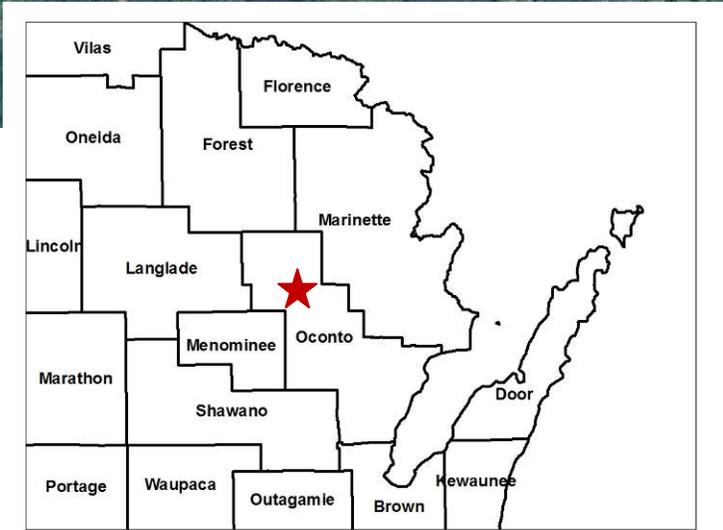


Chute Pond, Oconto County Wisconsin Fisheries Survey Report, 2013

Waterbody Identification Code: 462520



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April 2014

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SUMMARY

Lake and location

Chute Pond, Oconto County, T31N R16E Sections 23, 25, 26, 35, and 36; T31N R17E Section 31. Located in the town of Mountain.

Physical / chemical attributes

Surface acres: 433
Maximum depth: 18 feet
Lake type: drainage; impoundment of the North Branch Oconto River
Water chemistry: Hard water, slightly alkaline, moderate transparency
Littoral substrate: primarily sand and muck with limited gravel, rubble, and boulder
Shoreline: Apx. 10 miles (including islands). Primarily upland (mixed hardwoods/conifers)
Aquatic vegetation: coontail, wild celery, duckweed, Eurasian watermilfoil, curly-leaf pondweed
Aquatic invasives: Banded mystery snail, Chinese mystery snail, curly-leaf pondweed, Eurasian water-milfoil
Other features: There is a dam owned by Oconto County at the outlet on the north end of the impoundment that maintains a head of 13 feet

Purpose of surveys

Baseline lake survey Tier 1 assessment and fall muskellunge stocking assessment

Dates of fieldwork

Fyke netting survey: May 1 through May 6, 2013
Electrofishing surveys: May 28, October 9, and October 16, 2013

Fishery

Bluegill, pumpkinseed, bluegill X pumpkinseed hybrids, and black crappie are abundant. Rock bass, yellow perch, northern pike, and largemouth bass are common. Muskellunge are present and walleye are rare.

Acknowledgements

Data collection for the 2013 survey was completed by WDNR fisheries staff Mike Donofrio, Ronald Rhode, Brad Ryan, Tammie Paoli, Cory Wienandt, and Kevin King. Fish aging and data entry was completed by Ronald Rhode.

SUMMARY

- Chute Pond is a hard water drainage impoundment of the North Branch Oconto River with an area of 433 acres and a maximum depth of 18 feet. The last comprehensive fyke netting survey was completed in 2002.
- Chute Pond is listed in the Wisconsin Muskellunge Waters publication (Simonson 2012). It is considered a Class B waterbody, which is an intermediate class of waters that provide good fishing. It is also considered a Category 2 reproductive category, which has some natural reproduction of muskellunge yet stocking occurs to supplement natural recruitment.
- Muskellunge large fingerlings have been stocked sporadically by the Wisconsin Department of Natural Resources since the 1930's, with recent stockings in 2003, 2009, 2011, and 2013 at approximately 1 per acre. Annual stockings of 1/acre from 2013 to 2017 are planned as part of a statewide musky stocking assessment.
- Overall, 15,559 fish representing 13 species were collected during the 2013 survey. The five most abundant species collected by number were bluegill (36%), black crappie (31%), pumpkinseed and hybrids (14%), bullhead spp. (6%), and yellow perch (4%).
- A total of 5,651 bluegill were collected. Bluegill ranged in length from 2.2 to 9.0 inches and averaged 5.7 inches. Fyke net catch rates were significantly greater than the 2002 survey, when only 580 bluegill were captured. Growth rates have slowed, with older fish being 2 inches or more smaller than in 2002.
- A total of 4,815 black crappie were sampled. The average length was 6.5 inches with a range from 2.8 to 12.5 inches. Black crappie numbers have increased significantly compared to the 2002 survey, and are dominated by the 2009 and 2011 year classes. Growth rates have slowed, with older fish being 2 inches or more smaller than in 2002.
- A total of 2,152 pumpkinseeds and hybrids were sampled. The average length was 5.7 inches with a range from 3.2 to 7.9 inches. Fyke net catch rates were significantly greater than the 2002 survey, when only 47 pumpkinseeds and hybrids were captured.
- Rock bass have increased since 2002, with a total of 776 sampled. The average length was 6.3 inches with a range from 2.8 to 10.2 inches. Growth rates are slow, with older rock bass being 2 inches or more smaller than rock bass of the same age in Anderson Lake, Oconto County.
- A total of 690 yellow perch were sampled. The average length was 6.7 inches with a range from 3.6 to 9.6 inches.
- There appears to be very good survival of the 2009 year class of panfish species, which may coincide with the 2008 drawdown of Chute Pond.

- There were a total of 282 largemouth bass sampled. The population density was 5.2/acre, up significantly from 0.9/acre in 2002. Size structure has improved, with 63% of the fish being of a legal size (14 inches or greater). Growth rates are slower than the 2002 survey and the northeast Wisconsin averages.
- The population density of northern pike (3.8/acre) has not changed considerably since the 2002 survey (3.4/acre). A total of 215 northern pike were sampled. Average length was 20.8 inches with a range from 7.8 to 33.6 inches. The size structure was fair with 16% of the fish greater than 28 inches.
- A total of 58 muskellunge were captured. The population density was 0.2/acre. Average length (excluding recently stocked fingerlings) was 38.2 inches with a range from 25.4 to 46.5 inches. Size structure was excellent, with 45% over 40 inches (legal size).

BACKGROUND

Chute Pond is a hard water drainage impoundment of the North Branch Oconto River with an area of 433 acres and a maximum depth of 18 feet. The littoral area is primarily sand and muck with some boulders and rock outcroppings. A surface discharge dam owned by Oconto County at the outlet maintains a head of 13 feet. The water level is sometimes drawn down in the winter in an effort to control aquatic macrophyte growth. The last major drawdown was in August-September 2008, when the flowage was drawdown four feet to repair the dam. There are four public boat landings (Figure 1). These access locations are owned and maintained by Oconto County. About 20% of the approximately 10 miles of shoreline is in public ownership (county or national forest). The remainder of the shoreline is developed as homes and seasonal cottages. A total of 228 piers were counted on a recent aerial photo. The Chute Pond Protection and Rehabilitation District is a non-governmental group that is active in the lake community. There is a campground, picnic area, and public swimming beach that is managed by Oconto County.

Aquatic invasive species present in Chute Pond include banded mystery snail, Chinese mystery snail, curly-leaf pondweed, and Eurasian watermilfoil. Eurasian watermilfoil and curly-leaf pondweed were first documented in Chute Pond in 2008. Since then, efforts to physically and chemically control their abundance have been ongoing (B. Nordin, WDNR Water Resources Management Specialist, pers. comm).

Current fishing regulations are listed in Table 1, and those follow the general inland regulations. State and private fish stocking history for all species from 1972 to 2013 for Chute Pond is summarized in Table 2.

Chute Pond is listed in the Wisconsin Muskellunge Waters publication (Simonson 2012). It is considered a Class B muskellunge waterbody, which is an intermediate class of waters that provide good fishing for muskellunge. It is also considered a Category 2 reproductive category, which has some natural reproduction yet stocking occurs to supplement natural recruitment. Muskellunge large fingerlings have been stocked sporadically by the Wisconsin Department of Natural Resources (WDNR) since the 1930's, with recent stockings occurring in 2003, 2009, 2011, and 2013 at rates of approximately 1 per acre. Annual stockings of 1/acre from 2013 to 2017 are planned as part of a statewide musky stocking assessment. As part of this special study, WDNR Fisheries plans to conduct fall electroshocking surveys targeting muskellunge annually

through 2017 to determine survival, growth, and contribution to the fishery of stocked and naturally reproduced fish.

Fisheries surveys conducted from 1977 to 2013 are shown in Table 3. The most recent comprehensive (netting and electrofishing) survey was conducted in 2002 (Meyers 2007).

METHODS

Data collection

Ten standard 3' x 6' hoop fyke nets with ¾" bar, 1.5" stretch mesh were set at ice-out on April 30, 2013. Due to large numbers of panfish in all nets, one net (Net 8) was tied open and fish were not counted on Day One. On Day Two, a second net (Net 2) was tied open after fish were counted. The remaining eight nets were lifted daily from May 1 through May 6, 2013, for a total effort of 50 net nights (Figure 1). All fish captured were identified to species and measured to the nearest 0.1 inch. All gamefish were given a top caudal fin clip (for mark recapture population estimate), and a scale (northern pike, muskellunge) or dorsal spine (walleye, bass) was collected from 5 gamefish per 0.5 inch group per sex. Scales were collected from 5 panfish per 0.5 inch group per species with a length to the nearest 0.1 inch. An additional 250 lengths per species measured to the nearest 0.1 inch were collected as time allowed and all additional fish were counted. Passive integrated transponder (PIT) tags with a unique 15 digit code were inserted into adult muskellunge near the base of the dorsal fin.

A WDNR standard direct current double anode electrofishing boat was used to sample 4 miles of shoreline on the evenings of May 28, October 9, and October 16, 2013. Island shorelines and the northwest portion of the flowage which is more riverine were not sampled during electrofishing. On May 28, all panfish and gamefish were collected for two staggered 0.5 mile transects, and only gamefish were collected for the remaining 3 miles of shoreline that were sampled (Spring Electrofishing II) per protocol. Only gamefish were collected on October 9 (Fall Electrofishing), and only muskellunge were collected on October 16 (musky assessment). Fish collected were measured to the nearest 0.1 inch and inspected for a top caudal fin clip.

Data analysis

Total catch and catch per gear type was calculated for all species (Table 6). Ages were assigned to fish after scales and spines were aged using standard WDNR procedures. An age-

length key was created to assign ages to un-aged fish based on proportional representation of the known age fish subsample, within the 0.5 inch length bins. The modified Schnabel population estimation technique was used for gamefish and was calculated using fish captured in fyke nets and the Spring Electrofishing II survey in 2013.

Age and length frequency distributions and mean length at age analyses were performed for gamefish and panfish. Proportional stock density (PSD) and relative stock density of preferred length fish (RSD-preferred) were calculated (Anderson and Neumann 1996; Bister et al. 2000). Proportional stock density (PSD) is the ratio of 'quality-length' fish to 'stock-length' fish multiplied by 100. Relative stock density (RSD-preferred) is the ratio of 'preferred-length' fish to 'stock length fish' multiplied by 100. Both indices are commonly used as a measure of population size structure (Table 4). PSD and RSD data was combined for both gear types from all samples. Age-frequency distribution was calculated after ages were allocated to all fish in the sample. Mean length at age was calculated as mean length at time of capture. Mean lengths of aged fish were plotted against northeast Wisconsin averages and the 2002 survey, if aging data was available. Total mortality was estimated using a catch curve analysis (Ricker 1975) for populations where the assumptions of constant recruitment and mortality appeared valid.

RESULTS AND DISCUSSION

A total of 15,559 fish of 13 different species were collected (Table 5). Catch per gear type are shown for each species sampled (Table 6). Bluegill, pumpkinseed, bluegill X pumpkinseed hybrids, and black crappie were abundant. Rock bass, yellow perch, northern pike, and largemouth bass were common. Muskellunge are present and walleye are rare. Other species captured included creek chubs, golden shiners, white suckers, black bullheads, brown bullheads, and yellow bullheads.

Water temperature in ice-free areas on the day the nets were set was 53F, yet most areas of the flowage were ice-covered the previous day. This was an unusually late spring, and the water along the edges had been open for several weeks before the ice went out on the main body of the flowage. By the time the nets were able to be set, northern pike spawning was winding down, yellow perch egg skeins were on several nets, and female muskellunge were ripe. It is possible that the higher water temperatures during the survey resulted in greater activity and

catches of panfish. In contrast, fyke nets were lifted from April 18-26 in 2002 and water temperatures ranged from 46F to 51F during that survey.

Black Crappie

A total of 4,815 black crappie were sampled. The catch rate was 95.6 per net night and 33 per mile electrofishing (Table 6). The average length was 6.5 inches with a range from 2.8 to 12.5 inches. Black crappie numbers have increased significantly compared to the 2002 survey, when the catch rate was 2.5 per net night. The length frequency distribution indicated two strong modes of fish around 4.5 to 5 inches and 6.5 to 7 inches (Figure 2), which corresponds with two strong year classes, 2009 and 2011, in the age distribution (Figure 3). Only 12% of fish were greater than 8 inches (PSD), which is below the acceptable range of 30-60%, and only 4% of the fish were greater than 10 inches (RSD-preferred). The mean length at age shows that these fish are growing slower compared to other populations in northeast Wisconsin (Figure 4), and may be a result of high abundance of black crappie.

Bluegill

Bluegill were the most abundant species captured, with a total of 5,651 sampled. The catch rate was 104.2/net night and 443/mile of electrofishing (Table 6). Average length was 5.7 inches with a range from 2.2 to 9.0 inches. Fyke net catch rates were significantly greater in 2013 compared to the 2002 survey (4.3/net night). 46% of the fish were greater than 6 inches (PSD), which is within the acceptable range of 20-60%, but only 1% of fish were greater than the “preferred” size of 8 inches (RSD-preferred). A desirable bluegill population would have 5-20% of the fish being 8 inches or greater (see Table 4) (Figure 5). There was good representation of ages 4 through 7, but age 4 (2009 year class) fish were most abundant (Figure 6). The oldest bluegill, estimated at 12 years old, was 8.8 inches. Total annual mortality for ages 4-8 was estimated at 45%. The growth rate of bluegills is slightly below the 2002 survey and below northeast Wisconsin averages (Figure 7), and may be a result of high abundance of bluegill.

Pumpkinseed and hybrids

There were a total of 2,152 pumpkinseed and pumpkinseed X bluegill hybrids sampled. The catch rate was 41.7/net night and 69/mile electrofishing (Table 6). Average length was 5.7 inches with a range from 3.2 to 7.9 inches. Fyke net catch rates were significantly greater in 2013 compared to the 2002 survey, when only 32 pumpkinseed and hybrids were captured. The size structure was skewed towards small fish, with only 38% of the fish greater than 6 inches (PSD) (Figure 8). Ages 4 and 5 comprised most of the fish sampled, with the 2009 year class dominating the catch (Figure 9). Total annual mortality for pumpkinseed and hybrid ages 4-8 was calculated at 41%. Growth rates are similar to Oconto County averages (Figure 10).

Rock Bass

A total of 776 rock bass were sampled, for a catch rate of 15.2/net night (Table 6). Average length was 6.3 inches with a range from 2.8 to 10.2 inches. Fyke net catches were significantly greater in 2013 compared to the 2002 survey (1.1/net night). The size structure was skewed towards smaller fish, with 32% of the fish greater than 7 inches (PSD), which is within the acceptable range of 20-60% (Table 4), but only 4% were greater than 9 inches (Figure 11). There was good representation of several year classes (Figure 12). Total annual mortality of rock bass ages 4-10 was calculated at 50%. Because aging structures are not regularly collected on rock bass, length at age data for northeast Wisconsin was not readily available. However, growth rates plotted against nearby Anderson Lake suggest that rock bass in Chute Pond experience slower growth (Figure 13).

Yellow Perch

A total of 690 yellow perch were sampled. Average length was 6.7 inches with a range of 3.6 to 9.6 inches (Figure 14). Age 3 and 4 (2010 and 2009 year classes) dominated the sample (Figure 15). The total annual mortality rate of yellow perch ages 3-8 was calculated at 39%. Growth rates are slightly below northeast Wisconsin averages (Figure 16).

Largemouth Bass

There were a total of 282 largemouth bass sampled, including 6 recaptured individuals. The catch rate for fyke netting was 2.7/net night. Catch rate for spring electrofishing (17.5/mile) and fall electrofishing surveys (18.8/mile) were fairly high (Table 6). The population estimate for largemouth bass was 2,250 fish (5.2 per acre), with a 95% confidence range between 1,120 and 4,919. This is a moderately high population density, and has increased substantially since the 2002 survey (0.9 per acre). Average length of largemouth bass was 12.7 inches with a range from 5.8 to 20.6 inches. The size structure was very good, with 82% of the fish being 12 inches or more (PSD), which exceeds the acceptable range of 40-70% (Table 4). Of the largemouth bass sampled, 63% were 14 inches or greater (legal size) (Figure 17). There appears to be steady recruitment of largemouth bass, with older ages being represented more in the 2013 survey (Figure 18). The total annual mortality for ages 6-17 is estimated at 73%. Growth rates for largemouth bass are slower compared to the 2002 survey and northeast Wisconsin averages (Figure 19) and may be related to higher density of largemouth bass.

Northern Pike

There were a total of 215 northern pike sampled, including 6 recaptured individuals. The catch rate was 3.3/net night (Table 6) compared to 1.7/net night in 2002. The population estimate for northern pike was 1,634 adults (3.8 per acre), with a 95% confidence range between 814 and 3,573. This is relatively similar to the 2002 population estimate of northern pike which was 1,419 adults (3.4 per acre). Average length was 20.8 inches with a range from 7.8 to 33.6 inches. The size structure was fair with 51% of the fish greater than 21 inches (PSD), which is within the acceptable range of 30-60% (Table 4), and 16% of northern pike were greater than 28 inches (RSD-preferred, Figure 20). The age frequency distribution was dominated by age 4 and 5 fish (2009 and 2008 year class), with good representation of older fish (Figure 21). The total annual mortality for ages 5-9 is estimated at 54%. The sex ratio of males to females in the sample was approximately 3:1. This ratio is a common pattern and may suggest either an angler preference to harvest faster growing females or a bias toward netting males. However, we were unable to determine the sex of nearly half of the northern pike captured in fyke nets because they had already spawned prior to the nets being set at ice-out on April 30, 2013. Growth rates are slightly below the northeast Wisconsin averages and below the 2002 growth rates (Figure 22).

Muskellunge

A total of 58 muskellunge were captured in the 2013 survey, including 6 recaptured individuals and 14 fingerlings that were stocked in September 2013. The catch rate was 0.9/net night and the population estimate was 68 adults (0.2/acre), with a 95% confidence range between 34 and 139. As part of a statewide study on the survival of pellet versus minnow-raised muskellunge, all of the muskellunge stocked into Chute Pond in 2013 received a left ventral clip and were raised on minnows in the hatchery. No unclipped (naturally reproduced) young-of-year muskellunge were captured during the fall electroshocking survey. Excluding the recently stocked fish, the average length was 38.2 inches with a range from 25.4 to 46.5 inches (Figure 23). This is much improved from the 2002 survey, when six muskies were captured in fyke netting and fall electrofishing surveys. The size structure is excellent with 88% of the fish greater than 30 inches (PSD) and 45% over 40 inches (legal size). The sex ratio was near 1:1. The presence of age 5 through age 9 individuals (2004 to 2008 year classes) which are years that stocking did not occur suggests the occurrence of some natural reproduction of muskellunge (Figure 24). However, this data should be interpreted with caution, as aging muskellunge using scales can be tenuous particularly for older fish. Growth rates for younger fish are above the northeast Wisconsin average, and are near average for older fish. The minimum length limit for muskellunge in Chute Pond is 40 inches, and it takes approximately 8 years for fish to reach that size (Figure 25).

Walleye

A total of 2 walleye were sampled (15.0 and 23.6 inches). Those fish were estimated at ages 5 and 9, respectively. It is possible that those fish are from one of the flowages farther upstream (Townsend Flowage; Reservoir Pond) as no natural reproduction of walleye has been documented in Chute Pond. The only stocking of walleye in the last 37 years was in 2006 (Table 3), when the lake association stocked 363 large fingerling walleye.

CONCLUSIONS AND RECOMMENDATIONS

Chute Pond supports a good overall fishery. All fish species have shown increases in abundance compared to the 2002 survey. However, panfish have decreased in size structure and have exhibited slower growth compared to 2002. This is likely due to overabundance, which

was accelerated by a robust 2009 year class for all panfish species. This large year class comes one year after the 2008 drawdown in Chute Pond. Additionally, the establishment of Eurasian water-milfoil (found in Chute Pond in 2008) can provide dense vegetation for panfish to hide in, making them less vulnerable to predators. As a result, panfish have overpopulated and have become stunted, as exhibited by slow growth rates compared to other northeast Wisconsin lakes, and compared to the 2002 survey.

Muskellunge in Chute Pond are exhibiting good growth rates and size structure. The current population density of 0.2/acre is considered to be low. The northern pike population density has remained stable at 3.8 adults/acre. However, size structure has improved since the 2002 survey, with a greater percentage of older fish comprising the sample. Population density of largemouth bass has increased significantly since 2002, from 0.9/acre to 5.2/acre. Size structure has also improved, and 63% of the largemouth bass sampled were 14 inches or greater.

Management of Chute Pond should focus on maintaining the current diverse community of fish and on improving the size structure of panfish. Although the largemouth bass population has increased and size structure is good, an increased presence of muskellunge as a top predator is needed to keep the panfish population in check. Continued stocking of muskellunge fall fingerlings at the rate of 1/acre annually is recommended. From 2009 to 2013, Chute Pond was on an odd year stocking rotation for muskellunge. The inclusion of Chute Pond in the statewide study on the survival of pellet and minnow-raised muskellunge resulted in a change to the stocking rotation from odd years to every year until 2017. I recommend continuing annual stocking of muskellunge fall fingerlings at the rate of 1/acre until the next comprehensive survey. This effort will increase predation on stunted panfish which will improve panfish size structure, as well as provide a premiere musky fishery. If funding allows, inserting PIT tags into fall fingerling muskellunge prior to stocking would provide valuable age and growth data in future surveys.

No changes in fishing regulations are recommended at this time. The next comprehensive survey for Chute Pond is scheduled for 2023. Fall electroshocking surveys targeting muskellunge fingerlings are planned annually through 2017.

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TABLES AND FIGURES

TABLE 1.— Current (2014) fishing regulations for Chute Pond.

Species	Open Season	Daily limit	Minimum length
Largemouth and Smallmouth Bass	first Saturday in May – first Sunday in March	5	14 inches
Walleye	first Saturday in May – first Sunday in March	5	15 inches
Muskellunge	Saturday nearest Memorial Day to November 30 th .	1	40 inches
Northern Pike	first Saturday in May – first Sunday in March	5	none
Panfish (bluegill, pumpkinseed, yellow perch, black crappie)	Open all year	25 in total	none

TABLE 2.— Stocking history of Chute Pond from 1972 to 2013.

YEAR	SPECIES	STRAIN	AGE CLASS	NUMBER STOCKED	AVG LENGTH	SOURCE
1972	WALLEYE	UNSPECIFIED	FINGERLING	9000	3	DNR COOP PONDS
1973	MUSKELLUNGE	UNSPECIFIED	FINGERLING	1000	11	DNR HATCHERY
1974	WALLEYE	UNSPECIFIED	FINGERLING	12600	3	DNR COOP PONDS
1976	WALLEYE	UNSPECIFIED	FINGERLING	22500	3	DNR COOP PONDS
1977	MUSKELLUNGE	UNSPECIFIED	FINGERLING	800	9	DNR COOP PONDS
2003	MUSKELLUNGE	UNSPECIFIED	LARGE FINGERLING	497	10.9	DNR HATCHERY
2006	WALLEYE	UNSPECIFIED	LARGE FINGERLING	363	7	PRIVATE HATCHERY
2009	MUSKELLUNGE	UPPER WISCONSIN RIVER	LARGE FINGERLING	200	10.5	DNR HATCHERY
2011	MUSKELLUNGE	UPPER WISCONSIN RIVER	LARGE FINGERLING	400	9.3	DNR HATCHERY
2013	MUSKELLUNGE	UPPER WISCONSIN RIVER	LARGE FINGERLING	422	12	DNR HATCHERY

TABLE 3.— Fisheries surveys completed on Chute Pond from 1977 to 2013.

Date	Survey Type	Effort	Primary survey purpose
May 1-6, 2013	Fyke net	50 net nights	Gamefish population estimate & panfish assessment
May 28, 2013	Electrofishing	4.0 miles	Gamefish/panfish assessment
October 9, 2013	Electrofishing	4.0 miles	Fall gamefish & musky stocking assessment
October 16, 2013	Electrofishing	4.0 miles	Musky stocking assessment
April 18-26, 2002	Fyke net	82 net nights	Gamefish population estimate & panfish assessment
October 1, 2002	Electrofishing	3.0 miles	Gamefish/panfish assessment
October 14, 2002	Electrofishing	1.5 miles	Gamefish/panfish assessment
April 6-14, 1986	Fyke net	110 net nights	Gamefish population estimate & panfish assessment
September 3, 1986	Electrofishing	4.0 miles (estimated)	Gamefish/panfish assessment
August 2, 1977	Electrofishing	4.0 miles (estimated)	Gamefish/panfish assessment

TABLE 4.— Proposed length categories used to calculate Proportional stock density (PSD) and Relative stock density (RSD) for various fish species. Measurements are total lengths for each category in inches. Updated from Anderson and Neumann (1996) and Bister et al. (2000).

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

*Range based on management strategy for balanced populations.

TABLE 5.— Total number, percent of total, average length, and length range of fish by species captured with all gear types in 2002 and 2013 in Chute Pond.

*COMMON NAME OF FISH	2002				2013			
	NUMBER	PERCENT	AVERAGE LENGTH	LENGTH RANGE (inches)	NUMBER	PERCENT	AVERAGE LENGTH	LENGTH RANGE (inches)
Black Crappie	260	16.5%	7.1	4.2 - 12.5	4815	30.9%	6.5	2.8 - 12.5
Bluegill	580	36.9%	6.1	2.5 - 10.2	5651	36.3%	5.7	2.2 - 9.0
Largemouth Bass	179	11.4%	13.3	4.5 - 20.2	282	1.8%	12.7	5.8 - 20.6
Muskellunge	6	0.4%	36.5	17.5 - 50.1	58	0.4%	31.8	11.5 - 46.5
Northern Pike	157	10.0%	20.1	10.0 - 32.5	215	1.4%	20.8	7.8 - 33.6
Pumpkinseeds & Hybrids	47	3.0%	5.4	3.1 - 8.7	2152	13.8%	5.7	3.2 - 7.9
Rock Bass	105	6.7%	6.7	3.8 - 10.4	776	5.0%	6.3	2.8 - 10.2
Walleye	2	0.1%	19.9	19.5 - 20.3	2	0.0%	19.3	15.0 - 23.6
Yellow Perch	218	13.9%	6.9	5.0 - 12.8	690	4.4%	6.7	3.6 - 9.6
Bullhead Sp.	19	1.2%			888	5.7%		
Creek Chub	0				1	0.0%		
Golden Shiner	0				19	0.1%		
White Sucker	0				10	0.1%		
Total	1,573	100.0%			15,559	100.0%		

TABLE 6.— Catch summary for spring fyke netting and electrofishing samples from Chute Pond, 2013. Totals include recaptured individuals. Fyke nets were fished for a total of 50 net nights from May 1 through May 6. The spring electrofishing II sample was collected on May 28. Fall electrofishing was conducted on October 9 and 16. See Methods for additional sampling details.

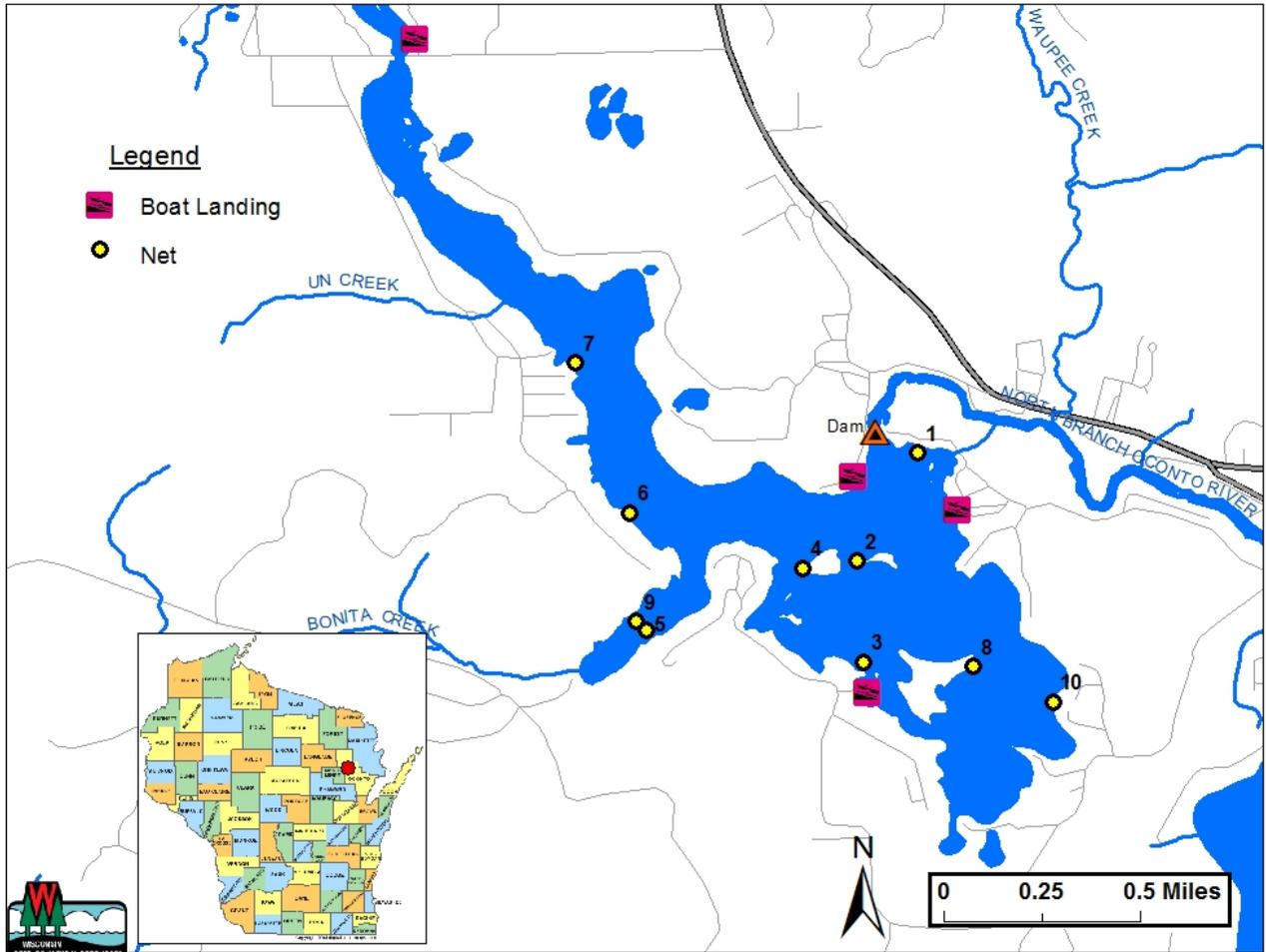
	2002 Fyke Netting (82 net nights)		2013 Fyke Netting (50 net nights)		Spring Electrofishing* May 28, 2014		Fall Electrofishing** October 9, 2014		Fall Electrofishing*** October 16, 2014	
	Total Catch	Catch per net night	Total Catch	Catch per net night	Total Catch	Catch per mile	Total Catch	Catch per mile	Total Catch	Catch per mile
	Black Crappie	204	2.5	4782	95.6	33	33.0			
Bluegill	353	4.3	5208	104.2	443	443.0				
Bullhead spp.	17	0.2	876	17.5	12	12.0				
Largemouth Bass	92	1.1	137	2.7	70	17.5	75	18.8		
Muskellunge	4	0.0	43	0.9			11	2.8	4	1.0
Northern Pike	142	1.7	167	3.3	18	4.5	30	7.5		
Pumpkinseed	32	0.4	2083	41.7	69	69.0				
Rock Bass	93	1.1	761	15.2	15	15.0				
Walleye	2	0.0			1	0.3	1	0.3		
Yellow Perch	207	2.5	681	13.6	9	9.0				

* Gamefish only collected for two 1.5 mile stations; All fish collected for two 0.5 mile stations

**Gamefish only collected for entire 4 miles

***Muskellunge only collected for entire 4 miles

FIGURE 1.— Locations of 10 fyke nets set on April 30 and removed on May 6, 2013 on Chute Pond, Oconto County. Fish in Net 8 were not counted for the entire survey. Fish in Net 2 were not counted for the last four nights of the survey. Total effort = 50 net nights.



Date: 05/20/2014

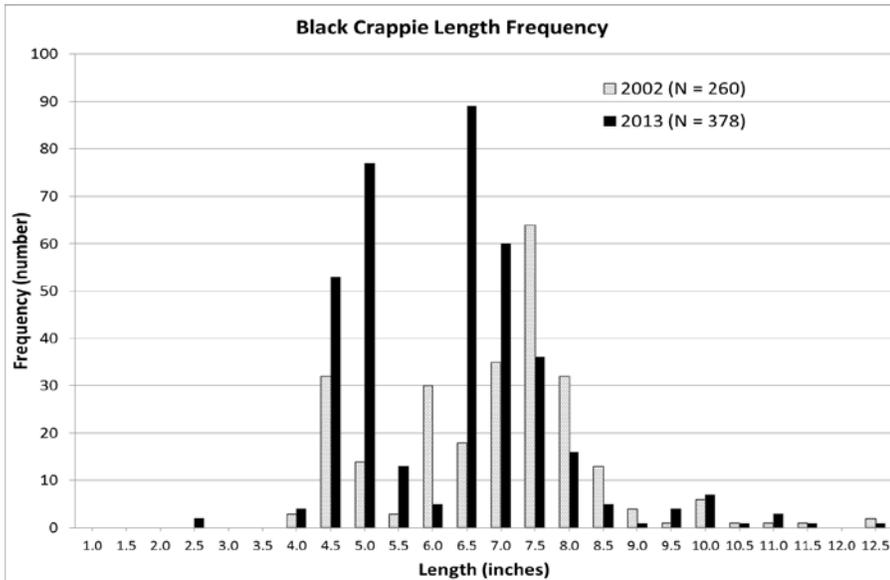


FIGURE 2. – Black crappie length frequency distribution from Chute Pond, 2002 and 2013.

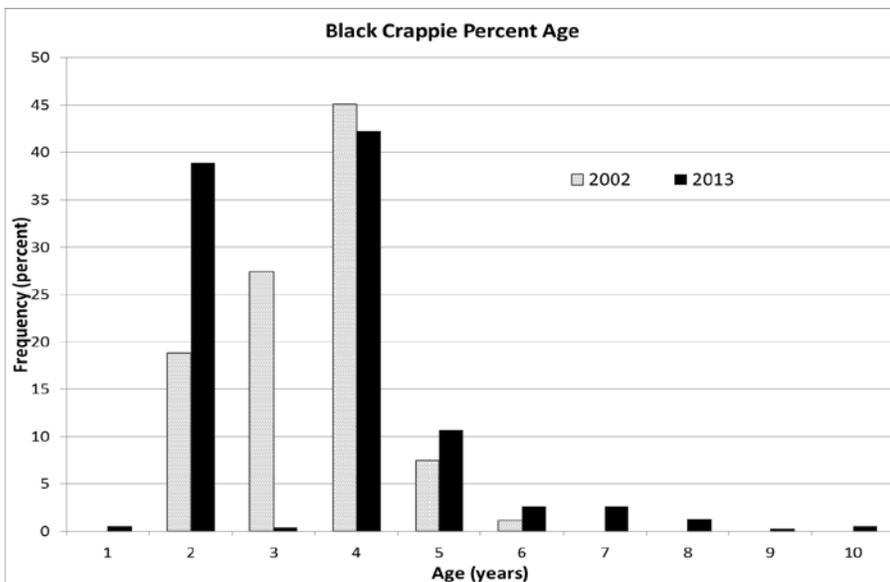


FIGURE 3. – Black crappie age frequency distribution from Chute Pond, 2002 and 2013.

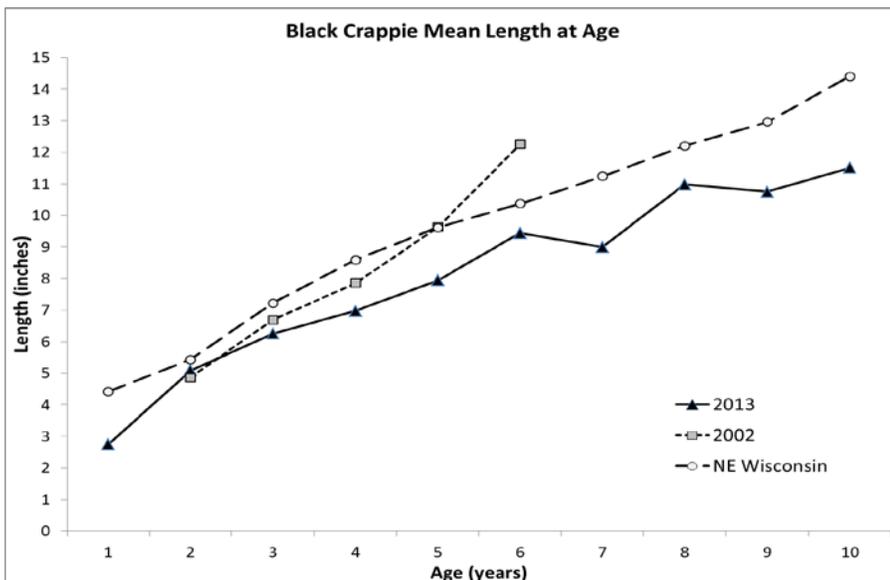


FIGURE 4. – Black crappie mean length at age, Chute Pond, 2002 and 2013, compared to northeast Wisconsin averages.

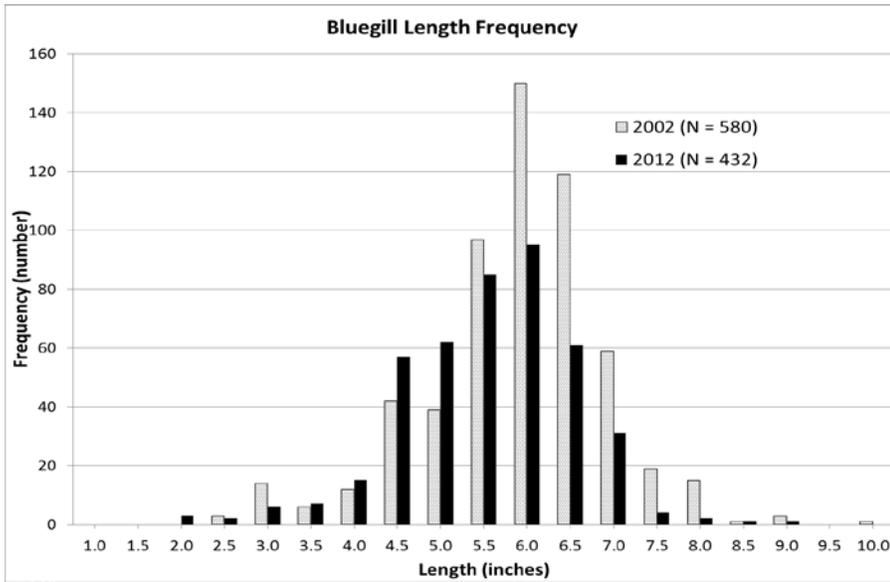


FIGURE 5. – Bluegill length frequency distribution from Chute Pond, 2002 and 2013.

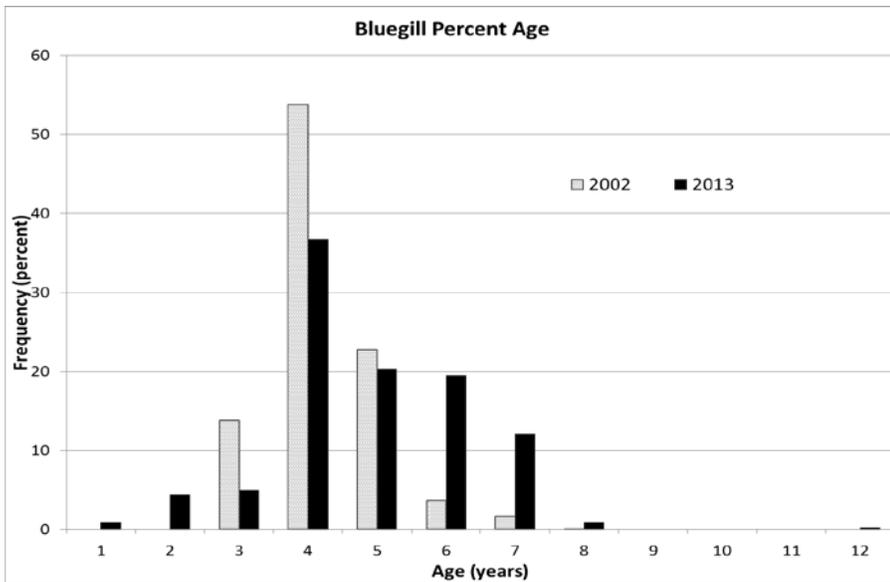


FIGURE 6. – Bluegill age frequency distribution from Chute Pond, 2002 and 2013.

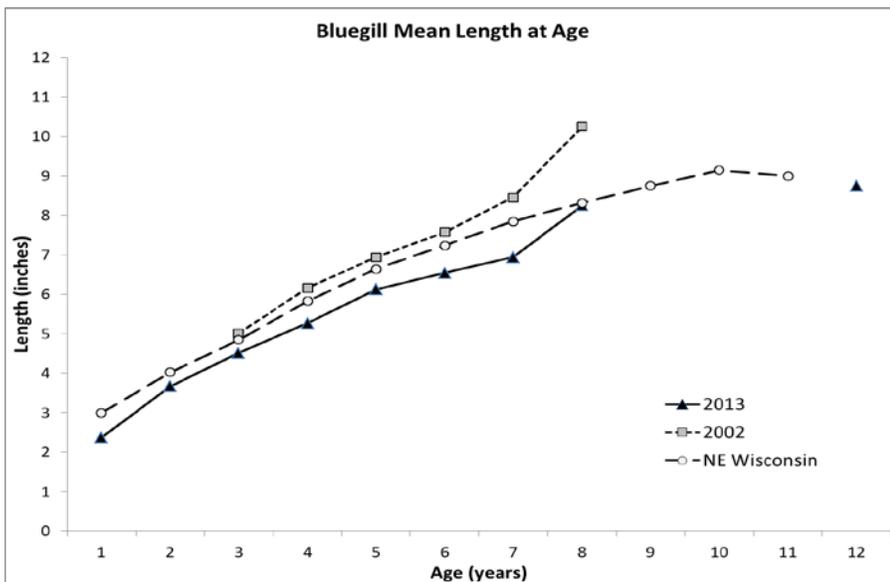


FIGURE 7. – Bluegill mean length at age, Chute Pond, 2002 and 2013, compared to northeast Wisconsin averages.

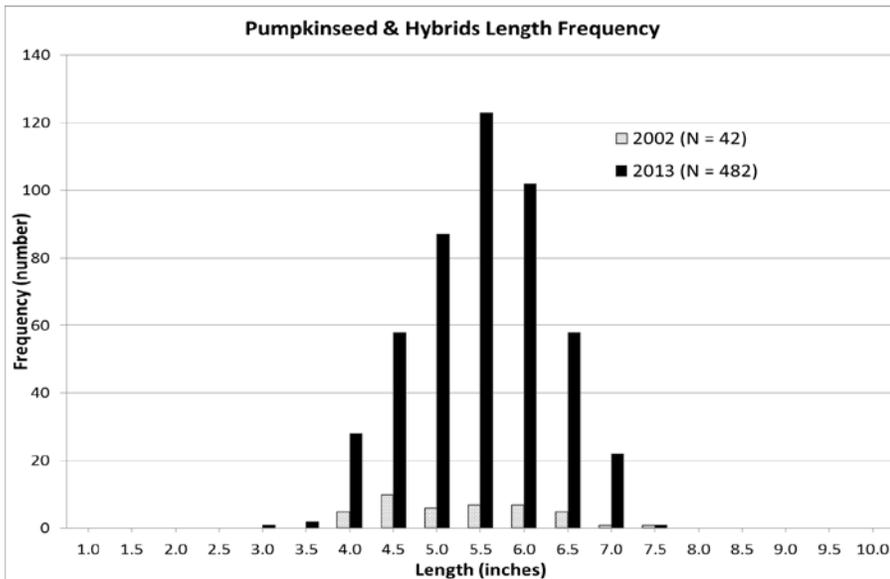


FIGURE 8. – Pumpkinseed and hybrids length frequency distribution from Chute Pond, 2002 and 2013.

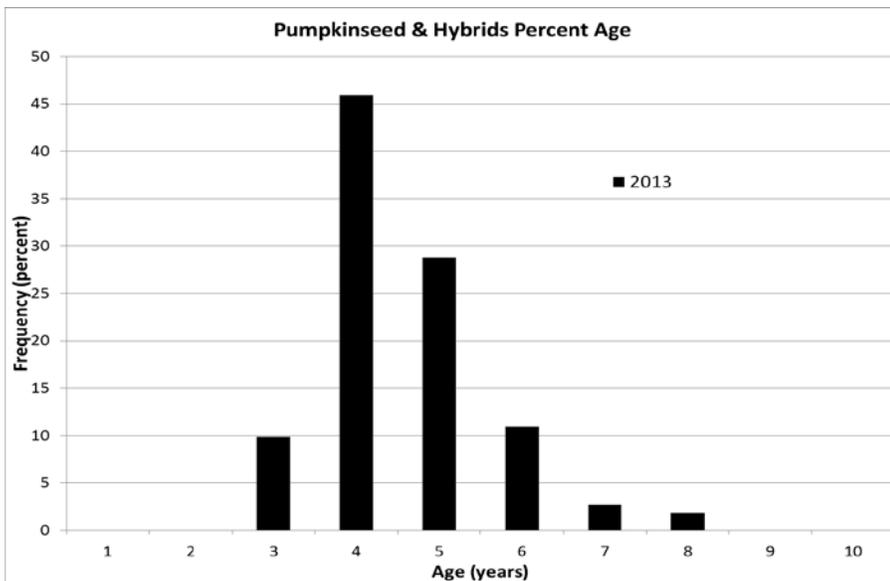


FIGURE 9. – Pumpkinseed and hybrids age frequency distribution from Chute Pond, 2013.

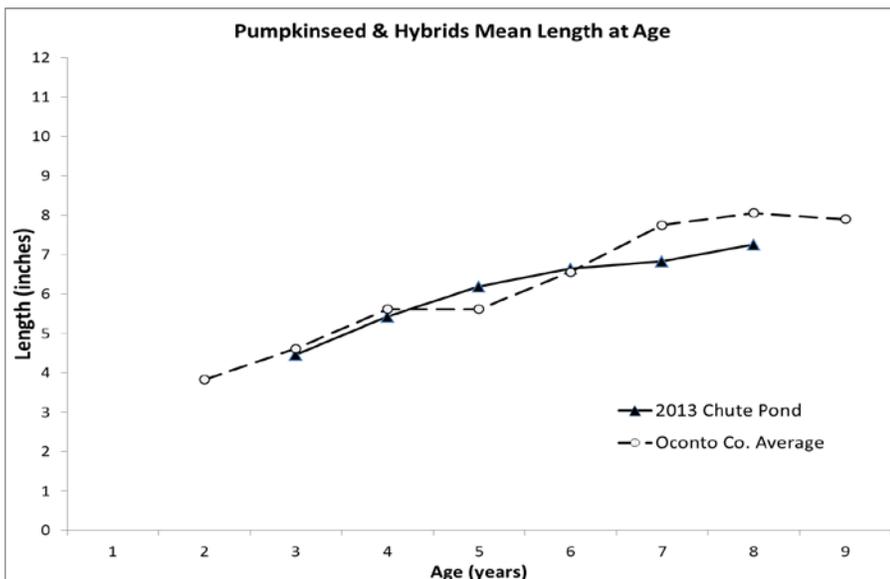


FIGURE 10. – Pumpkinseed and hybrids mean length at age, Chute Pond, 2013, compared to Oconto County averages.

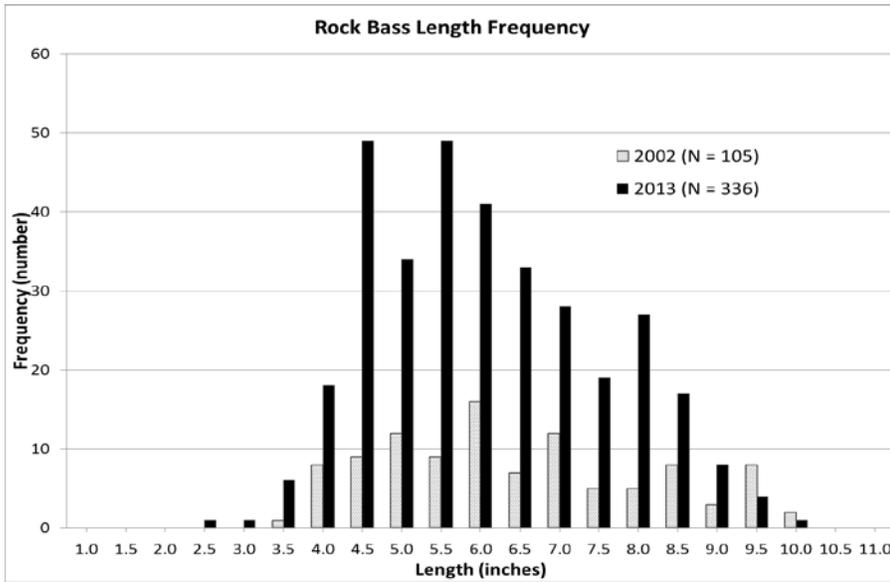


FIGURE 11. – Rock bass length frequency distribution from Chute Pond, 2002 and 2013.

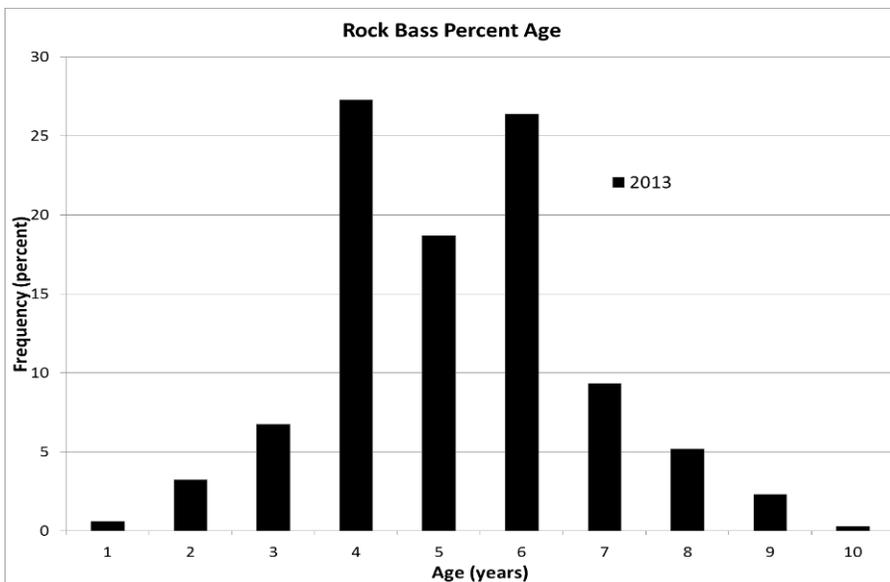


FIGURE 12. – Rock bass age frequency distribution from Chute Pond, 2013.

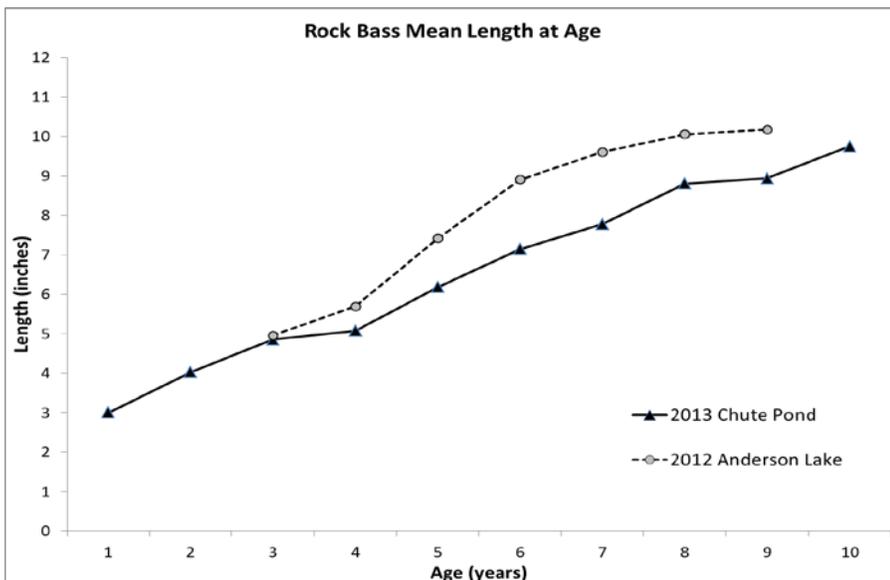


FIGURE 13. –Rock bass mean length at age, Chute Pond, 2013, compared to 2012 Anderson Lake (Oconto County) survey.

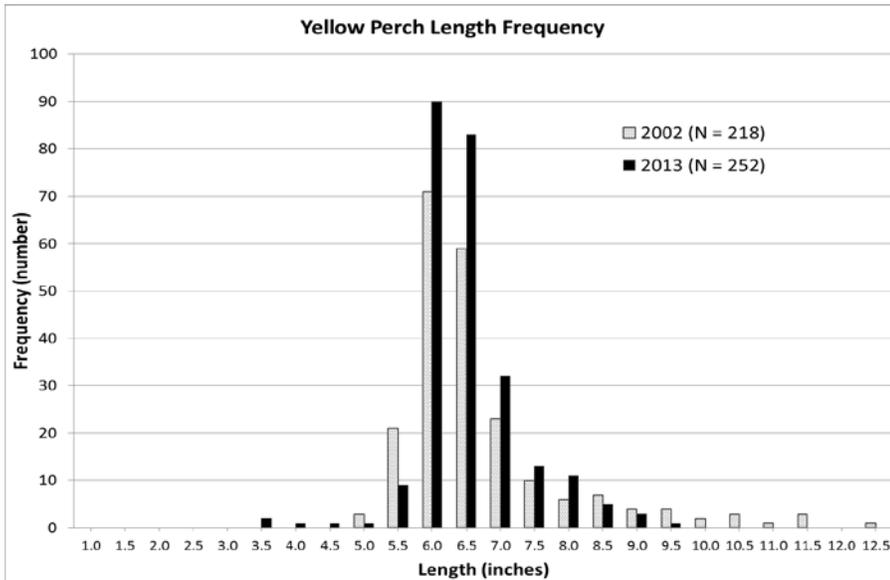


FIGURE 14. – Yellow perch length frequency distribution from Chute Pond, 2002 and 2013.

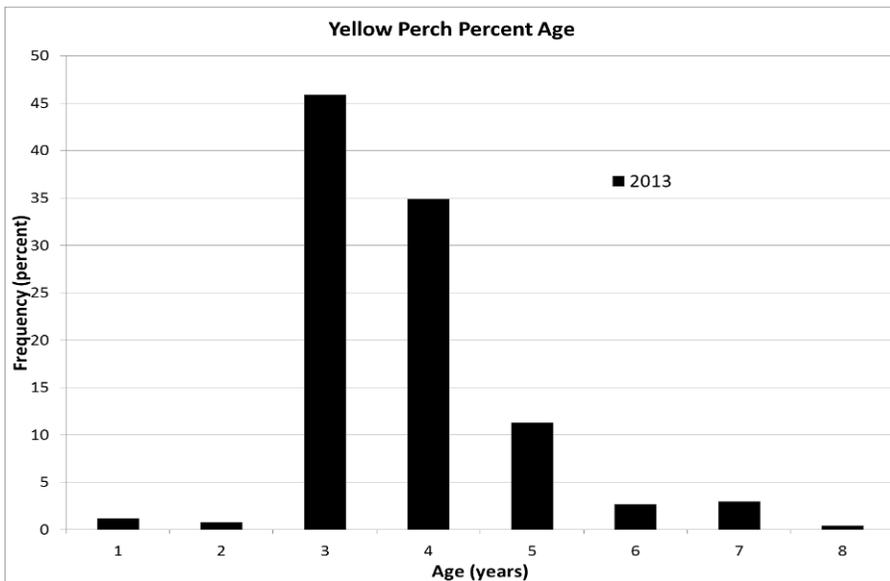


FIGURE 15. – Yellow perch age frequency distribution from Chute Pond, 2013.

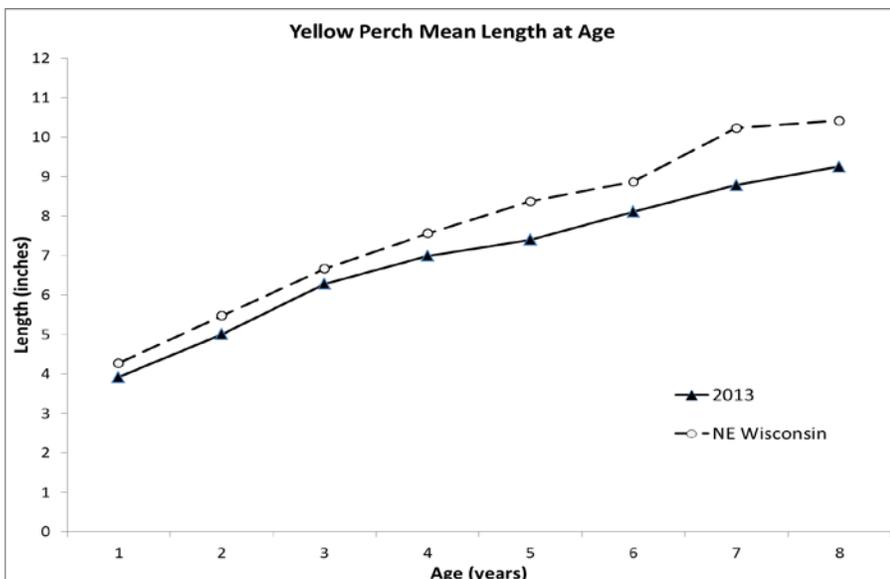


FIGURE 16. – Yellow perch mean length at age, Chute Pond, 2013, compared to northeast Wisconsin averages.

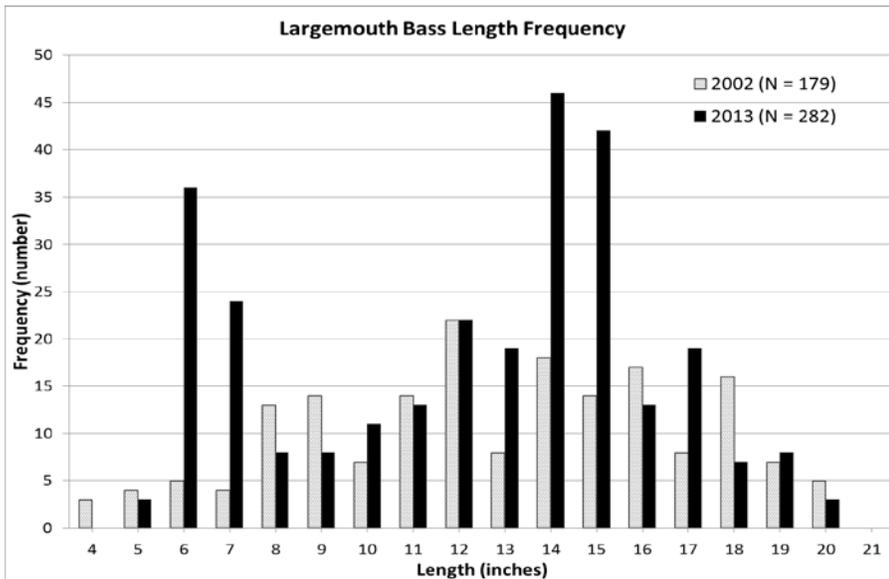


FIGURE 17. – Largemouth bass length frequency distribution from Chute Pond, 2002 and 2013.

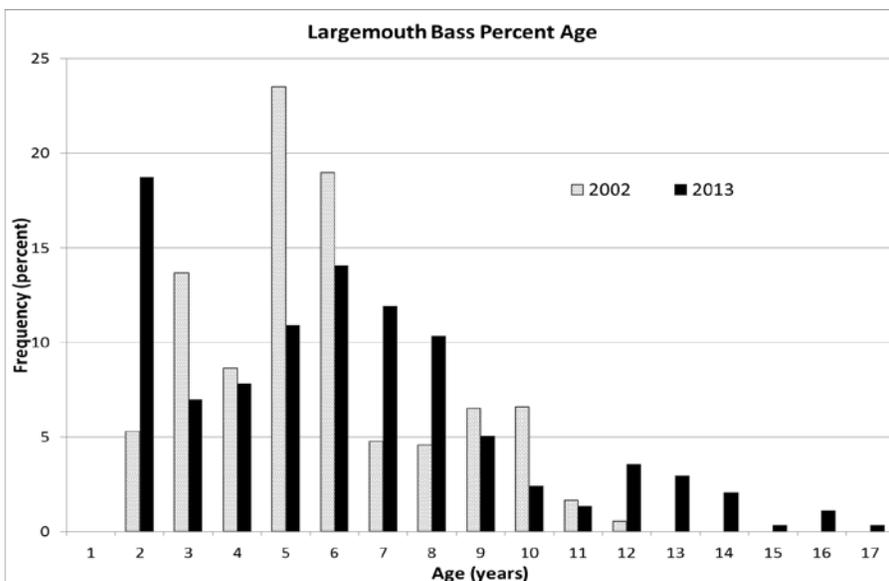


FIGURE 18. – Largemouth bass age frequency distribution from Chute Pond, 2002 and 2013.

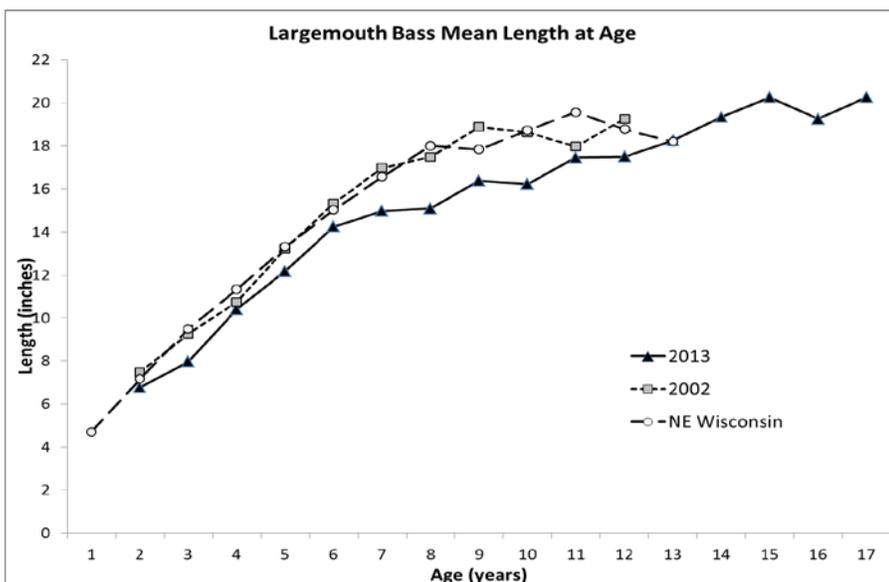


FIGURE 19. – Largemouth bass mean length at age, Chute Pond, 2002 and 2013, compared to northeast Wisconsin averages.

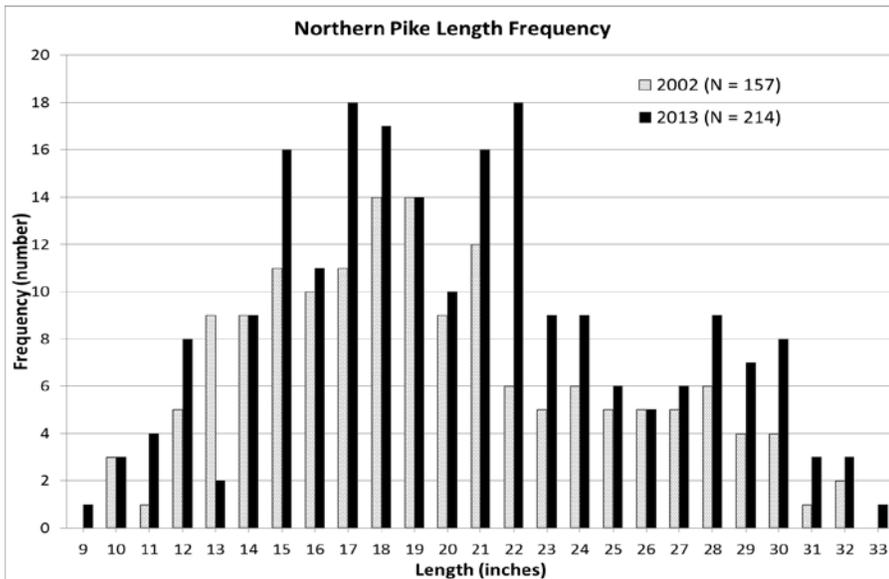


FIGURE 20. – Northern pike length frequency distribution from Chute Pond, 2002 and 2013.

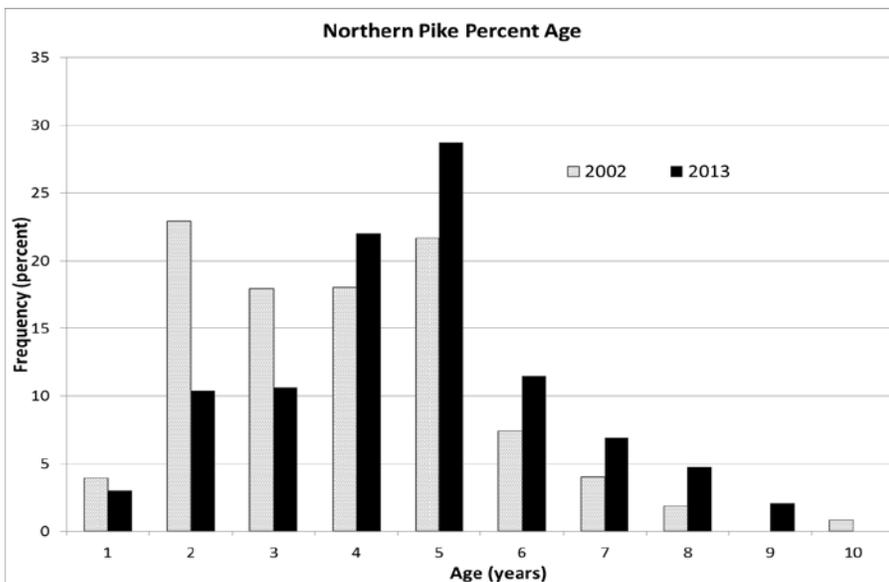


FIGURE 21. – Northern pike age frequency distribution from Chute Pond, 2002 and 2013.

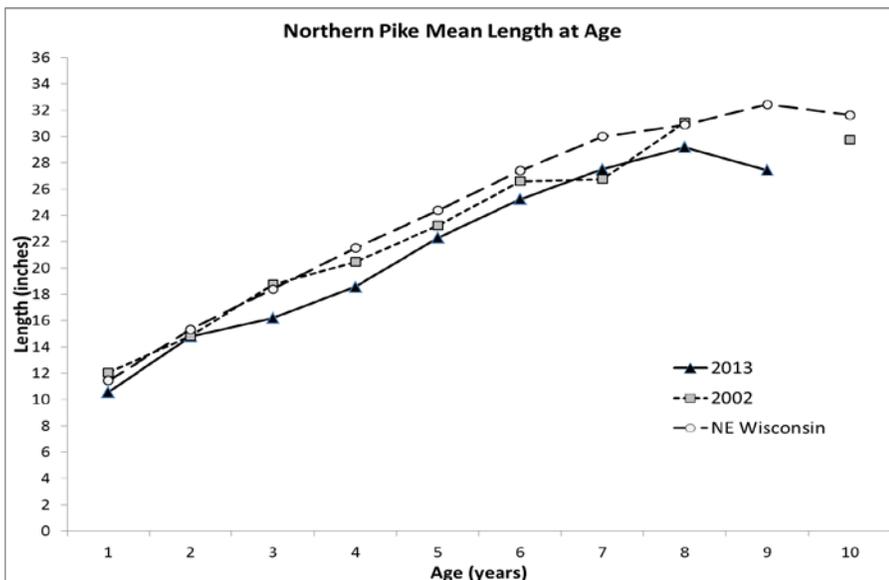


FIGURE 22. – Northern pike mean length at age, Chute Pond, 2002 and 2013, compared to northeast Wisconsin averages.

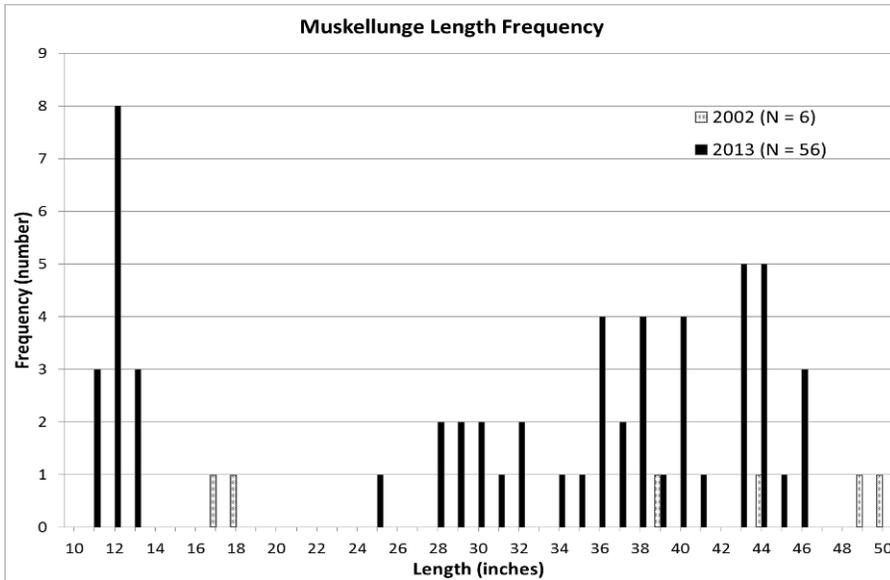


FIGURE 23. – Muskellunge length frequency distribution from Chute Pond, 2002 and 2013.

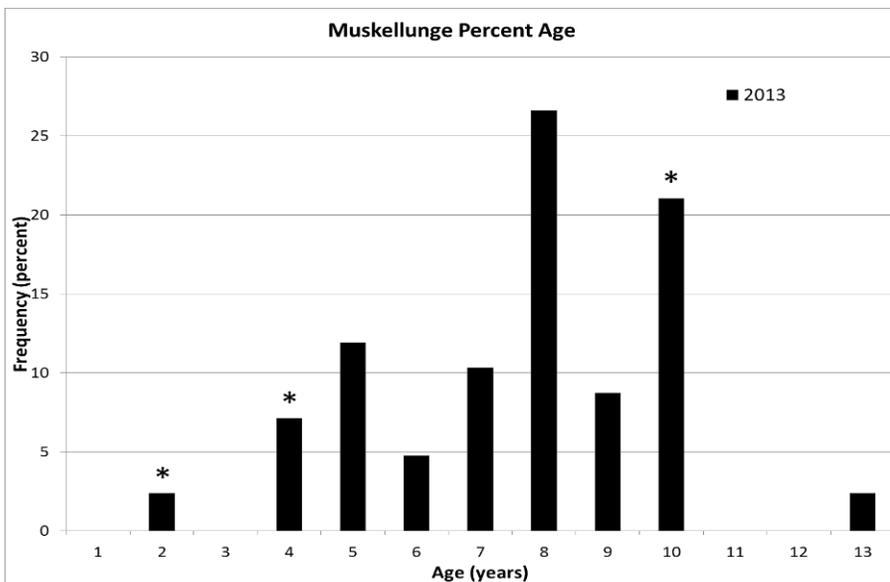


FIGURE 24. – Muskellunge age frequency distribution from Chute Pond, 2002 and 2013. Asterisk above bar denotes year that muskellunge were stocked.

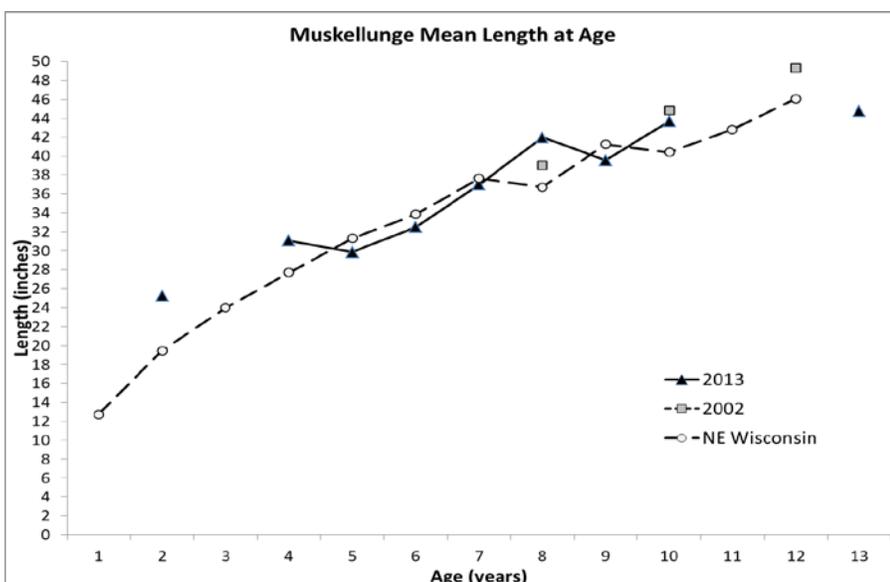


FIGURE 25. – Muskellunge mean length at age, Chute Pond, 2002 and 2013, compared to northeast Wisconsin averages.

APPENDIX - PHOTOS



Ice was still present on Chute Pond when the nets were set on April 30, 2013. This photo shows how the ice moved into an area after a fyke net was set on that day.



WDNR Fisheries staff Tammie Paoli and Ron Rhode emptying a fyke net on Chute Pond.



WDNR Fisheries staff Brad Ryan holds a 20+ inch largemouth bass captured in Chute Pond fyke nets.

APPENDIX - PHOTOS



A muskellunge captured in Chute Pond fyke nets.



On September 25, 2013, 422 muskellunge fall fingerlings averaging 12 inches were scatter stocked into Chute Pond. All fish were given a left ventral fin clip.



A 12+ inch black crappie captured in Chute Pond fyke nets.