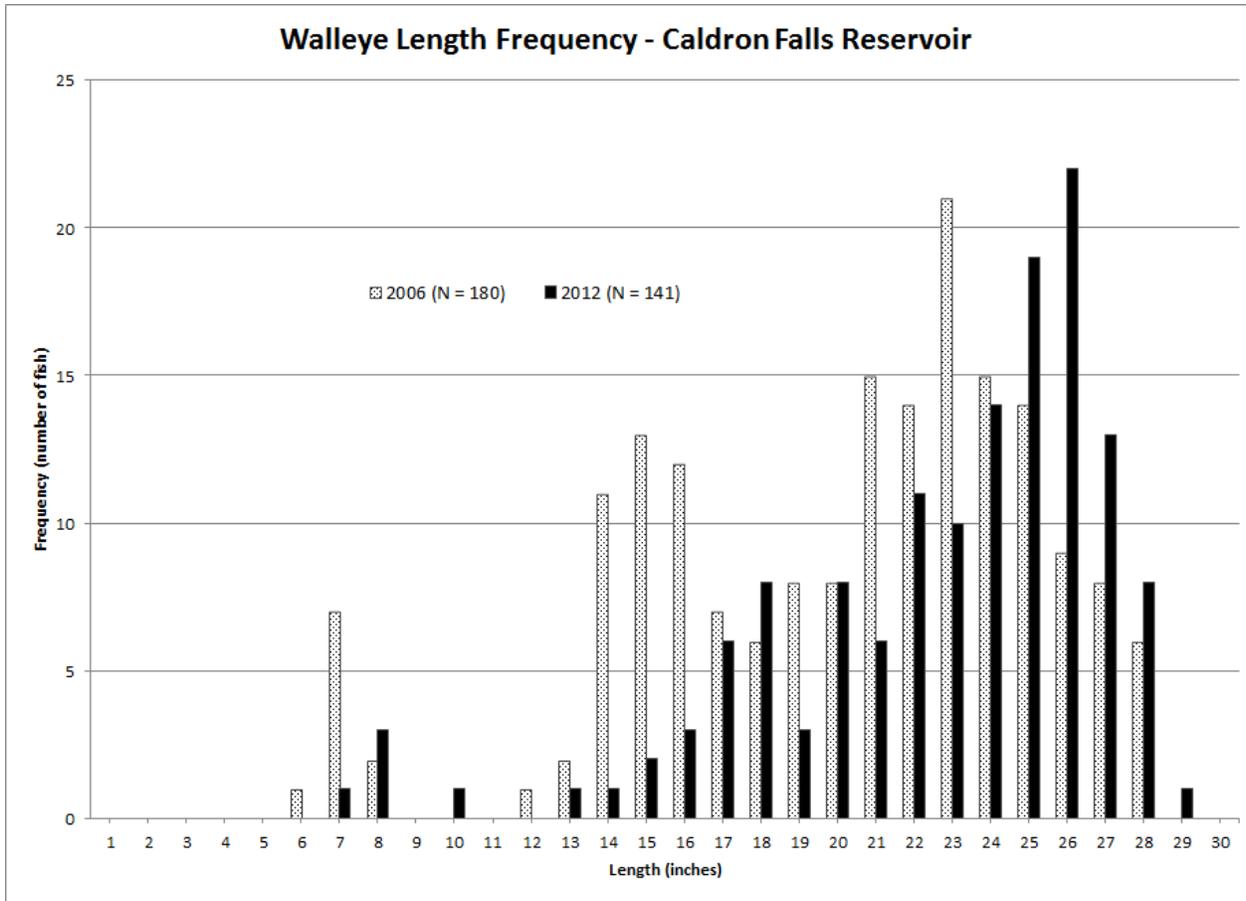


Figure 12. Walleye length frequency from 2006 and 2012 fisheries surveys at Caldron Falls Reservoir, Marinette County, WI.

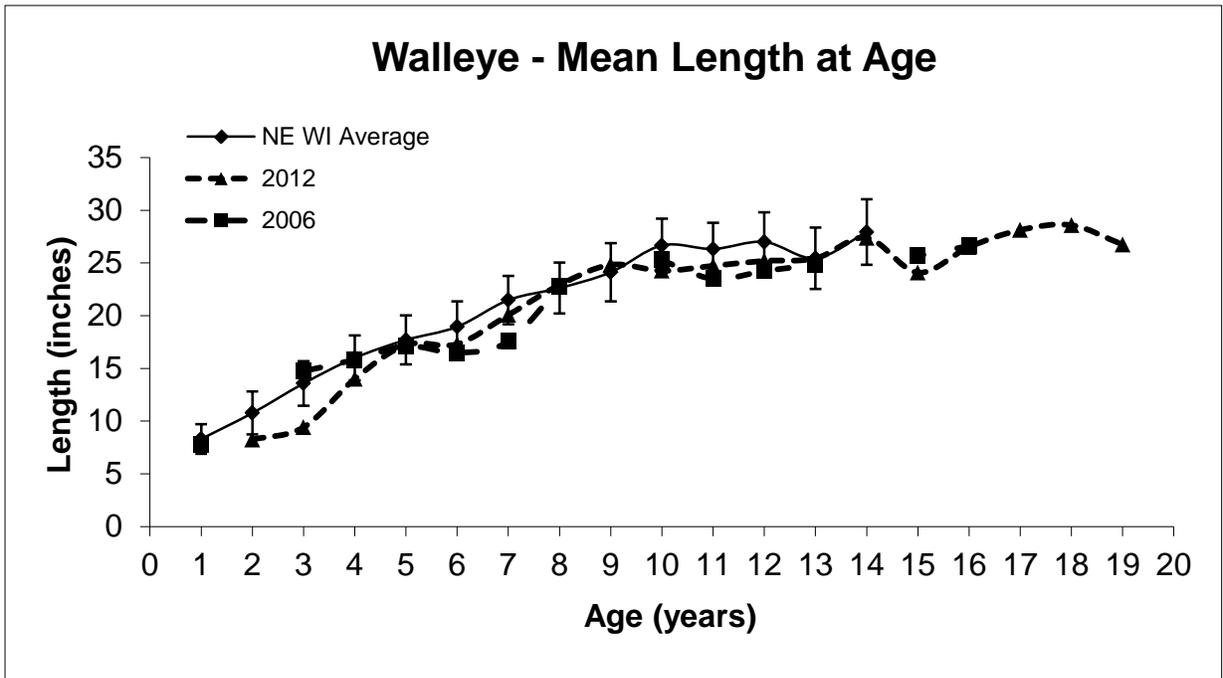


Figure 13. Walleye mean length at age comparison from Caldron Falls Reservoir; Marinette County, WI.

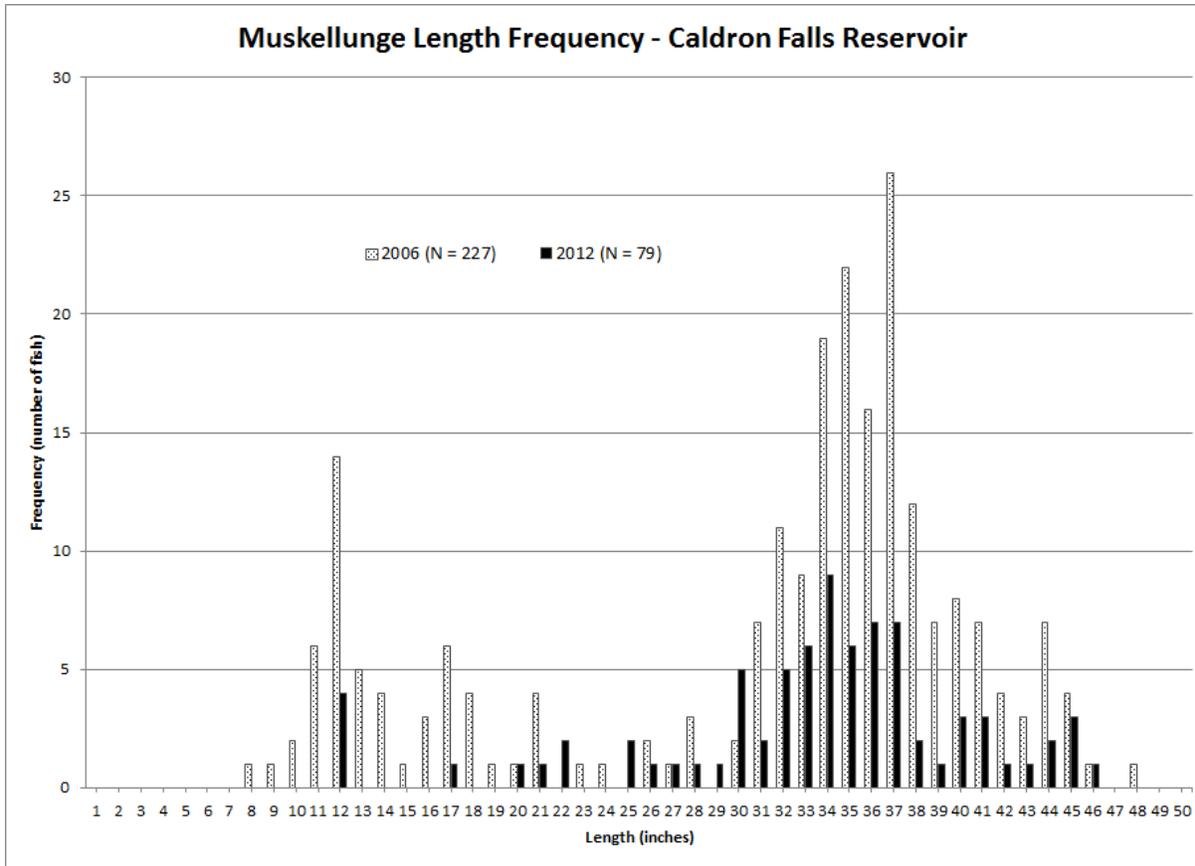


Figure 14. Muskellunge length frequency from 2006 and 2012 fisheries surveys at Caldron Falls Reservoir, Marinette County, WI.

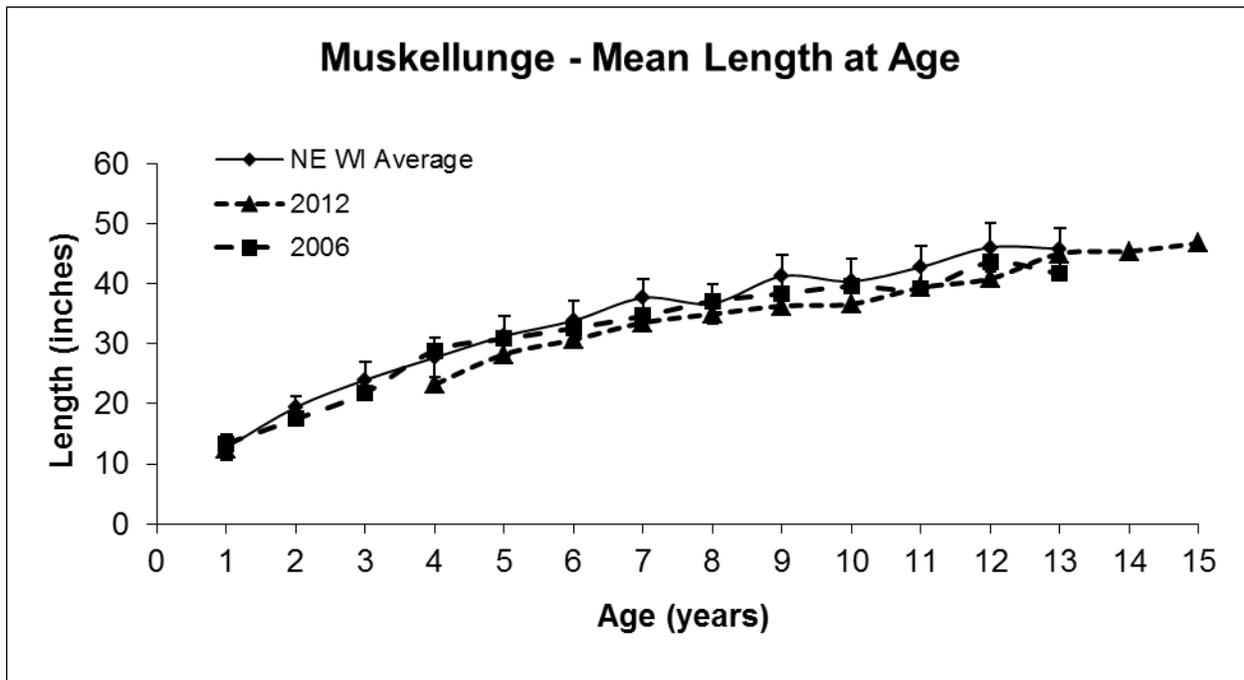


Figure 15. Muskellunge mean length at age comparison from Caldron Falls Reservoir; Marinette County, WI.

APPENDIX III – SAMPLING LOCATION DATA

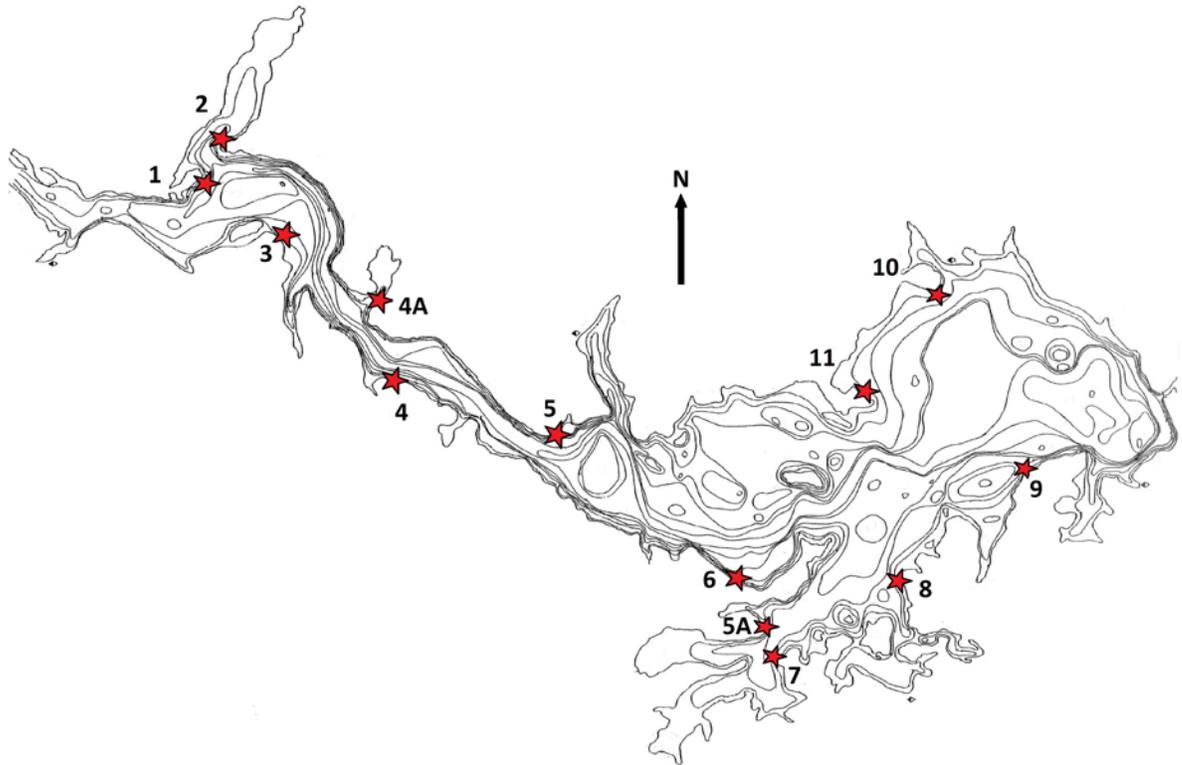


Figure 17. Fyke net locations during 2012 comprehensive survey of Caldron Falls Reservoir; Marinette County, Wisconsin (“A” indicates net was moved from initial set).

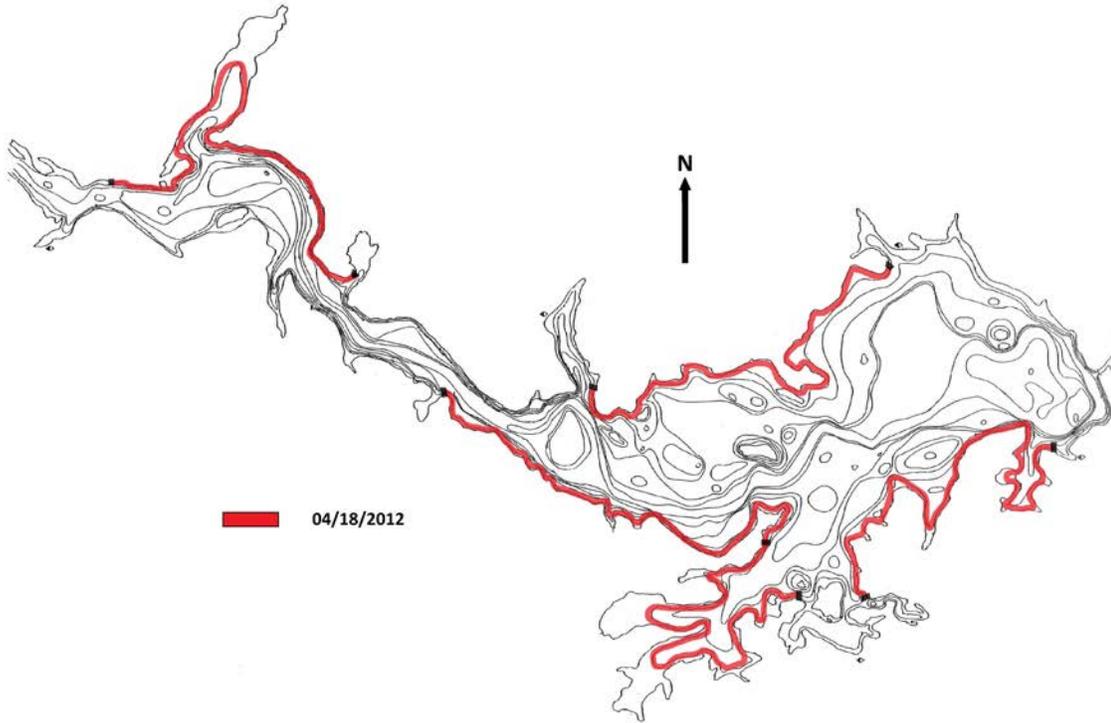


Figure 18. Walleye recapture electrofishing during 2012 comprehensive survey of Caldron Falls Reservoir; Marinette County, WI.

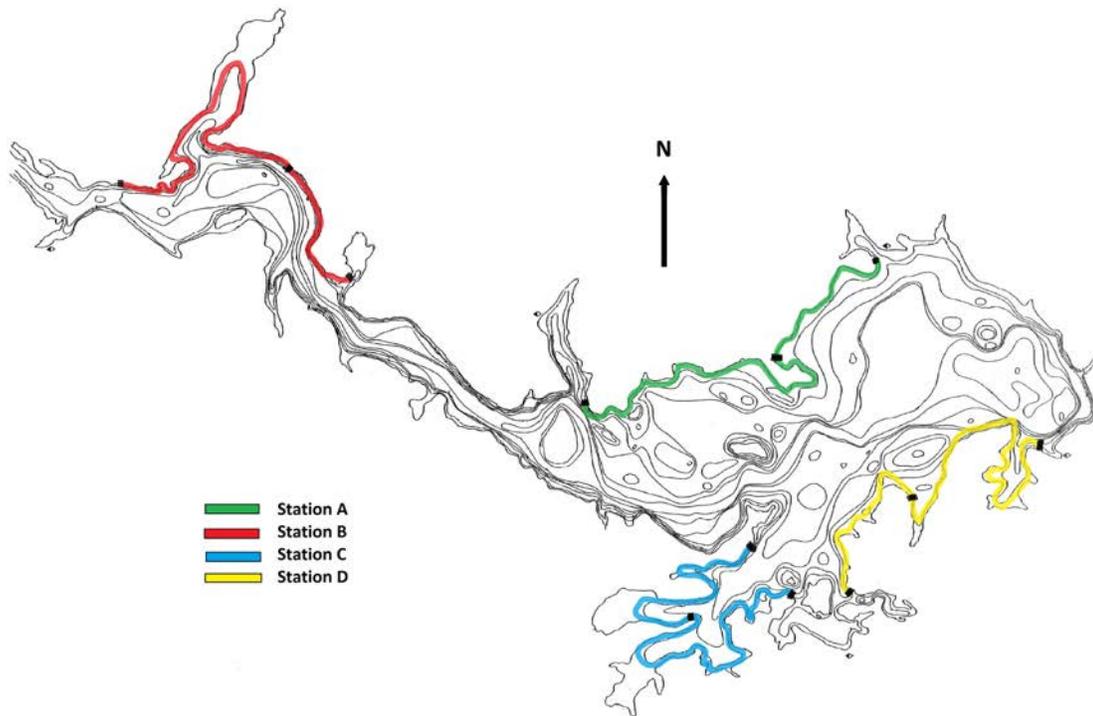


Figure 19. Gamefish and panfish electrofishing (May 30, 2012) during comprehensive survey of Caldron Falls Reservoir; Marinette County, WI.

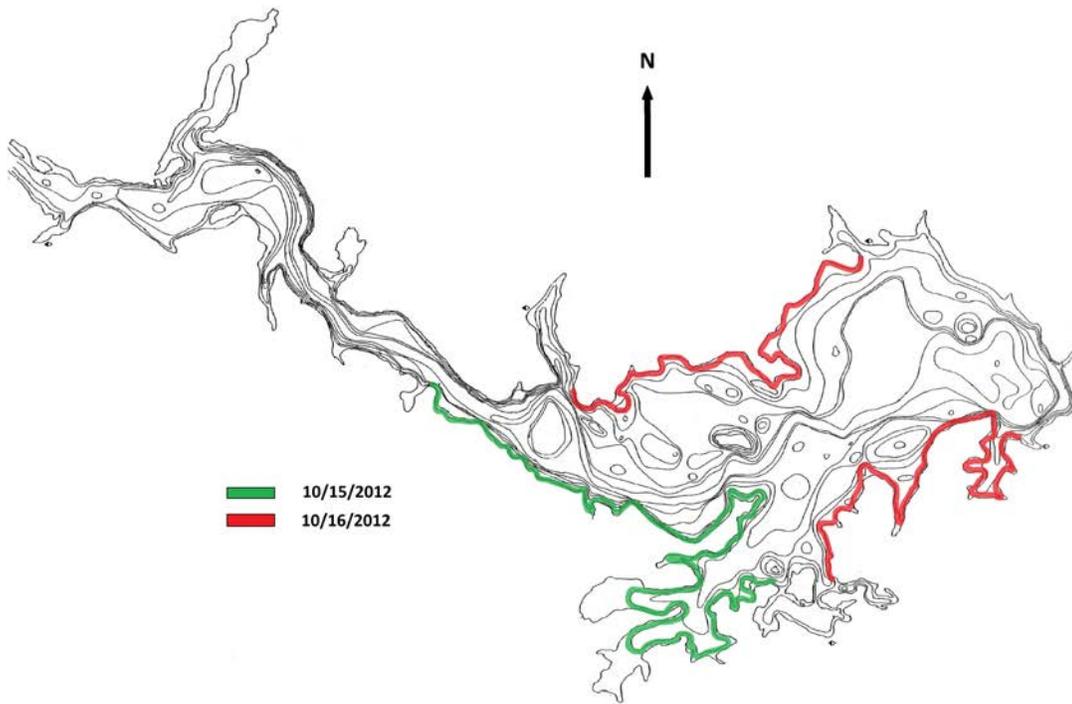


Figure 20. Walleye recruitment assessment (October) during 2012 comprehensive survey of Caldron Falls Reservoir; Marinette County, WI.

Date and GPS location for all sampling locations (fyke nets and electrofishing) during 2012 on Caldron Falls Reservoir; Marinette County, WI.

Fyke Net Locations			Electrofishing						
Net	Latitude	Longitude	Date	Station	Start		End		
					Latitude	Longitude	Latitude	Longitude	
1	N 45.3674	W -88.2950	18-Apr	Boat 1 Run 1	N 45.3677	W -88.2888	N 45.3667	W -88.3015	
2	N 45.3688	W -88.2938		Boat 1 Run 2	N 45.3566	W -88.2768	N 45.3493	W -88.2549	
3	N 45.3647	W -88.2901		Boat 1 Run 3	N 45.3493	W -88.2549	N 45.3455	W -88.2567	
4	N 45.3587	W -88.2831		Boat 2 Run 1	N 45.3476	W -88.2488	N 45.3533	W -88.2333	
4A*	N 45.3621	W -88.2831		Boat 2 Run 2	N 45.3618	W -88.2458	N 45.3562	W -88.2664	
5	N 45.3559	W -88.2721							
5A*	N 45.3481	W -88.2578	30-May	0.5 mi A	N 45.3618	W -88.2458	N 45.3583	W -88.2529	
6	N 45.3495	W -88.2589		1.5 mi A	N 45.3583	W -88.2529	N 45.3562	W -88.2664	
7	N 45.3465	W -88.2569		0.5 mi B	N 45.3621	W -88.2840	N 45.3677	W -88.2888	
8	N 45.3490	W -88.2485		1.5 mi B	N 45.3677	W -88.2888	N 45.3667	W -88.3015	
9	N 45.3539	W -88.2408		0.5 mi C	N 45.3493	W -88.2549	N 45.3472	W -88.2602	
10	N 45.3614	W -88.2468		1.5 mi C	N 45.3472	W -88.2602	N 45.3455	W -88.2567	
11	N 45.3572	W -88.2510		0.5 mi D	N 45.3476	W -88.2488	N 45.3524	W -88.2456	
**A" indicates net was moved from initial set				1.5 mi D	N 45.3476	W -88.2456	N 45.3533	W -88.2333	
			15-Oct	Run 1	N 45.3568	W -88.2769	N 45.3473	W -88.2517	
			16-Oct	Run 1	N 45.3476	W -88.2489	N 45.3533	W -88.2340	
				Run 2	N 45.3611	W -88.2461	N 45.3563	W -88.2664	