



2016 Spring Netting (SNI) Summary Report

White Lake

Waupaca County (WBIC 272900)

Introduction and Survey Objectives

In 2016, the Department of Natural Resources conducted a fyke netting survey of White Lake in order to provide insight and direction for the future fisheries management of the water body. Primary sampling objectives of this survey are to characterize species composition, relative abundance and size structure. The following report is a brief summary of the activities conducted, general status of fish populations and future management options.

Acres: 1064 Shoreline Miles: 5.94 Maximum Depth (feet): 11
 Lake Type: Shallow Lowland Public Access: 3 Public Landings
 Regulations: 25 Panfish may be kept but only 10 of any one species, all other species follow statewide default regulations

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A copy of this report can be found online at:

<http://dnr.wi.gov/topic/fishing/reports/>

Survey Information

Site location	Survey Dates	Water Temp. (F)	Target Species	No. of Nets	Gear	Net Nights
White Lake	03/17/2016 - 3/23/2016	37 - 41	Northern Pike, Walleye, Panfish	6	Fyke Net	51

Survey Method

- White Lake was sampled according to spring netting (SNI) protocols as outlined in the statewide lake assessment protocol. The primary objective for this sampling period is to count and measure adult walleye and muskellunge. However, we also used this sampling period to target adult northern pike. Other gamefish may be sampled but are considered by-catch as part of this survey.
- Fyke Nets were deployed in areas of the lake that contained spawning habitat or were likely travel areas for northern pike, and walleye. All newly captured walleye and northern pike were given a partial fin clip (top caudal fin). A subsample of fish were weighed and age structures (spines and otoliths) were collected for age and growth analysis.
- Fish metrics used to describe fish populations include total abundance (mark and recapture population estimate for walleye and northern pike), proportional stock density, catch per effort, length frequency distribution, and mean age at length.



Fish Metric Descriptions

Catch per unit effort (CPUE) is an index used to measure fish population relative abundance which simply refers to the number of fish captured per unit of distance or time. For netting surveys we typically quantify CPUE by the number and size of fish per net night. CPUE indexes are compared to statewide data by percentiles and within lake trends. For example, if a CPUE is in the 90th percentile, it is higher than 90% of the other CPUEs in the state.

Total abundance is a metric that describes population size and is estimated by mark and recapture. In our study, during spring netting, a portion of the northern pike population is captured, marked (with a partial fin clip), and released. During follow-up surveys, another portion is captured and the number of marked individuals within the sample is counted. The proportion of marked and unmarked fish is used in a formula calculation to estimate the size of the population.

Proportional Stock Density (PSD) is an index used to describe size structure of fish. It is calculated by dividing the number of quality size fish by the number of stock size fish for a given species. PSD values in the 30 to 50 percent range generally describe a balanced fish population. PSD indexes are compared to statewide data by percentile and to within lake trends.

Length frequency distribution (LFD) is a graphical representation of the percentage of fish captured by one inch size intervals. Smaller fish (or younger age classes) may not always be represented in the length frequency due to different habitat usage or sampling gear limitations.

Mean Age at Length is an index used to assess fish growth. Growth structures (otoliths, spines, or scales) are collected from a specified length bin of interest (e.g. 7.0-7.5 inches for bluegill). Mean age from all samples is compared to statewide data by percentile with growth characterized by the following benchmarks: slow (<33rd percentile); moderate (33rd to 66th percentile); and fast (>66th percentile).

Relative Abundance (Catch per Unit Effort)

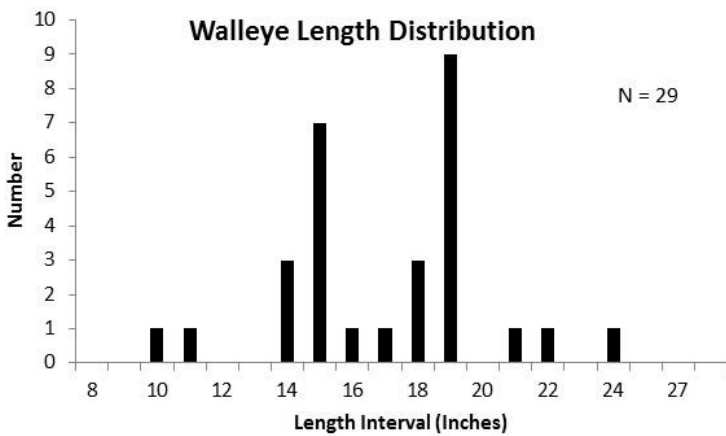
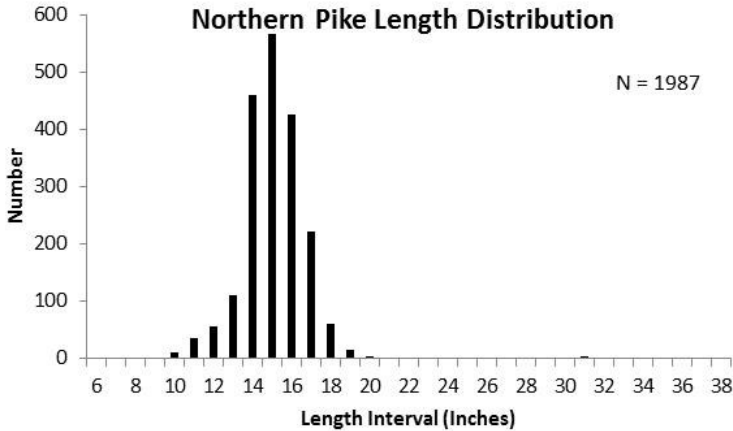
Species	Total No. Captured	CPUE (no per net night)			Statewide Percentile Rank	Abundance Rating
		Historical Median (1993 - Present)	2012	2016		
BLACK CRAPPIE	10	1.5	2.5	0.2	12th	Low
BLUEGILL	890	40.0	63.2	17.5	62nd	Moderate
BROWN BULLHEAD	16	0.9	1.4	0.3	-	-
COMMON CARP	10	0.4	0.4	0.2	-	-
LARGEMOUTH BASS	13	1.1	1.1	0.3	47th	Moderate
NORTHERN PIKE	1987	39.0	12.3	39.0	99th	Very High
PUMPKINSEED	45	2.2	5.6	0.9	46th	Moderate
WALLEYE	29	2.2	2.2	0.6	25th	Low
WARMOUTH	1	0.0	-	0.0	-	-
YELLOW BULLHEAD	16	0.3	0.3	0.3	-	-
YELLOW PERCH	29	0.7	0.2	0.6	34th	Moderate - Low

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Gamefish Summary

Size Structure Metrics

Species	Total	Average Length (Inches)	Length Range (Inches)	Stock and Quality Size (inches)	Stock No	Quality No	PSD	Percentile Rank	Size Rating
LARGEMOUTH BASS	13	15.6	13.6 - 20.1	8.0 and 12.0	13	13	100%	100th	Very High
NORTHERN PIKE	1987	15.5	10.2 - 36.3	14.0 and 21.0	1774	16	1%	1st	Very Low
WALLEYE	29	17.4	10.0 - 24.0	10.0 and 15.0	29	24	83%	75th	Moderate - High



Size Structure (PSD) Trends

Species	Historical Median (1984-Present)	PSD by Year					
		1984	1993	2002	2008	2012	2016
LARGEMOUTH BASS	100%	100%	90%	100%	32%	100%	100%
NORTHERN PIKE	8%	15%	13%	2%	11%	5%	1%
WALLEYE	94%	99%	72%	94%	95%	95%	82%

Total Abundance (Mark and Recapture Population Estimate)

Species	Number Marked (Netting)	Number Sampling Events (Netting)	No. Recaptures (Netting)	Schnabel Population Estimate (95%)	No per Acre	Abundance Rating
NORTHERN PIKE	1813	6	163	9242 (7700 - 11554)	8.7	High

Growth Metrics

Species	Total (N)	Length Bins (inches)	Mean Age (Years)	Age Range (Years)	Percentile Rank	Growth Rating
LARGEMOUTH BASS	2	8.0	2	2	100th	Very Fast
LARGEMOUTH BASS	5	14.0	6.8	5 - 12	78th	Moderate - Fast
WALLEYE	3	18.0	5.0	3 - 6	86th	Moderate - Fast
WALLEYE	3	21.0	8.0	7 - 9	61st	Moderate

Gamefish Summary

Northern Pike

Relative abundance metrics were at high levels and size structure was at extremely low levels when compared to statewide data. Largest northern pike captured was 36.3 inches. Relative abundance has increased since the last survey, but was similar to the historical median. However, size structure has declined with PSDs (% > 21.0 inches) decreasing by 80% since the last survey and 88% lower than the historical median.

Largemouth Bass

Largemouth bass were found at moderate abundance during this survey. Size structure metrics indicated high quality size. Growth metrics for stock and quality sized bass indicated moderate to fast growth. A spring electrofishing survey was also completed which is the preferred gear to assess largemouth bass metrics. A separate electrofishing report is also available. Electrofishing results indicated abundance were at low levels and size metrics were at moderate levels.

Walleye

Relative abundance metrics were at low levels and size structure was at high levels when compared to statewide data. Largest walleye captured was 24.0 inches. Relative abundance has decreased since the last survey and was below the historical median. PSDs (% > 15 inches) has declined slightly since last survey.

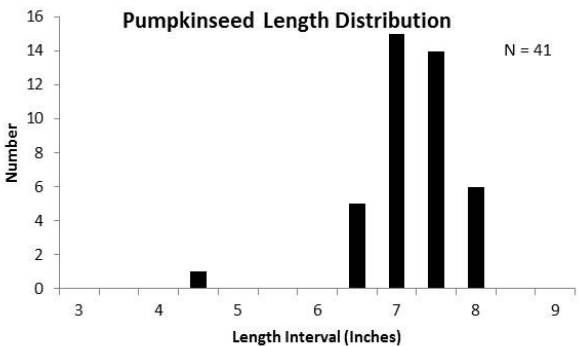
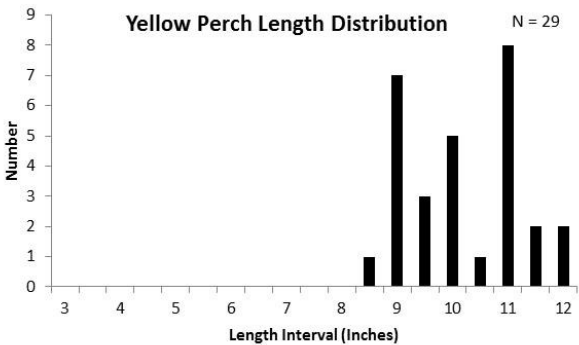
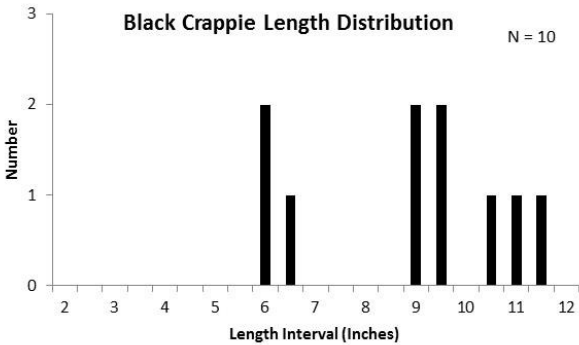
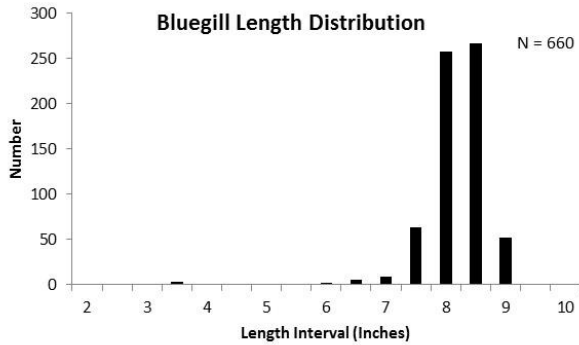


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Panfish Summary

Size Structure Metrics

Species	Total	Average Length (Inches)	Length Range (Inches)	Stock and Quality Size (inches)	Stock No	Quality No	PSD	Percentile Rank	Size Rating
BLUEGILL	660	8.4	3.8 - 9.6	3.0 and 6.0 inches	660	655	99%	98th	High
BLACK CRAPPIE	10	9.1	6.1 - 11.9	5.0 and 8.0 inches	10	7	70%	60th	Moderate
PUMPKINSEED	41	7.4	4.5 - 8.3	3.0 and 8.0 inches	41	40	98%	99th	High
YELLOW PERCH	29	10.3	8.9 - 12.1	5.0 and 8.0 inches	29	29	100%	100th	High



Size Structure (PSD) Trends

Species	Historical Median (1978-Present)	PSD by Year					
		1984	1993	2002	2008	2012	2016
BLUEGILL	83%	82%	70%	84%	36%	97%	99%
BLACK CRAPPIE	85%	71%	88%	86%	84%	93%	70%
PUMPKINSEED	74%	4%	58%	89%	13%	96%	98%
YELLOW PERCH	59%	8%	38%	81%	29%	100%	100%

Growth Metrics - 2016

Species	Total	Length Bin	Mean Age	Age Range	Percentile Rank	Growth Rating
BLUEGILL	3	6.5 - 7.4	3.33	3 - 4	99th	Very Fast
BLUEGILL	12	7.5 - 8.4	7.5	4 - 13	21st	Slow

Panfish Summary

Bluegill

Bluegill abundance was found at moderate levels, while size structure metrics were at high levels when compared to statewide data. Largest bluegill captured was 9.6 inches. Relative abundance has decreased since the last survey, and was lower than the historical median. Size structure had remained stable with PSDs(>6.0 inches) increasing only 2% since the last survey and 19% higher than the historical median. Growth metrics for bluegill show fast growth in the first few years and dramatically slow down as they reach 7.0 inches.

Black Crappie

Black crappie abundance was also at low levels, while size structure metrics were at moderate to high levels when compared to statewide data. Largest black crappie sampled was 11.9 inches. Relative abundance has decreased since last survey, but remained close to the historical median. This phenomenon is often seen with black crappie populations, and their ability to pull off large year classes. Size structure has declined with PSDs (>8.0 inches) decreasing 24% since the last survey and 17% lower than the historical median.

Other panfish and preyfish

Yellow perch and pumpkinseed were observed in the fyke netting sampling, but were found at low numbers. Other species to note from our survey were brown bullhead, yellow bullhead, common carp and warmouth.

Overall the panfish in White Lake are low density with a majority of the fish larger in size. Recruitment appears to be a problem, and new year classes are needed to keep the fishery flourishing.

Stocking History

Species	Year	Age	Mean Length	Number Stocked
FATHEAD MINNOW	2015	FRY	2.0	104999
WALLEYE	2015	LARGE FINGERLING	7.0	2000
FATHEAD MINNOW	2014	YEARLING	2.0	34000
WALLEYE	2014	LARGE FINGERLING	7.0	300
YELLOW PERCH	2014	LARGE FINGERLING	6.0	365
WALLEYE	2013	YEARLING	7.0	1120
BLACK CRAPPIE	2013	LARGE FINGERLING	5.0	1600
YELLOW PERCH	2012	ADULT	7.0	1470
YELLOW PERCH	2010	ADULT	7.0	1463
WALLEYE	2009	LARGE FINGERLING	7.0	1082
WALLEYE	2008	YEARLING	7.0	1194
WALLEYE	2005	LARGE FINGERLING	-	800
BLUEGILL	2000	ADULT	5.4	1449
BLACK CRAPPIE	2000	LARGE FINGERLING	3.5	500
WALLEYE	1994	YEARLING	6.9	2000
LARGEMOUTH BASS	1990	FINGERLING	4.0	2400
WALLEYE	1989	FINGERLING	3.0	1200
WALLEYE	1988	FINGERLING	7.0	1700
WALLEYE	1986	FRY	1.0	1130000
WALLEYE	1984	FRY	1.0	200000
WALLEYE	1984	FINGERLING	4.0	1000
LARGEMOUTH BASS	1984	FINGERLING	4.0	1000
LARGEMOUTH BASS	1984	FINGERLING	4.0	7000
BLUEGILL	1983	ADULT	4.0	1000
WALLEYE	1983	FINGERLING	3.0	1000

Mean Length (inches) at Age

Age	Bluegill		Walleye	Largemouth Bass
	M	F	All	All
1	-	-	9.7	-
2	3.8	3.8	14.9	8.2
3	-	6.7	16.2	-
4	6.5	7.8	-	-
5	-	7.7	-	13.3
6	8.6	8.0	18.7	14.3
7	8.9	8.8	20.9	-
8	-	8.4	19.8	-
9	-	-	19.9	-
10	8.8	8.4	22.3	-
11	-	8.8	-	-
12	8.1	-	-	14.2
13	-	8.1	-	-

Management Options

Northern Pike

- Management Objective: *Increase fyke net size structure metric (PSD21) to 40-60% and decrease relative abundance metrics.*
- Management Action: *Explore regulation change to increase harvest of northern pike.*



Largemouth Bass

- Management Objective: *Maintain relative abundance metrics for fyke-net and electro-fishing.*

Walleye

- Our population estimate was below 1 per acre for walleye. Historically because of White lake being a stocked walleye fishery, the population is relatively low.
- Management Action: Suspend stocking of walleye until panfish population rebounds. There were very few panfish under 6 inches, with the large population of predators in the system these young fish will have a hard time surviving.



Panfish

- Bluegill and black crappie size structure metrics were found to be higher than optimal levels. Relative abundance metrics were at moderate levels.
- Management Action: White lake has been included in the experimental panfish regulation to limit harvest. The panfish regulation in place is 25 panfish may be kept, but only 10 of any one species.
- Low number of black crappie, yellow perch and pumpkinseed have been showing trends similar to bluegills.

Other Management Objectives

- White Lake is on a 4 year sampling rotation with the next survey scheduled for 2020. With the current panfish regulation in place it will be important to re-survey the panfish population to evaluate the effects of the regulation.
- There were reports from visual surveys that there was a large year class of bluegill that hatched from 2016. The next survey will show whether these fish survived the often partial winterkills of White Lake.
- Meet with lake association, sportsman's club, and other interested citizens to discuss latest survey results.