Wheeler Lake, Oconto County, Wisconsin
Fisheries Survey Report, 2008

Waterbody Identification Code: 439800

Wheeler Lake, Oconto County, Wisconsin

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October 2009

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Report Approval signatures

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SUMMARY
A comprehensive fisheries survey of Wheeler Lake was conducted during the 2008 field season. The dominant game fish species in this lake are walleye (Chapman population estimate = 791), largemouth bass (Chapman population estimate = 1,784), and northern pike (Schumacher- Eschmeyer population estimate = 338). It appears that walleye harvest and poor natural recruitment have reduced the walleye population. During a 2008-09 creel survey, walleye was the most sought after species and the specific catch rate (angler hours/ fish caught) was lower than any other species. Although the population estimate is currently acceptable for a northern Wisconsin Lake, fall recruitment surveys in 2004, 2005, and 2008 were less than 0.4 young of year walleye per acre. Future year classes might not be able to support the same level of current harvest. Therefore, the walleye population should be monitored with fall recruitment surveys in alternate years for a 6 year period to determine if poor recruitment persists. This lake has an adequate panfish population. The recommended management of Wheeler Lake is for large and smallmouth bass, walleye, northern pike and panfish.

Lake and location
Wheeler Lake, Oconto County, T33N R16E Sec 27

Physical / chemical attributes (Carlson et al, 1977)
Surface acres: 293
Mean depth: 15
Maximum depth: 35 feet
Lake type: seepage with 80% being over 20 ft deep
Basic water chemistry: Neutral, clear water if high transparency and secchi depth of 13 ft.
Littoral substrate: 40% gravel, 30% rubble, 20% sand, 10% muck
Aquatic vegetation: Sparse, 5% emergent and 5% submergent vegetation with Eurasian water milfoil
Other features: This lake is highly developed with over 150 homes. It's located within the treaty ceded territory.

Purpose of surveys
Spring and Fall Electrofishing assessments

Dates of fieldwork
Fyke netting April 28 through May 7, 2008 and electrofishing surveys conducted May 7, 27 and October 13, 2008.

BACKGROUND

Wheeler Lake is a 293 acre seepage lake located just east of Lakewood, WI. Wheeler Lake is located near several other northern Oconto county lakes. The deepest part of the lake is 35 feet and the mean depth is 15 feet with 80% being over 20 ft deep. It's a neutral water body neither acidic nor basic in water chemistry. It's a relatively, clear water with a high transparency and secchi depth measured at 13 feet in 1977. The littoral substrate is 40% gravel, 30% rubble, 20% sand, 10% muck. Aquatic vegetation is sparse with less than 5% emergent and 5% submergent vegetation. It contains invasive species of Eurasian water milfoil and rusty crayfish. It has a highly developed shoreline with a mixture of permanent and seasonal homes.

Fishing pressure on this seepage lake is believed to be high based on a creel survey performed from May- October 2008 and January- March 2009 (Tobias 2009). Anglers fished 12,614 hours or 43 hours per acre during the 2008-09 season. The statewide average is 33.6 hours per acre. February was the month with the highest fishing pressure (7.2 hours per acre) and October was the lowest month at 0.4 hours per acre. Panfish (bluegill, yellow perch, and black crappie) accounted for 37% of the total directed effort. Fishermen also targeted their fishing effort towards walleye (20.7%), northern pike (19.1%) and largemouth bass (18.1%). Wisconsin DNR fishing regulations are standard rules for Oconto county lakes with the walleye bag limit subject to annual revisions (Table 1).

Recent comprehensive surveys were conducted in 1994 and 2001 including spring fyke netting and electrofishing. According to stocking records, walleye fry were first stocked in the 1930s with very poor survival. From 1964-1970, a total of 97,000 walleye fingerlings were stocked into this lake. No stocking has occurred since 1970. Access to the lake can be obtained from a boat landing maintained by the Town of Lakewood off Wheeler Lake Lane.

Since 1985, Wheeler Lake has been eligible for tribal off-reservation harvest. Between 1985 and 2008, a total of 1,054 walleye were harvested from the lake under this activity. That harvest ranged from 0 to 241 annually and an average of 44 walleye/ year.

METHODS

Data collection

In the fyke netting survey during April - May 2008, all game fish were given a left ventral fin clip (for mark recapture population estimate), an ageing structure was collected from 5 fish per 0.5 inch group per sex with a length to the nearest 0.1 inch and weight in grams. An additional 250 individuals per species had length taken to the nearest 0.1 inch and all other were counted. An ageing structure was collected from 10 pan fish per 0.5 inch group per species with a length to the nearest 0.1 inch and a weight in grams. An additional 250 lengths per species measured to the nearest 0.1 inch were collected and all additional fish were counted. The Chapman or Schumacher - Eschmeyer population estimation techniques were used for each gamefish, when applicable, and were calculated using only the fyke net caught fish from spring 2008.

A WDNR standard direct current electrofishing boat was used to sample 4 miles of shoreline on the evening of May 7th for walleye, 2 miles of shoreline on May 27th for all gamefish and 6 miles of shoreline on October 13, 2008 (see attachments). All fish captured were identified to species and counted for the first ½ mile and only game fish during the succeeding 1.5 miles each evening. Total length of gamefish and a sub-sample of panfish were measured to the nearest 0.1 inch. Scales or dorsal spines were collected from a sub-sample of fish stratified within 0.5 inch bins. Ages were assigned to fish after scales and spines were aged using standard WDNR procedures.

Data analysis

Total catch and catch per gear type was calculated for all species. Length frequency distributions were performed for walleye, largemouth bass, smallmouth bass, northern pike and bluegill. Age frequency distributions and mean length at age analyses were performed for walleye, largemouth bass, northern pike, and smallmouth bass. A subsample of adult walleye, northern pike, largemouth and smallmouth bass were aged for comparisons with previous surveys. Age-frequency distribution was calculated after ages were allocated to all related fish in the sample. Mean length at age was calculated as mean length at time of capture. Mean lengths of known-age fish were plotted against northeast Wisconsin averages. Total mortality was estimated using a catch curve analysis (Ricker 1975) for populations where the assumptions of constant recruitment and

mortality appeared valid, including smallmouth bass. Proportional Stock Density (PSD) and Relative Stock Density of preferred length fish (RSD-preferred, Anderson and Neumann 1996) were calculated for smallmouth bass, northern pike, walleye, largemouth bass, and rock bass. Stock length, quality length, and preferred length values were assigned as proposed by Gabelhouse (1984).

RESULTS AND DISCUSSION

Catch per date and sampling gear are presented for each species sampled along with fyke netting results from 2001 (Table 2). A total of 1,955 fish from 10 different species were collected with fyke nets and 630 fish with electrofishing equipment in 2008. In 2001, 920 fish from 9 species were captured with fyke nets excluding white suckers. In 2008, 877 white suckers were caught in fyke nets. The fyke netting effort was 99 net nights in 2008 and 100 net nights in 2001. So excluding the harvest of suckers, the effort and total numbers of fish were very similar for 2001 and 2008 fyke nets. Walleye were the most abundant gamefish caught in fyke nets at 4.07 fish per net night, but largemouth bass was the dominant species captured with electrofishing gear at an average of 61.5 fish per hour. White suckers were dominant species in fyke nets with 877 fish netted in 2008. Bluegill, rock bass, northern pike, yellow perch, walleye and smallmouth bass were common fish species in both gear types. In 2001, the number of walleye caught per net night was 4.93 followed in relative abundance by bluegill (1.07), largemouth bass (.76), rock bass (.74), northern pike (.68), black crappie (.50), and smallmouth bass (.47).

Walleye

Fyke netting in 2008 yielded 403 walleye compared to 493 in 2001. The 2008 catch rate for nets was 4.07 in 2008 compared to 4.93 in 2001. In 2008, the percent composition in the nets was 31% female, 61% male, and 8% unknown. The percent composition of walleye in 2001 was 20% female, 57% male, and 23% unknown sex. In 2008, the female walleye average length was 17.8 inches with a range from 13.6 to 24.3 inches compared to 2001 average of 17.7 inches and range from 14.2 to 26.7 inches. The male average length was 16.2 in 2008 compared to 15.5 in 2001. The respective ranges of male walleye were 14.2 to 19.2 in 2008 and 12.2 to 19.7 in 2001.

The 2008 Electrofishing effort yielded 50 walleye (39 in May and 11 in October). Those fish ranged from 6.4 to 19.7 inches and averaged 15.8 inches. Since no walleye stocking occurred since 1970 and 3 fish were less than 7 inches in length during the October survey, natural recruitment is occurring at Wheeler Lake.

The 2008 size structure was good to excellent with over 90% of the fish greater than 15 inches proportional stock density (PSD) based on fyke net and electrofishing surveys. However, the relative stock density (RSD) preferred values for walleye over 20 inches was poor at 2%. These values were similar in 2001 with a PSD over 90 and the RSD20 at 3%. Size structure was similar for both survey years with good representation from adult walleye; although 25% of the walleye caught in the 2001 netting were under 14 inches compared to 1% in 2008 (Figure 1). Average annual growth rates were 13 to 39% less than other Northeastern Region lakes (Table 3). More than 50% of a subsample of walleye were more than 9 years in age (Figure 2).

An external floy tag was given to all walleye captured in fyke nets during the 2001 survey. In 2008, we recaptured 5 walleye that received a floy tag in 2001. Their average annual growth rate over that 7 year period ranged from 0.22 to 0.45 inches. Those fish were all adult males in 2001 with a size range from 13.9 to 16.8 inches.

The 2008 walleye population estimate was 791. The 2001 population estimate was 1,051 adult walleye. The average number of adult walleye > 20 inches in length per acre ranged from 0.04 in 1994 to 0.11 in 2001 and 0.03 in 2008 for fish. The range of similar values for other northern Oconto county lakes ranged from 0.1 to 0.3 walleye per acre. The population estimate for walleye greater than 12 inches in length has decreased from 11.8/ acre in 1985, 10.2 in 1994, 3.7 in 2001 and 2.8 in 2008.

Largemouth Bass

A total of 85 largemouth bass were sampled during spring netting in 2008 compared to 76 bass caught in 2001 netting. The catch rate was .86 bass per net night in 2008 and .76 bass per net night in 2001 (Table 2). The 2008 fyke netted bass ranged from 6.1 to 20.1 inches and averaged 12.8 inches. In 2001, spring fyke netting yielded bass ranging in size from 6.7 to 22.2 inches. The average size of largemouth bass in 2001 nets was 15.0 inches. Sixty- six percent of the bass were larger than 14 inches (legal size) in 2001, but only 40% were legal size in 2008 (Figure 3).

During 2008 spring electrofishing, we sampled 199 largemouth bass ranging from 6.4 to 17.8 inches. A fall of 2008 electrofishing event yielded 139 largemouth bass ranging from 4.9 to 21.8 inches. The average size in the spring electrofishing survey was 12.0 inches and 12.1 inches in the fall of 2008. Only 17% of the electrofish caught largemouth bass were legal size or larger.

In 2008, the size structure for the fyke netted largemouth bass was good with 79 of the fish greater than 12 inches (PSD) and 17% of fish greater than 15 inches (RSD-preferred). The size structure for the largemouth bass caught during the spring and fall electrofishing surveys was less with 66 of the fish greater than 12 inches (PSD) and 8% of fish greater than 15 inches (RSD-preferred). The 2001 size structure from fyke nets was 90 PSD and 69% for RSD preferred. The recommended RSD-P is 10-40 (Gabelhouse 1984). Overall, largemouth bass were abundant, but size structure has declined from 2001 to 2008.

Largemouth bass aging information was based on a sample size of 106 and compared to other lakes in Northeast Wisconsin (Table 4, Figure 4). When comparing largemouth bass year class strength, based on proportion of ages in the sample, to the NER values, Wheeler Lake values were 7-20% less for all age classes. More than 90% of the largemouth bass were between the ages of 3 and 8, inclusive (Figure 5).

A tagged largemouth bass was caught during the netting survey that had been tagged during a 2001 netting survey. It was aged as 4 years old in 2001 and had a length of 13.7 inches and grew to 16.8 inches in 7 years. The Chapman population estimate for Wheeler Lake largemouth bass was 1,784 or 6.1 per acre.

Northern Pike

Fyke netting in 2008 resulted in the capture of 155 northern pike with a size range of 10.4 to 36.2 inches. The catch rate was 1.57 per net night in 2008 (Table 2). A 2001 netting effort yielded 68 northern pike ranging from 8.7 to 42.5 inches. The 2008 average size was 21.1 inches and 23.7 inches for 2001 survey (Table 5). A breakdown of the average length and standard deviation by sex in 2001 revealed higher values for each group in 2001 versus 2008.

Spring electrofishing in 2008 only yielded 7 pike with an average size of 20.7 inches and range of 17.0 to 26.4 inches. During fall of 2008 electrofishing, 15 pike were sampled with an average length was 19.3 inches with a range from 14.8 to 22.1 inches. Electrofishing was not performed in 2001. The length frequency distribution in 2008 indicated that 79% of the pike were between 15 and 24 inches compared to 34% for the same size range in 2001 (Figure 6).

The size structure for fyke netting in 2008 was good with a 45 PSD and 14% RSD28. The 2001 spring netting PSD was 78 and the RSD28 was 29%. The PSD value was 42 lower from 2001 to 2008 and the RSD was a 52% reduction.

Ages were determined for 120 northern pike from Wheeler Lake and those fish were assigned ages from 1 to 10 years (Table 6). Average age information yielded insignificant age differences between Wheeler Lake and NER northern pike for ages 1-4 and 8-9 (Table 7). Wheeler Lake northern pike average age was 10-13% lower than NER averages for ages 5-7 years. Length frequency data and aging information, appeared to indicate strong year classes for 2004- 2006 year classes. More than 78% of the northern pike were between the ages of 2 and 5, inclusive (Figure 7). The Schumacher- Eschmeyer population estimate for northern pike was 338 or 1.2 per acre.

Smallmouth Bass

In 2008, a total of 12 smallmouth bass were encountered in our fyke nets for a catch rate of .12 fish per net night, compared to a rate of .47 in 2001 (Table 2). The 2008 smallmouth ranged from 10.7 to 16.4 inches with an average of 12.6 inches. In 2001, the sample size was 47 and those fish ranged from 6.0 to 18.4 inches with an average of 12.9 inches. Length frequency comparisons are limited between 2001 and 2008 because of a small 2008 sample size (Figure 8). Both survey years indicated the presence of adult bass in the spring. In 2008, the sample size for electrofishing was 176 fish compared to only 7 in 2001. The length range in 2008 was 4.2 to 14.8 inches and the average size was 9.2 inches compared to 6.9 to 11.6 inches in 2001 with an average size of 8.8 inches. Those electrofishing surveys revealed 4 to 6 inch bass and indicates good natural recruitment as well as adult fish.

The size structure for fyke netting in 2008 was very good with a 92% PSD but poor with an 8% RSD14 but the sample size was small. The 2008 electrofishing survey indicated

poor values with 32% of the fish greater than 7 inches (PSD) and 2% fish greater than 14 inches-preferred (RSD). The 2001 spring netting PSD was 80% and the RSD14 was 35%. Ages were assigned to 66 smallmouth bass from Wheeler Lake and ranged from 2 to 8 years (Table 8). Average age information yielded significant differences (2-5 inches) between Wheeler Lake and NER smallmouth bass for ages 2-8 (Table 7, Figure 9). Length frequency data and aging information from fall electrofishing, appeared to indicate strong year classes of juvenile and sub-adult smallmouth bass (Figure 10). More than 82% of the smallmouth bass were between the ages of 3 and 5, although full recruitment to this gear does not occur until age 3 (Figure 11). The calculated total annual mortality rate for aged bass from 3 to 8 years was 51% and that rate is acceptable for a northern Wisconsin lake.

Bluegill

The 2008 results may not reflect the characteristics of the bluegill population since the number of measured fish from the fyke nets was 55 and 14 from the spring electrofishing survey. The catch rate was 0.55 in 2008 and 1.07 per net night in 2001 (Table 2). In 2008, bluegill lengths ranged from 4.0 to 9.4 inches and averaged 6.6 inches. In 2008, 65% of the bluegill were between 4-7 inches long while 88% were in the same size range in 2001 (Figure 12). In 2008, 35% of the bluegill in the fyke netting samples were over 8 inches in length compared to only 5% in 2001.

Rock Bass

The catch rate for rock bass in the spring of 2008 was 1.91 fish per net night (Table 2). During that survey, 122 rock bass were captured and the size range was 4.3 to 10.9 inches with an average length of 7.8 inches. A spring of 2008 electrofishing event yielded 26 rock bass with an average size of 7.1 inches and ranging from 3.8 to 9.3 inches. The 2008 spring netting RSD and PSD9 values were excellent at 74 and 28%, respectively. The 2001 netting RSD was 21% and PSD was 4%. During the May of 2008 electrofishing event, the PSD value was calculated at 60% and the RSD8 was 12%.

Other Fish Species

The catch rate for yellow perch in the spring of 2008 was 0.76 fish per net night (Table 2). A total of 66 perch were sampled with a size range of 3.1 to 11.3 inches and the average size was 7.2 inches. The spring survey PSD value was less than rock bass or bluegill at 23 while the RSD10 was higher than RSD values for other species at 15%. Only one 4.9 inch perch was captured in the May electrofishing survey. During spring netting, 9 black crappie were captured and only 3 fish were measured at 10.3, 11.5, 11.5 inches. Black crappie were not observed during the two electrofishing events. White sucker were very abundant as 877 were captured in the fyke nets, although no finclipping was conducted so the percentage of recaptures is unknown.

CONCLUSIONS AND RECOMMENDATIONS

As indicated by the 2008-09 creel report, more than 20% of the anglers target walleye at Wheeler Lake. During that creel survey, the total angler walleye harvest was 193. Tribal members have actively harvested Wheeler Lake since 1991. That harvest was highest in 1995 and 1996 when 211 and 241 walleye were harvested, respectively. From 1997-through 2009, the average annual tribal harvest has been 48 walleye. Based on the 2008 creel survey and tribal harvest, the exploitation rate was 26%.

In 2008 surveys, the walleye population was largely supported by 16 to 19 inch fish. In 2001, 25% of the walleye were less than 14 inches in length compared to less than 1% in 2008. The adult walleye population estimate was 22% lower in 2008 compared to 2001. The number of walleye over 6 inches in length during fall electrofishing events has decreased over the last 17 years (41 fish/ mile in 1991, 25 in 1994, 14 in 1998, 6 in 2004, 5 in 2005 and 2 in 2008). The number of walleye less than 6 inches in length during fall electrofishing events has decreased over the last 17 years (1.2 fish/ mile in 1991, 4.4 in 1994, 2.6 in 1998, .35 in 2004, .16 in 2005 and .15 in 2008) (Figure 13). It appears that fishing pressure might be higher than the natural recruitment can support so it would be prudent to monitor young of year walleye with a fall recruitment surveys for alternate years over a 6 year period. The next fall survey should be conducted in 2010. If poor recruitment persists then future management may necessitate large walleye fingerlings stocking.

The largemouth bass population appears to be in good condition as 40% of the sampled bass were larger than 14 inches. More largemouth bass were caught during the 2008 spring electrofishing survey than any other species. Proportional stock density (PSD) and relative stock density (RSD) values indicate a moderate density population which indicates that largemouth bass are of equal importance in a balanced community (Gabelhouse, 1984). The size structure of the northern pike population has changed from 2001 to 2008. The PSD value was 42% lower and the RSD indicated a 52% reduction from 2001 to 2008. The largemouth bass and northern pike fisheries each support a relatively large amount of the targeted fishing effort at just under 20% for each species. During the fall electrofishing survey, more smallmouth bass were caught than any other species. Unfortunately, only 2% of those bass were larger than 14 inches in length. Less than 5% of the anglers reported they were targeting smallmouth bass in Wheeler Lake. Fishery surveys in 2001 and 2008 indicated good natural recruitment of smallmouth bass. Growth rates of these 4 gamefish species were less than the average growth of northeast Wisconsin lakes.

Panfish (bluegill, yellow perch, rock bass and black crappie) accounted for 37% of the total directed effort. Based on a survey sample size of 55, the bluegill fishery appeared to represent a good population of adult fish in the 7-9 inch range and that size group represented 48% of the surveyed fish. The rock bass population was represented by a good length frequency and the average length was 7.8 inches. Netting surveys also indicated a healthy population of yellow perch and that species represented 11% of the directed effort in the recent creel survey. The average size of harvested perch was 9.8 inches. Black crappie were observed in low numbers during the survey and creel survey. Crappie populations are cyclical and likely that fishery should improve in the near future. Wisconsin DNR has worked with lakefront owners to improve habitat. In 2009, we placed and anchored 100 small conifers throughout the lake. Property owners could also explore placing tree drops around the shoreline, although support would be needed from the Forest Service and WDNR. Additional cover for fish should increase the prey population and provide additional protection for juvenile predators.

The current regulations seem to be appropriate but walleye exploitation should be monitored on Wheeler Lake. I would recommend a comprehensive survey of these waters in the next 5-10 years. Public access to Wheeler Lake is adequate, although the parking

area and adjacent roads are full on busier weekends. It appears an expanded parking area would be beneficial but the highly developed shoreline makes that improbable.

ACKNOWLEDGEMENTS

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TABLES AND FIGURES

TABLE 1. Current fishing regulations for Wheeler Lake, Oconto County, Wisconsin.

Species	Open Season	Daily limit	Minimum length
Largemouth and Smallmouth Bass	1st Saturday May- June 19 June 20- March 7	0 5 in total	Catch and release 14 inches
Northern Pike	first Saturday in May – first Sunday in March	5	none
Muskellunge	May 23- November 30	1	34 inches
Walleye	1st Sunday May- 1st Saturday March	5	15 inches
Panfish (bluegill, pumpkinseed, yellow perch, white and black crappie)	Open all year	25 in total	None
Catfish	Open all year	10 in total	none

TABLE 2. Catch summary for fyke netting (April 28 to May 7) and electrofishing samples from Wheeler Lake, Oconto County, WI, 2008. The electrofishing sample was collected on May 7th, May 27th and October 13th for a total of 5.5 hours of effort. The 2008 fyke net effort was 99 net nights. The 2001 fyke net effort was 100 net nights.

Species	Fyke netting 2008		May Electrofishing 2008		October Electrofishing 2008		Fyke netting 2001	
	Total Catch	Catch per net night	Total Catch	Catch per hour	Total Catch	Catch per hour	Total Catch	Catch per net night
White Sucker	877	8.8	2	.8	0	-	-	-
Walleye	403	4.07	39	15.6	11	3.67	493	4.93
Rock Bass	189	1.91	26	10.4	0	-	74	.74
Yellow Perch	75	.76	1	0.4	0	-	4	.04
Bluegill	55	.55	14	5.6	0	-	107	1.07
Northern Pike	155	1.57	7	2.8	15	5.0	68	.68
Largemouth Bass	85	.86	199	79.6	139	46.33	76	.76
Yellow Bullhead	3	.03	1	0.4	0	-	1	.01
Black Crappie	5	.05	0	-	0	-	50	.50
Smallmouth Bass	12	.12	12	4.8	176	58.67	47	.47

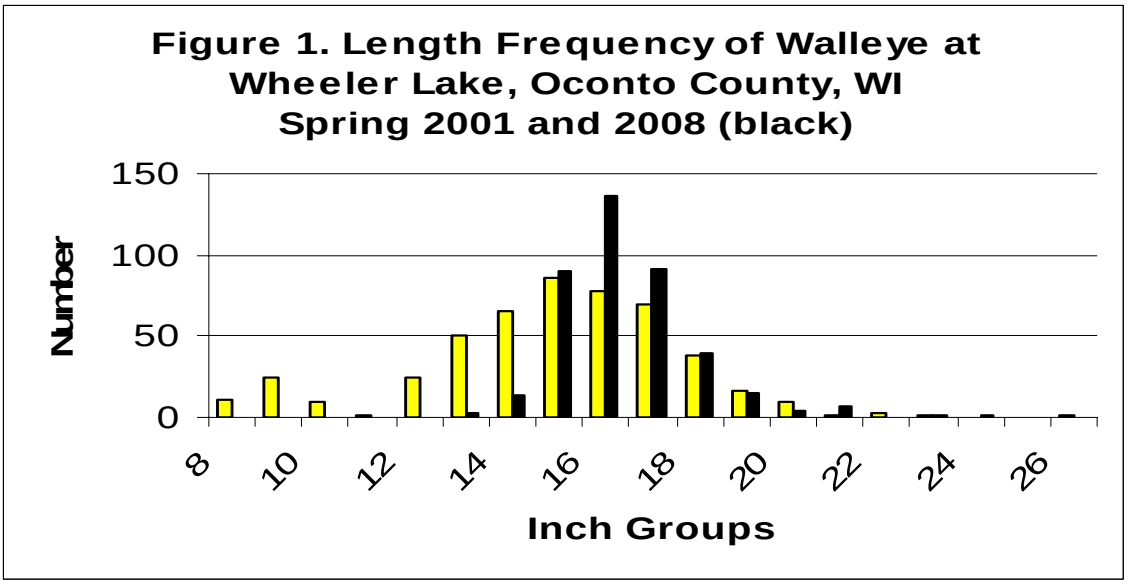
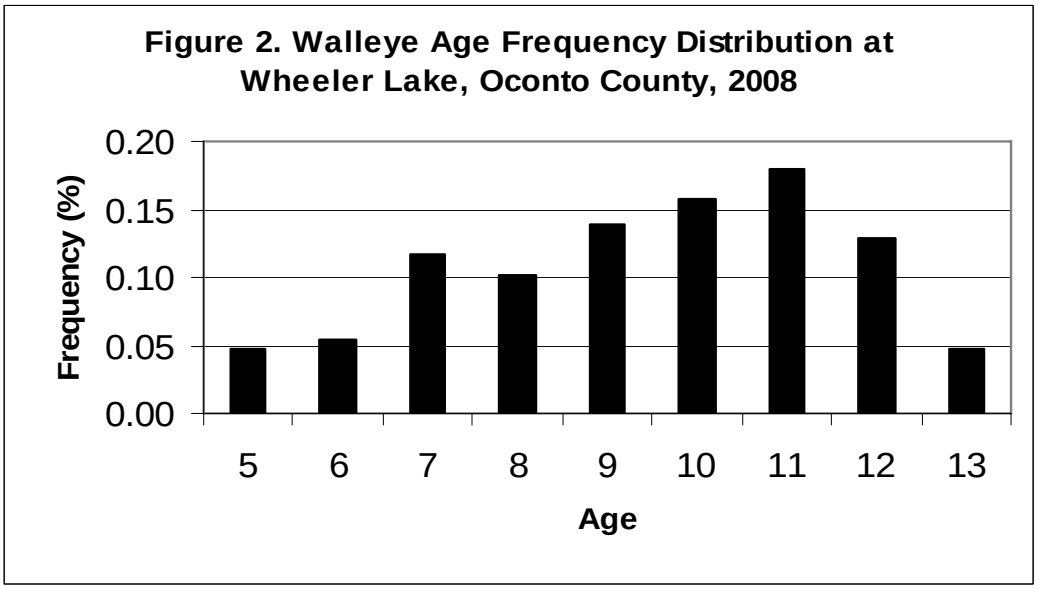


Table 3. 2008 Age- length distribution of walleye from Wheeler Lake, Oconto County, Wisconsin compared to Northeastern (NER) Wisconsin average length at age data. N equals sample size.

Age	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
NER Average	13.6	16.4	18.0	19.1	21.2	22.5	23.9	26.7	26.3	27.0	25.5	27.9
2008 Survey	13.6	-	14.9	16.6	16.9	17.4	16.3	17.2	16.8	18.1	18.9	20.8
2008 (N)	2	0	5	3	10	14	11	14	13	12	8	4



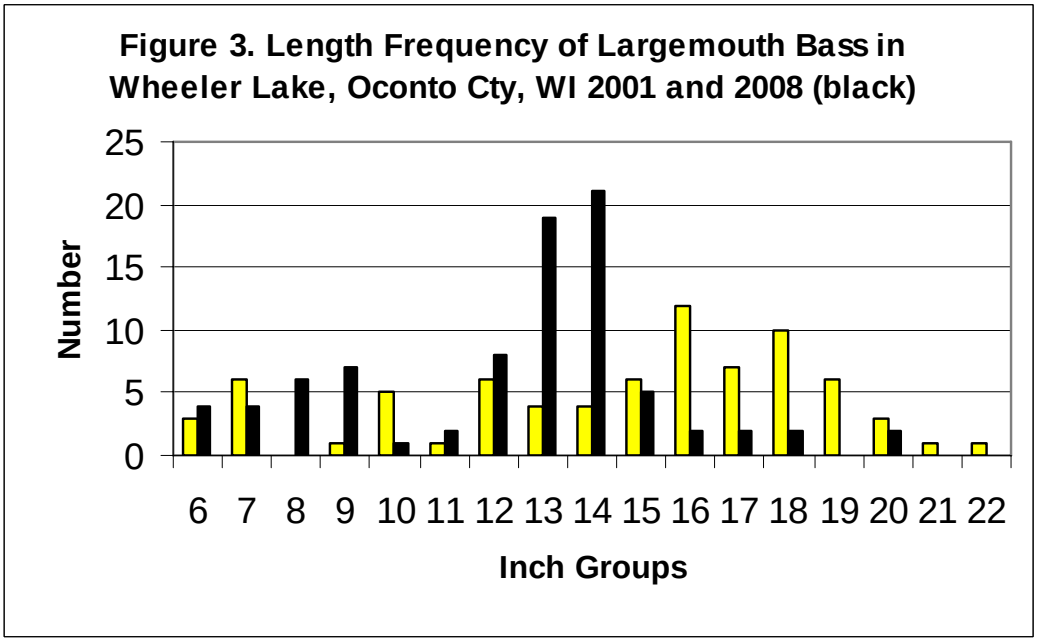
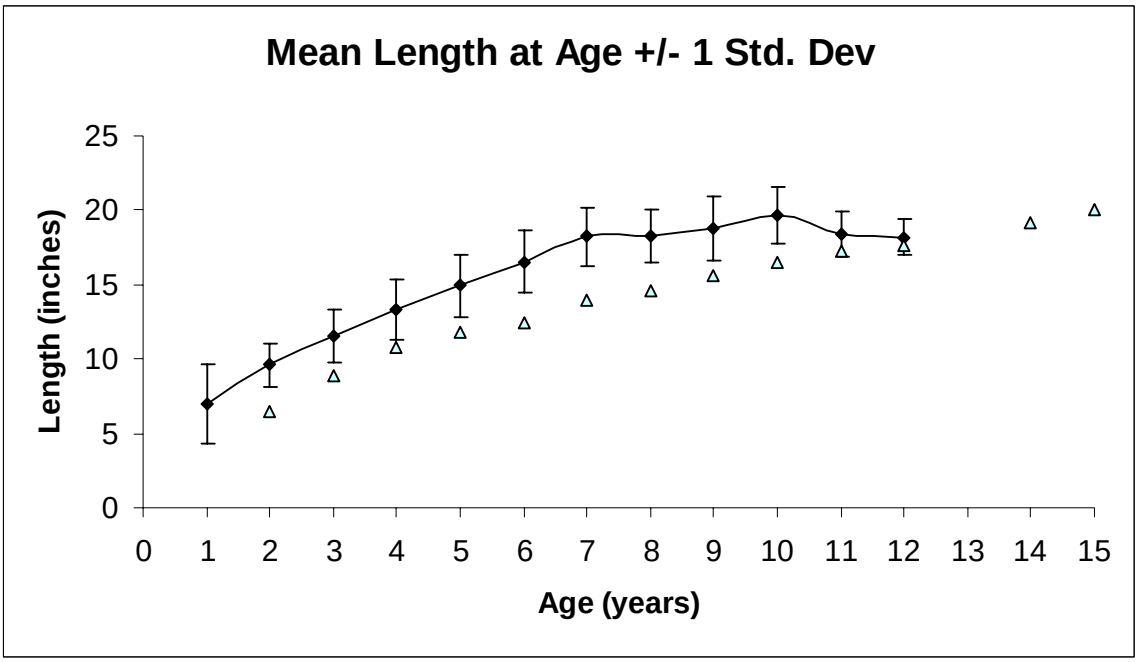


Table 4. Spring 2008 Age- length distribution of largemouth bass from Wheeler Lake, Oconto County, Wisconsin compared to Northeastern (NER) Wisconsin average length at age data. N equals sample size.

Age	2	3	4	5	6	7	8	9	10	11	12	14	15
NER Average	7.0	9.6	11.5	13.3	14.9	16.5	18.3	18.2	18.8	19.6	18.4	----	----
2008 Survey	6.5	8.9	10.8	11.8	12.5	13.9	14.6	15.6	16.5	17.2	17.7	19.2	20.1
2008(N)	6	34	7	6	7	11	12	6	4	1	3	2	1

Figure 4. Northeastern Region of Wisconsin Mean of the Average Length at Age from Largemouth Bass of all Surveys compared to average length at Age for Wheeler Lake in 2008 (triangles).



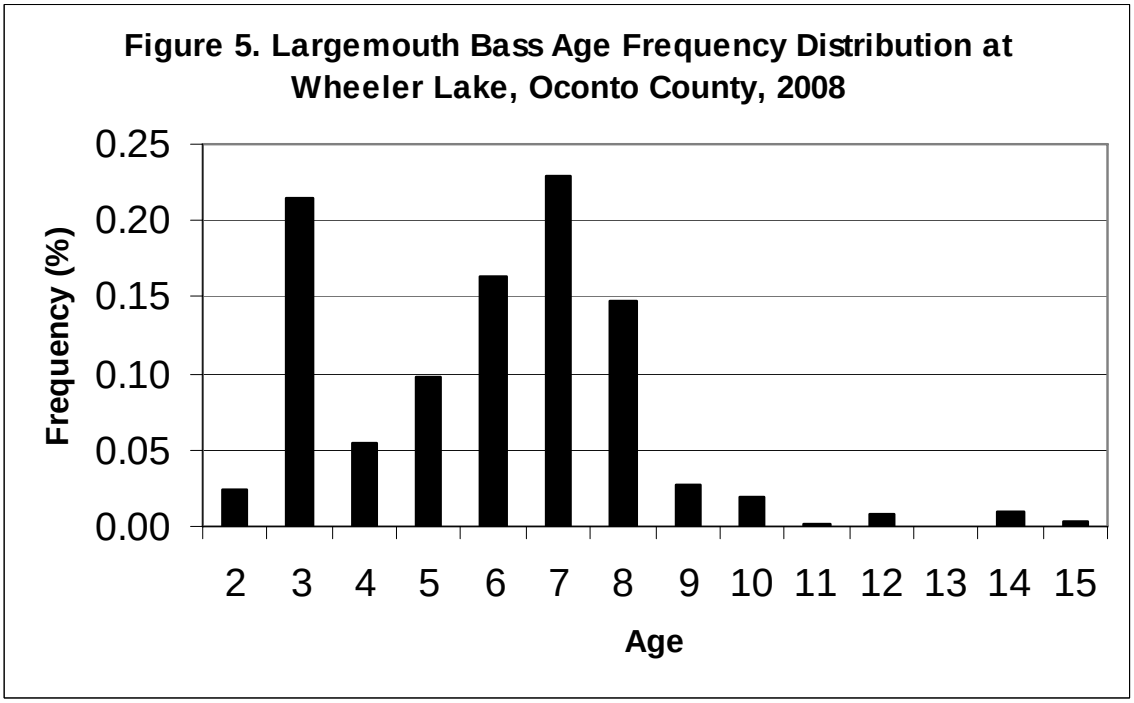


Table 5. Average Length and standard deviation of northern pike by sex for 2001 and 2008 in Wheeler Lake, Oconto county, Wisconsin

Year	2001			2008		
Statistic	Male	Female	Unknown	Male	Female	Unknown
Average length	21.3	28.8	23.8	19.2	20.1	23.4
Standard Deviation	6.0	6.1	10.7	4.1	3.2	6.2
Sample size	18	7	43	54	37	64

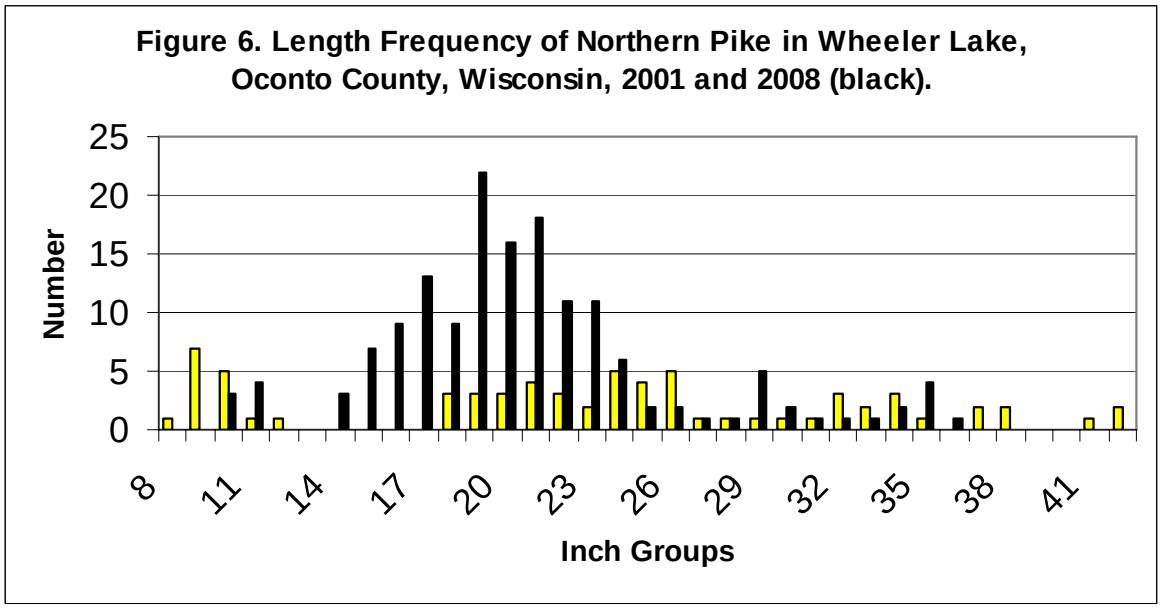
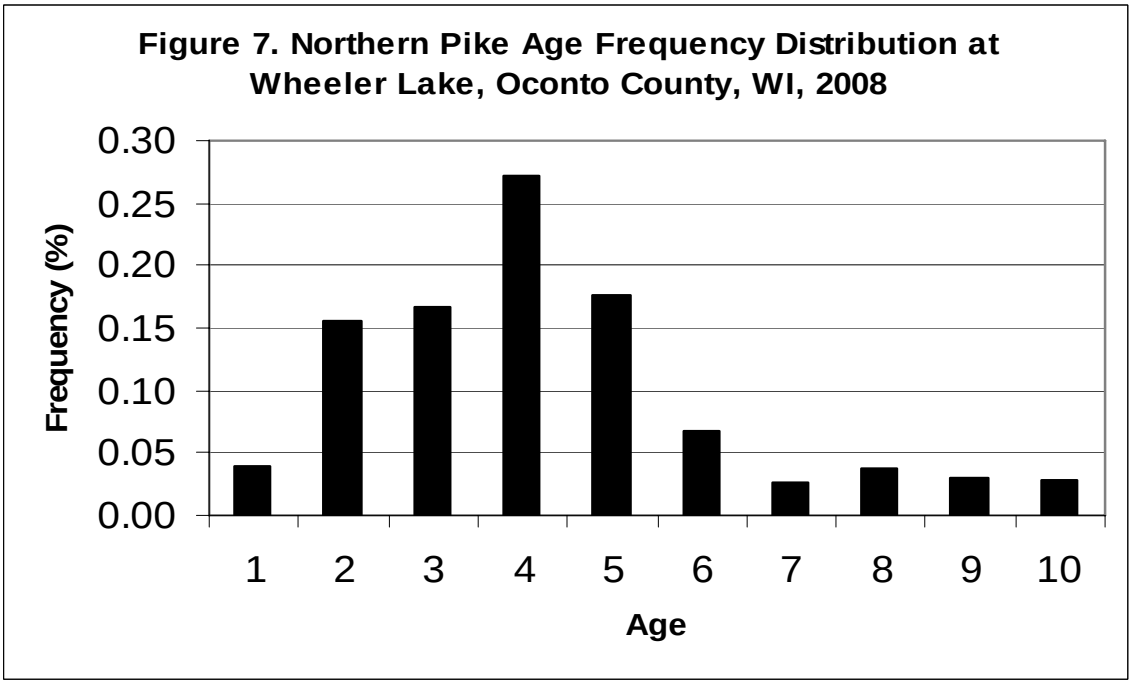


Table 6. Spring 2008 Age- length distribution of northern pike from Wheeler Lake, Oconto County, Wisconsin compared to Northeastern (NER) Wisconsin average length at age data. N equals sample size.

Age	1	2	3	4	5	6	7	8	9	10
NER Average	10.9	15.1	18.6	21.8	24.3	27.2	30.0	30.6	31.5	31.6
2008 Survey	11.1	16.3	18.8	20.6	21.8	23.6	26.5	30.1	32.5	35.2
2008(N)	7	19	19	29	20	6	4	6	5	5



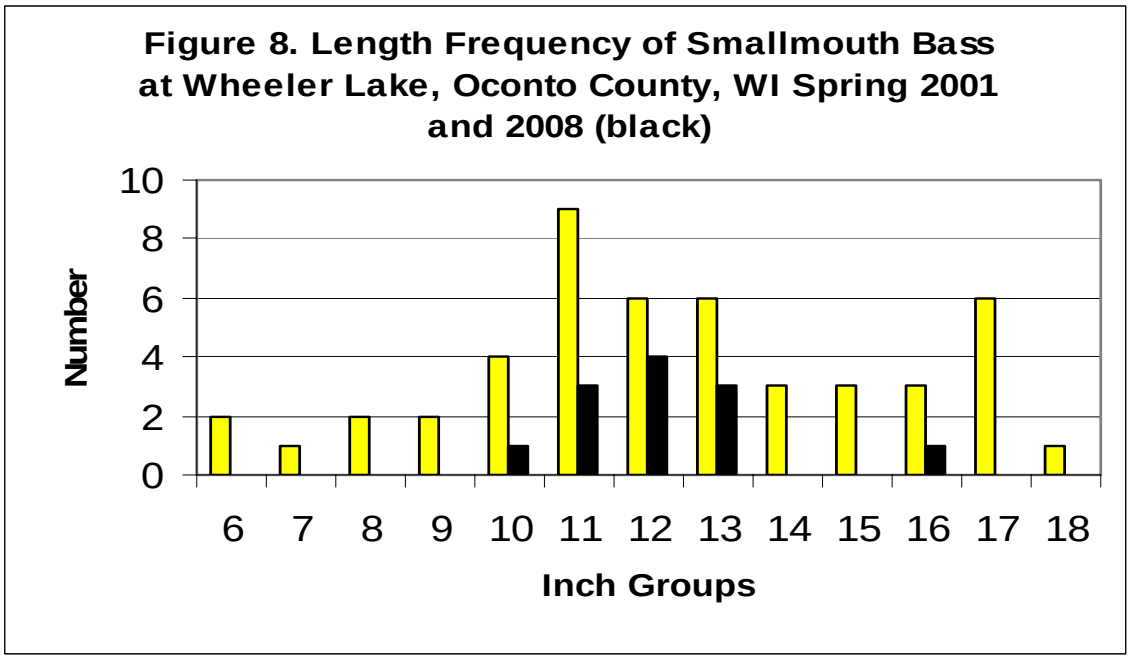


Table 7. Spring 2008 Age- length distribution of smallmouth bass from Wheeler Lake, Oconto County, Wisconsin compared to Northeastern (NER) Wisconsin average length at age data. N equals sample size.

Age	**2**	**3**	**4**	**5**	**6**	**7**	**8**
NER Average	7.0	10.0	12.6	14.3	15.8	17.1	18.5
2008 Survey	5.7	7.9	9.5	11.7	12.7	14.5	13.0
2008(N)	5	19	13	15	8	5	1

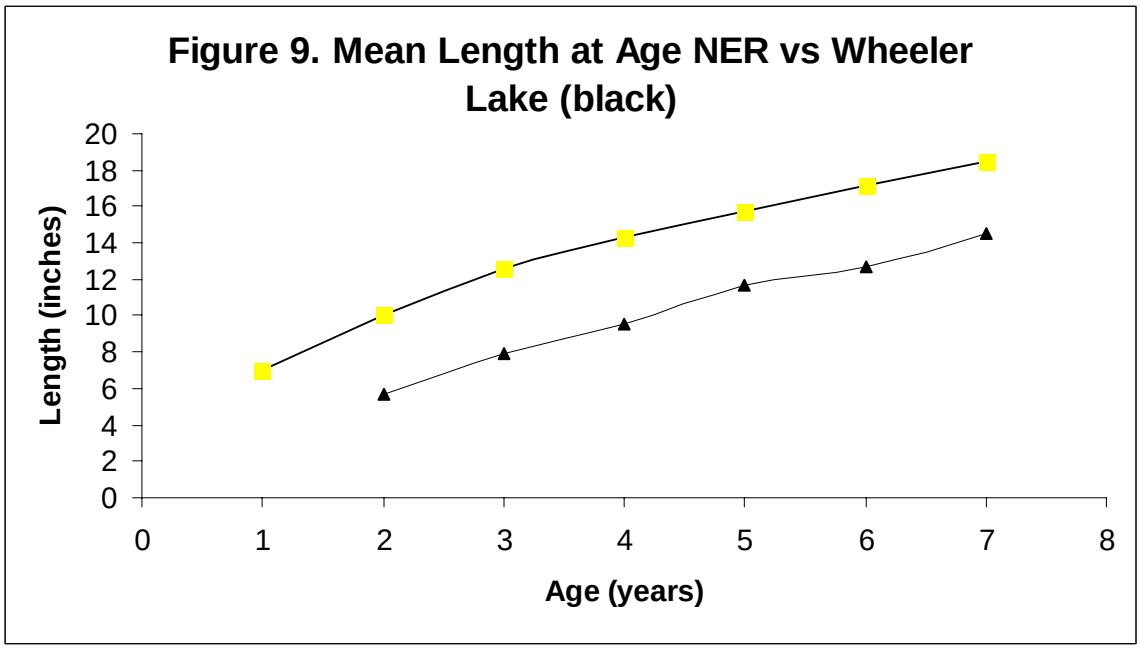


Figure 10. Length Frequency of Smallmouth Bass, Wheeler Lake, Oconto County, WI Fall 2008

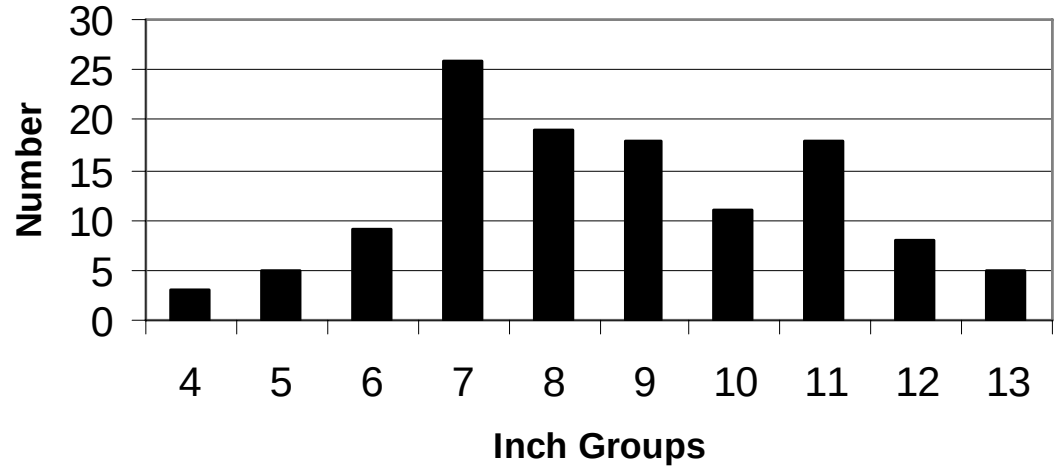


Figure 11. Smallmouth Bass Age Frequency Distribution at Wheeler Lake, Oconto County, Wisconsin, 2008

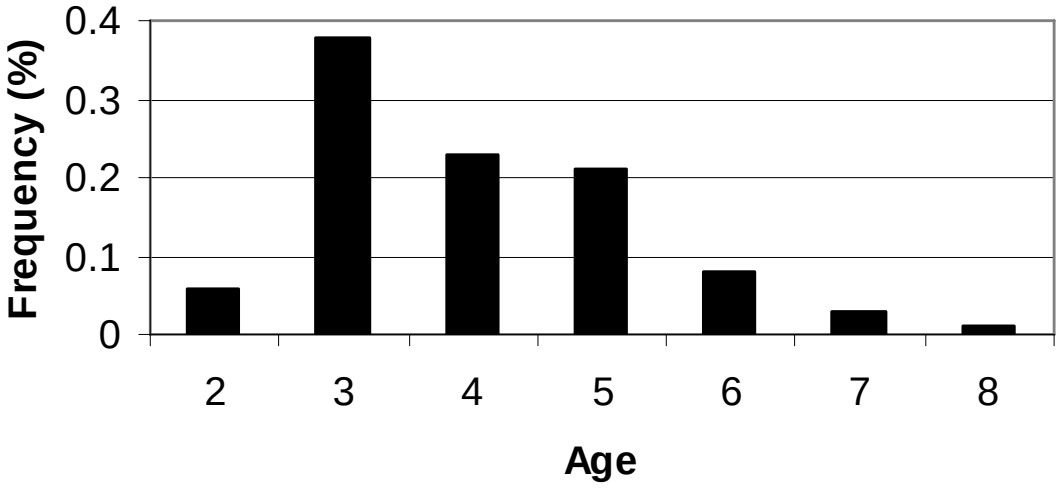


Figure 12. Length Frequency of Bluegill at Wheeler Lake, Oconto County, WI, 2001 and 2008 (black)

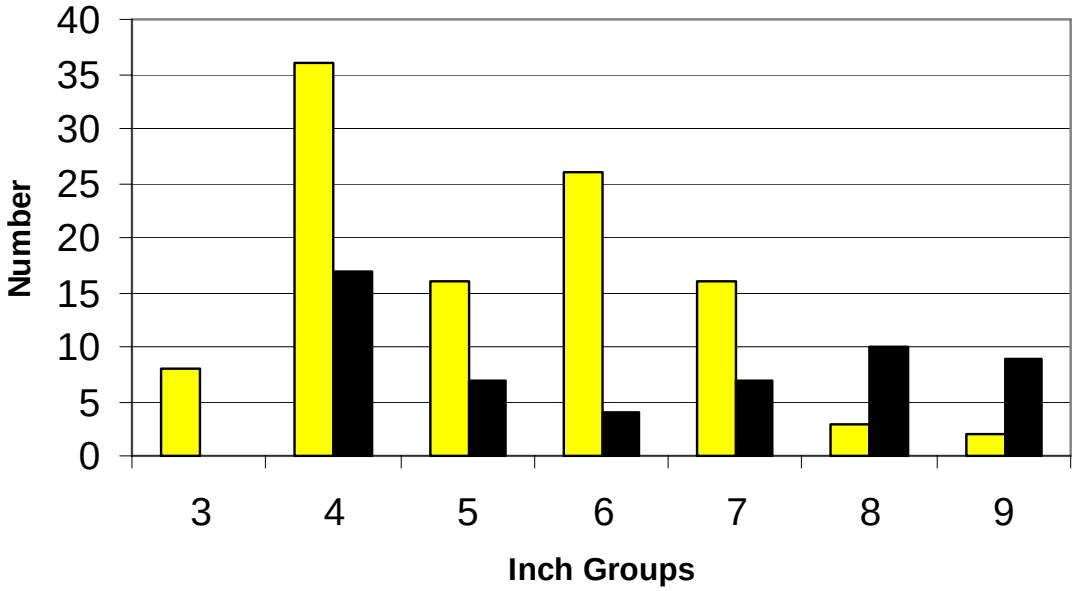


Figure 13. Number of Walleye Surveyed during Fall Electrofishing in Wheeler Lake, Oconto County, Wisconsin