

**WISCONSIN DEPARTMENT OF NATURAL RESOURCES  
CREEL SURVEY REPORT**

**PLUM LAKE**

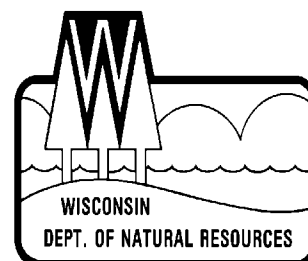
**VILAS COUNTY**

**2015-16**



**Treaty Fisheries Publication**

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Jeff Blonski  
Treaty Fisheries Technicians**



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**Cover Art:** Steve Hilt, Portland, OR

**Fish Graphics:** Virgil Beck, Stevens Point, WI

## INTRODUCTION

Fish populations can fluctuate due to natural forces (weather, predation, competition), management actions (stocking, regulations, habitat improvement), inappropriate development (habitat degradation), and harvest impacts. Wisconsin Department of Natural Resources fisheries crews regularly conduct fishery surveys on area lakes and reservoirs to gather the information needed to monitor changes, identify concerns, evaluate past management actions, and to prescribe fishery management strategies. Netting and electrofishing surveys are used to gather data on the status of fish populations and communities (species composition, population size, reproductive success, size/age distribution, and growth rates). The other key component of the fishery that we often need to measure is the harvest.

On many lakes in the Ceded Territory of northern Wisconsin, harvest of fish is divided between sport anglers and the six Chippewa tribes who harvest fish under rights granted by federal treaties. The tribes harvest fish mostly using a highly efficient method, spearing, during a relatively short time period in the spring. Every fish in the spear harvest is counted – a complete “census” of the harvest.

We measure the sport harvest to assess its impact on the fishery. However, it would be highly impractical and very costly to conduct a complete census of every angler who fishes on a lake. Therefore, we conduct creel surveys.

A creel survey is an assessment tool used to sample the fishing activities of anglers on a body of water and make projections, or estimates, of harvest and other fishery parameters. Creel survey clerks work on

randomly-selected days and shifts, forty hours per week, during the open season for gamefish from the first Saturday in May through the first Sunday in March. Creel surveys are not conducted in November when fishing effort is low and ice conditions are often unsafe. The survey is run during daylight hours, and shift times change from month to month as day length changes.

Creel survey clerks travel their lakes using a boat or snowmobile to count the number of anglers at predetermined times, and to interview anglers who have completed their fishing trip. Data is collected on what species they fished for, catch, harvest, lengths of fish harvested, marks (fin clips or tags), and hours of fishing effort. Collecting completed-trip data provides the most accurate assessment of angling activities, and it avoids the need to disturb anglers while they are fishing.

A computer program is used to make estimates of total catch and harvest of each species, catch and harvest rates, and total fishing effort by month, as well as for the year in total. Keep in mind that these are only estimates based on the best information available, and not a complete accounting of effort, catch, and harvest. Accurate estimates require that we sample a sufficient and representative portion of the angling activity on a lake. The accuracy of creel survey results, therefore, depends on good cooperation and truthful responses by anglers when a creel clerk interviews them.

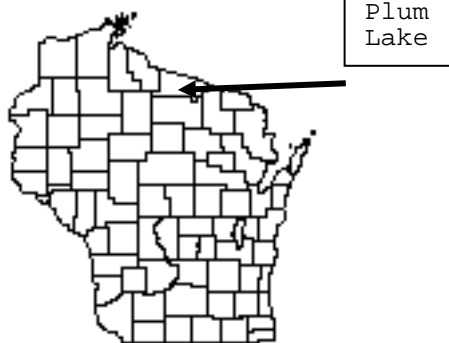
You may have encountered a DNR creel survey clerk on a recent fishing trip. We appreciate your cooperation during an interview. The survey only takes a moment of your time, and it gives the Department valuable information needed for management of the fishery.

This report provides estimates of:

1. Overall fishing effort (pressure)
2. Fishing effort directed at each species
3. Catch and harvest rates
4. Numbers of fish caught and harvested

Also included are a physical description of Plum Lake; discussion of results of the survey; and detailed summaries, by species, of fishing effort, catch and harvest.

## GENERAL LAKE INFORMATION



### Location

Plum Lake is located in Vilas County near the town of Sayner.

### Physical Characteristics

Plum Lake is an 1,108 acre drainage lake with a maximum depth of 57 feet. Littoral substrate consists primarily of sand and gravel, with lesser amounts of muck. Plum Lake contains soft, slightly acidic, clear water of moderate transparency.

### Seasons Surveyed

The period referred to in this report as the 2015-16 fishing season ran from May 2, 2015 through March 6, 2016. The open water creel survey ran from May 2 through October 31, 2015, and the ice fishing creel survey ran from December 1, 2015 through March 6, 2016.

### Weather

Ice-out on Plum Lake was around April 16, 2015. Fishable-ice formed on Plum Lake in late December.

### Fishing Regulations

The following seasons, daily bag limits, and length limits were in place on Plum Lake during the 2015-16 fishing season:

Species	Season	Bag Limit	Min. Size
Largemouth Bass	5/2-3/6	1	18"
Smallmouth Bass	5/2-6/19	Catch&Release	
	6/20-3/6	1	18"
Musky	5/23-11/30	1	40"
Northern Pike	5/2-3/6	5	none
Walleye	5/2-3/6	3	No Minimum, 14"-18" Protected Slot, 1>18"
Panfish	year round	25	none
Rock Bass	year round	none	none

## SPECIES CATCH AND HARVEST INFORMATION

Angling effort, catch, and harvest information is summarized for each species in Table 2 and Figures 1-10. Table 2 also includes a comparison of these statistics with the previous creel survey. Information presented about species whose fishing season extends beyond March 6 should be considered minimum estimates. Each species page has up to five graphs depicting the following:

1. **ESTIMATED FISHING EFFORT**  
Total calculated number of hours during each month that anglers spent fishing for a species.
2. **ESTIMATED SPECIFIC CATCH AND HARVEST RATES**  
Calculated number of hours it takes an angler to catch or harvest a fish of the indicated species. Only information from anglers who were specifically targeting that species is reported.

3. **ESTIMATED CATCH AND HARVEST**  
Calculated number of fish of the indicated species caught or harvested by all anglers, regardless of targeted species.
4. **LENGTH DISTRIBUTION OF HARVESTED FISH**  
All fish of a species that were measured by the clerk during the entire creel survey season.
5. **LARGEST AND AVERAGE LENGTH OF HARVESTED FISH**  
Monthly largest and average length of harvested fish of a species. Only those fish measured by the creel survey clerk are reported.

## **CREEL SURVEY RESULTS AND DISCUSSION**

### **Survey Logistics**

The creel survey went well. We encountered no unusual problems conducting the survey or calculating the estimates contained in the report. This was the seventh time the department conducted a creel survey on Plum Lake. The last creel survey took place in 2012-13.

### **General Angler Information**

Anglers spent 22,051 hours, or 19.9 hours per acre, fishing Plum Lake during the 2015-16 season (Table 1). That was less than the Vilas County average of 35.5 hours per acre. May was the most heavily fished month (3,668 hours). Fishing effort was lightest in December (14 hours) due to poor ice conditions. Anglers spent more time (28.7 hours per acre) fishing during the 2012-13 creel survey. The creel clerks were able to conduct 706 interviews throughout the survey.

## **RESULTS BY SPECIES**

### **Walleye** (Table 2, Figure 1)

Anglers spent 7,032 hours targeting walleyes during the 2015-16 season. The greatest fishing effort for walleyes was in February (1,380 hours). December had the least amount of walleye fishing effort (14 hours).

Total catch of walleyes was 755 fish with a harvest of 232 fish. Highest catch (342 fish) and harvest (160 fish) occurred in October. Anglers fished 9.9 hours to catch, and 31.3 hours to harvest, a walleye during the survey. The mean length of harvested walleyes was 14.8 inches, and the largest walleye measured was a 23.6-inch fish.

### **Northern Pike** (Table 2, Figure 2)

Fishing effort directed at northern pike was 5,126 hours during the 2015-16 season. Northern pike fishing effort was greatest in February (1,742 hours). Total catch of northern pike was 2,158 fish with a harvest of 472 fish. The mean length of harvested northern pike was 21.1 inches, and the largest northern pike measured was a 28.5-inch fish.

### **Muskellunge** (Table 2, Figure 3)

Anglers spent 3,767 hours targeting muskellunge during the 2015-16 season. Muskellunge fishing effort was greatest in July (1,061 hours). Total catch of muskellunge was 73 fish, and the highest catch (23 fish) occurred in July. Anglers fished 76.3 hours to catch a muskellunge, and there was no documented harvest during the survey.

### **Smallmouth Bass** (Table 2, Figure 4)

Smallmouth Bass received the most fishing effort during the 2015-16 season. Fishing effort targeted at smallmouth bass was 7,183 hours. Smallmouth bass fishing

effort was greatest in May (2,118 hours). Total catch of smallmouth bass was 2,939 fish, with 17 being harvested. Highest catch (1,378 fish) occurred in May. Anglers fished 2.7 hours to catch a smallmouth bass during the survey.

#### **Largemouth Bass** (Table 2, Figure 5)

Fishing effort directed at largemouth bass was 2,477 hours during the 2015-16 season. Largemouth bass fishing effort was greatest in October (752 hours). Total catch of largemouth bass was 282 fish, with a harvest of 13 fish. Highest catch (106 fish) occurred in August. Anglers fished 12.4 hours to catch a largemouth bass during survey.

#### **Panfish** (Table 2, Figures 6-10)

**Yellow perch** received 4,521 hours of directed fishing effort. Total catch of yellow perch was 4,575 fish, with 431 harvested. The mean length of yellow perch harvested was 8.3 inches.

**Bluegills** were the most sought after panfish species during the survey. Fishing effort directed at bluegills was 4,651 hours. Total catch of bluegills was 7,774 fish, with 2,899 being harvested. The mean length of bluegills harvested was 7.3 inches.

**Black crappies** received 2,727 hours of directed fishing effort. Anglers caught 1,165 black crappies and harvested 992 fish. The mean length of black crappies harvested was 10.6 inches.

**Pumpkinseeds** received 1,006 hours of directed fishing effort. Anglers caught 1,043 pumpkinseeds and harvested 526 fish. The mean length of pumpkinseeds harvested was 6.9 inches.

**Rock bass** received 62 hours of directed

fishing effort. Anglers caught 151 rock bass and harvested 105 fish. The mean length of pumpkinseeds harvested was 7.9 inches.

## **ACKNOWLEDGMENTS**

Completion of this survey was possible because of the efforts of the following fisheries management and treaty fisheries staff: Lawrence Eslinger, Jeff Blonski, Joelle Underwood, Jason Halverson, John Kubisiak, Steve Timler, Tim Tobias, Steve Gilbert, Eric Brown, and David Farrow. Matt Meulemans, Mike Rynski, and Reuben Frey were the creel clerks on Plum Lake during the survey period.

We thank all the anglers who took the time to offer information about their fishing trip to the survey clerk. Without their cooperation the survey would not have been possible.

The department thanks our cooperators, Paul and Meadow Lofty of Plum Gate Resort and Plum Lake Golf Course, all of whom generously allowed the department to keep a boat and/or snowmobile on their property during this survey.

This creel report was reviewed by Steve Gilbert and Lawrence Eslinger of the Wisconsin Department of Natural Resources, Woodruff, Wisconsin.

Additional copies of this report, and those covering other local lakes, can be obtained from the Woodruff DNR or online at:  
<http://dnr.wi.gov/topic/Fishing/north/trtycrslrvys.html>

**Table 1. Sportfishing effort summary, Plum Lake, 2015-16 season.**

<b>Month</b>	<b>Number of Angler Party Interviews</b>	<b>Total Angler Hours</b>	<b>Total Angler Hours/Acre</b>	<b>2012-13 Total Angler Hours/Acre</b>	<b>Vilas County Average Hours/Acre</b>	<b>Ceded Territory Average Hours/Acre</b>
May	90	3668	3.3	4.3	5.4	5.0
June	127	3152	2.8	4.1	7.1	6.4
July	128	3302	3.0	4.5	7.5	6.8
August	85	3263	2.9	3.4	6.6	5.5
September	65	2810	2.5	5.2	4.3	3.3
October	86	2216	2.0	2.3	2.0	1.5
December	2	14	0.0	0.6	0.6	1.1
January	34	903	0.8	0.7	0.8	1.7
February	62	2245	2.0	3.2	1.0	1.6
March	27	477	0.4	0.5	0.2	0.2
*Summer Total	581	18412	16.6	23.7	32.9	28.5
*Winter Total	125	3640	3.3	5.0	2.6	4.6
Grand Total	706	22051	19.9	28.7	35.5	33.1

\*"Summer" is May-October; "Winter" is December-March

**Number of Angler Party Interviews** is the number of groups of anglers interviewed by the creel clerk. A party is considered the members of a group who fish together in the same boat, ice shanty, or from shore. The clerk fills out one interview form for each group of anglers. The number of individual anglers actually contacted by the clerk is usually much greater than the number of groups listed in this table since most groups consist of more than one angler.

**Total Angler Hours** is the estimated total number of hours that anglers spent fishing on Plum Lake during each month surveyed.

**Total Angler Hours/Acre** is the total angler hours divided by the area of the lake in acres. This is useful in order to compare effort on Plum Lake to other lakes.

**2012-13 Total Angler Hours/Acre** is the total angler hours divided by the area of the lake in acres. This is from the previous creel survey that took place on Plum Lake.

**County Average Hours/Acre** is the average angler effort in hours per acre for county lakes that have been surveyed since 1990. This value is useful for fishing pressure comparisons with other waters.

**Ceded Territory Average Hours/Acre** is the average angler effort in hours per acre for inland lakes in the ceded territory that have been surveyed since 1990. This value can be used to compare Plum Lake to other lakes in northern Wisconsin.

**Table 2. Comparison of creel survey synopses, Plum Lake, 2015-16 and 2012-13 fishing seasons.**

CREEL YEAR: 2015-16

<b>SPECIES</b>	<b>DIRECTED EFFORT (Hours)</b>	<b>PERCENT OF TOTAL</b>	<b>TOTAL CATCH</b>	<b>SPECIFIC CATCH RATE (Hrs/Fish) *</b>	<b>TOTAL HARVEST</b>	<b>SPECIFIC HARVEST RATE (Hrs/Fish) **</b>	<b>MEAN LENGTH OF HARVESTED FISH</b>
Walleye	7032	18.2%	755	9.9	232	31.3	14.8
Northern Pike	5126	13.3%	2158	3.4	472	12.5	21.1
Muskellunge	3767	9.8%	73	76.3	0		
Smallmouth Bass	7183	18.6%	2939	2.7	17	434.8	19.1
Largemouth Bass	2477	6.4%	282	12.4	13	285.7	17.0
Yellow Perch	4521	11.7%	4575	1.1	431	11.5	8.3
Bluegill	4651	12.1%	7774	0.6	2899	1.6	7.3
Black Crappie	2727	7.1%	1165	3.1	992	3.5	10.6
Pumpkinseed	1006	2.6%	1043	1.2	526	2.4	6.9
Rock Bass	62	0.2%	151	1.2	105	1.2	7.9

9 \* A blank cell in this column indicates that no fish of a given species were caught by anglers who specifically targeted that species.

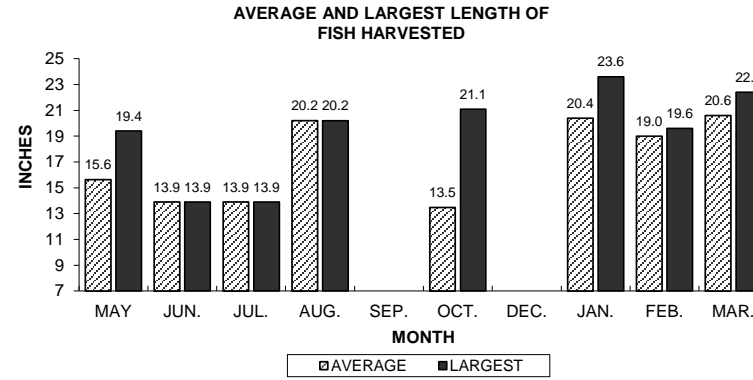
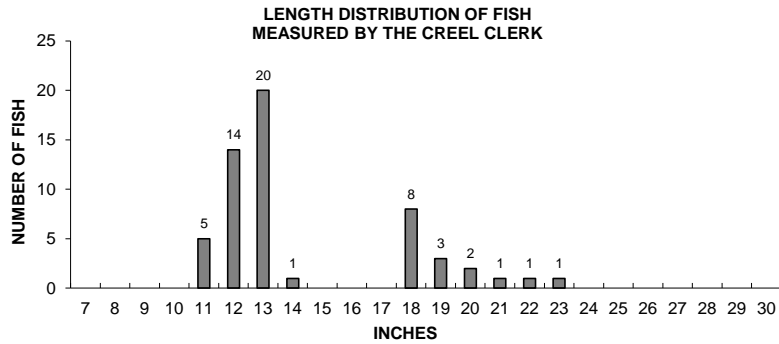
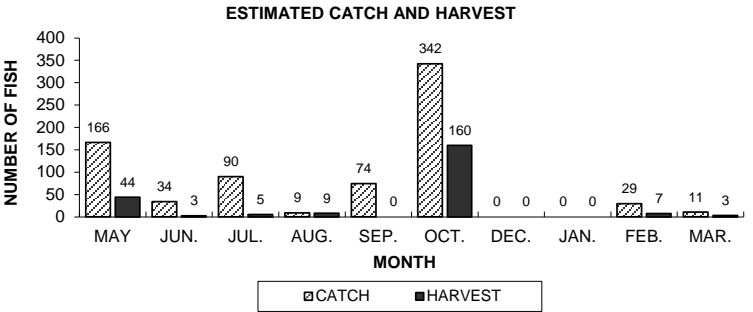
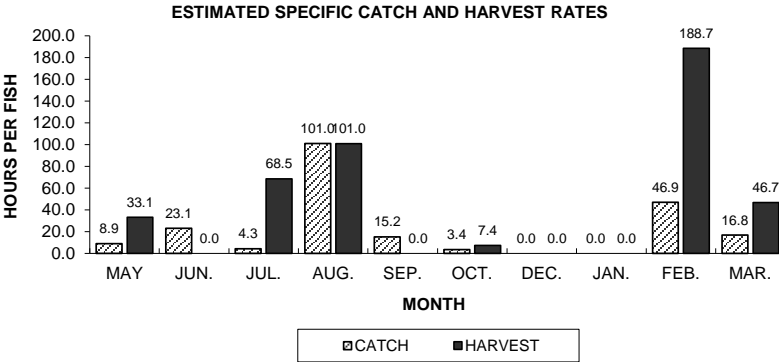
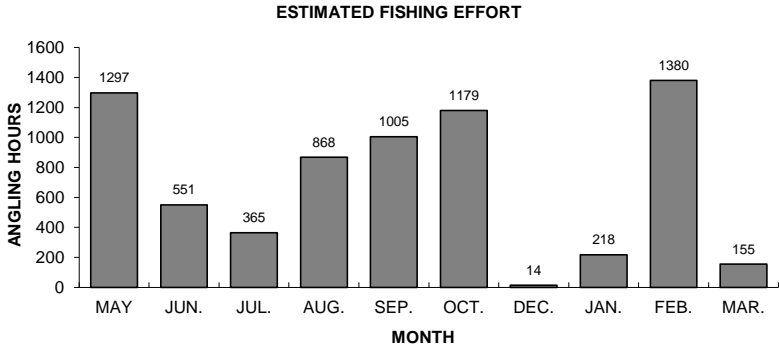
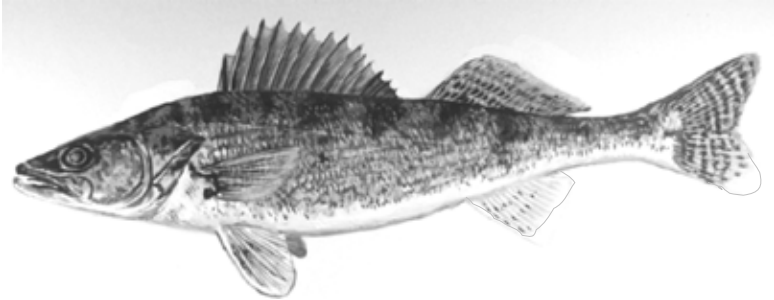
\*\* A blank cell in this column indicates that no fish of a given species were harvested by anglers who specifically targeted that species.

CREEL YEAR: 2012-13

<b>SPECIES</b>	<b>DIRECTED EFFORT (Hours)</b>	<b>PERCENT OF TOTAL</b>	<b>TOTAL CATCH</b>	<b>SPECIFIC CATCH RATE (Hrs/Fish)</b>	<b>TOTAL HARVEST</b>	<b>SPECIFIC HARVEST RATE (Hrs/Fish)</b>	<b>MEAN LENGTH OF HARVESTED FISH</b>
Walleye	14191	27.7%	3393	4.2	1020	13.9	13.5
Northern Pike	8110	15.9%	3466	3.9	598	14.5	20.1
Muskellunge	5963	11.7%	97	72.5	5	1250.0	47.3
Smallmouth Bass	6326	12.4%	2698	2.5	68	104.2	19.5
Largemouth Bass	1718	3.4%	346	5.7	7	232.6	18.7
Yellow Perch	5550	10.8%	2890	2.2	1216	4.7	9.7
Bluegill	6790	13.3%	7858	0.9	2644	2.6	7.4
Black Crappie	1381	2.7%	229	6.5	111	14.7	10.9
Pumpkinseed	920	1.8%	365	3.0	195	5.8	6.6
Rock Bass	206	0.4%	314	6.7	33	7.8	8.9



# WALLEYE



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Figure 1. Walleye sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2015-16.

# NORTHERN PIKE

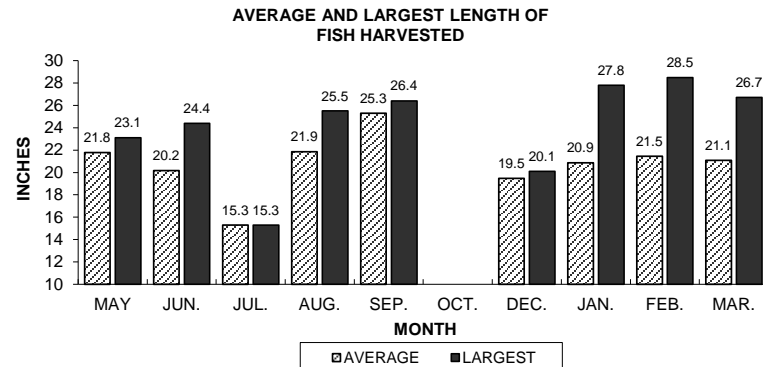
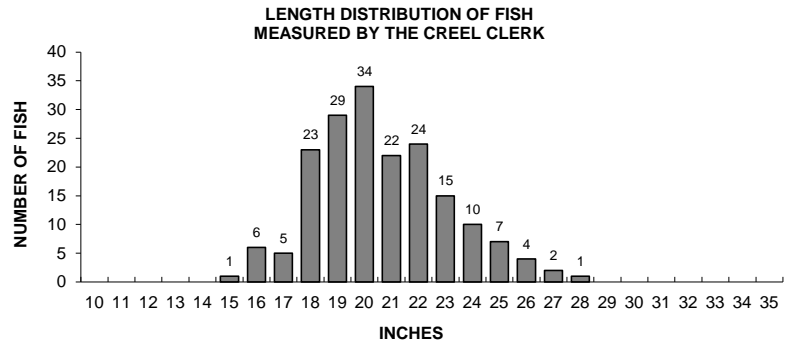
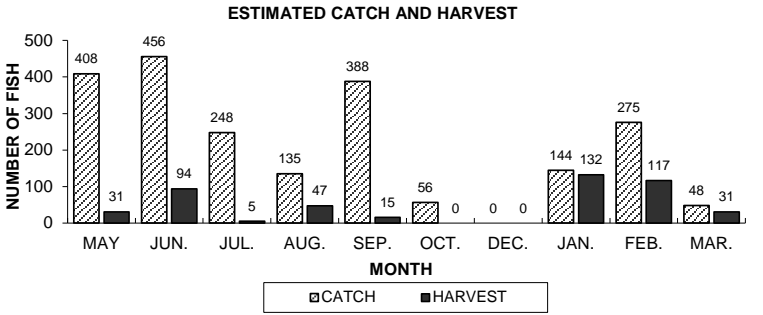
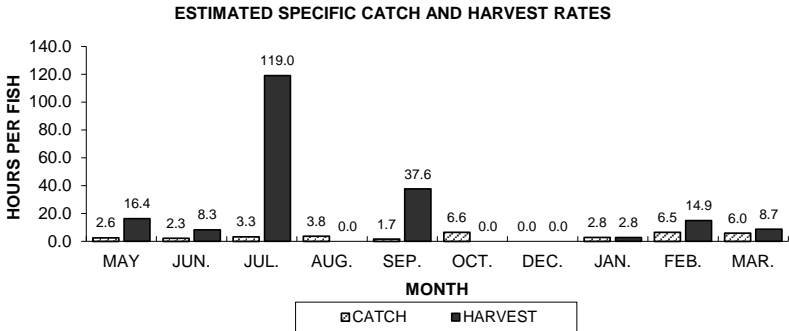
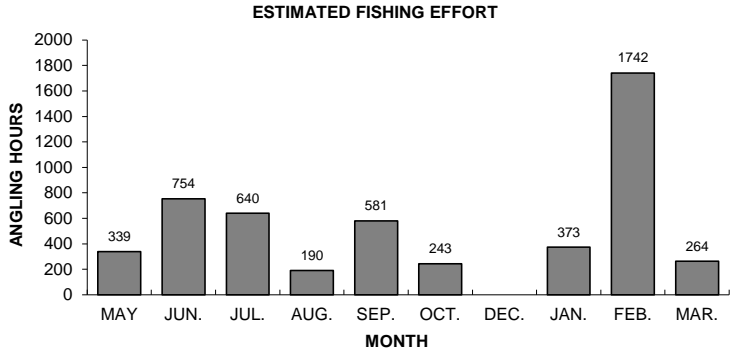
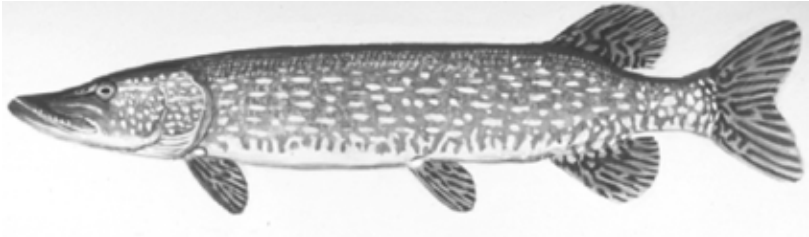
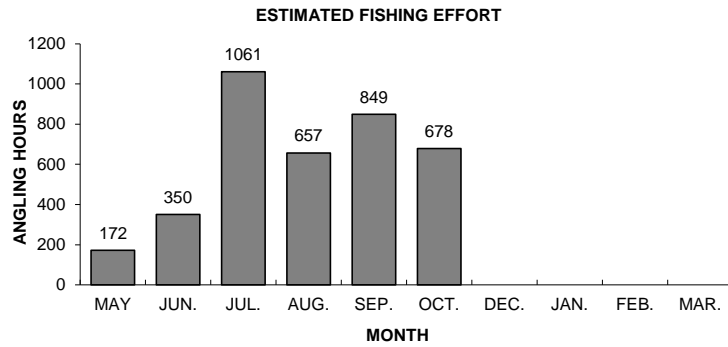


Figure 2. Northern pike sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2015-16.

# MUSKELLUNGE



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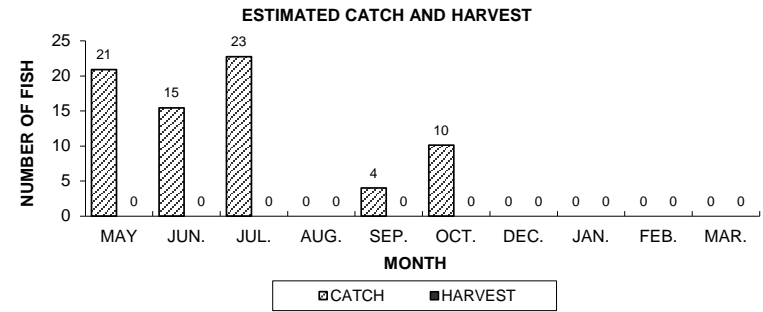
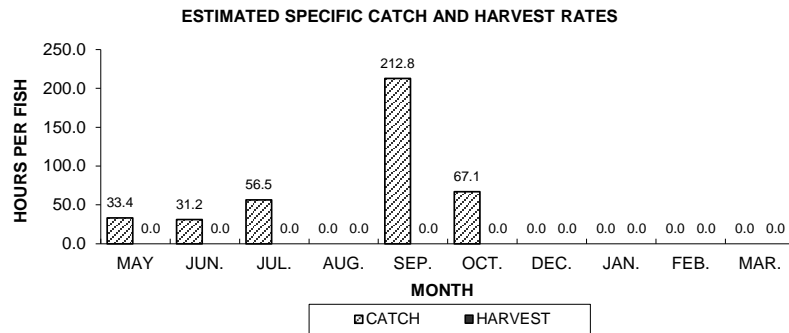


Figure 3. Muskellunge sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2015-16.

# SMALLMOUTH BASS

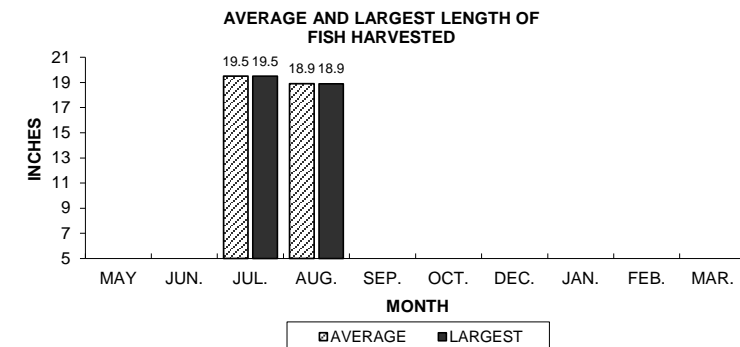
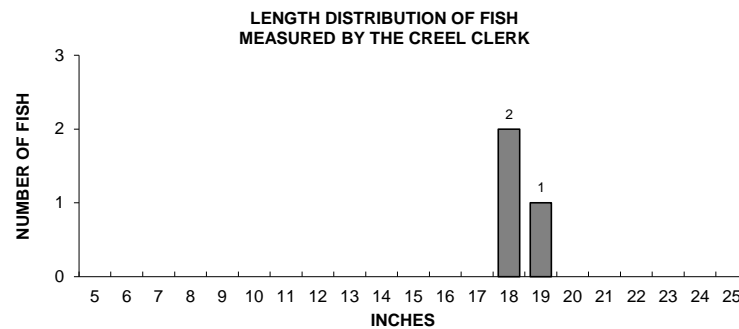
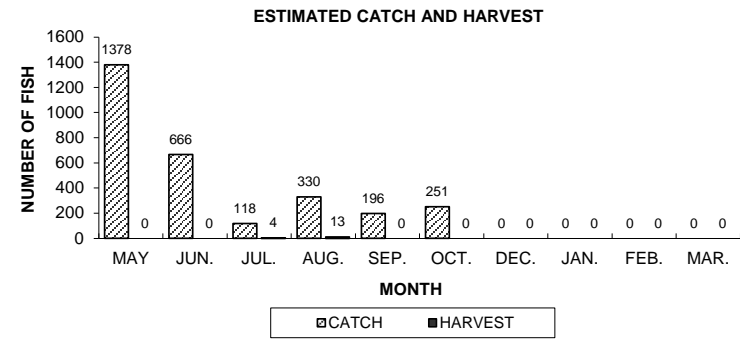
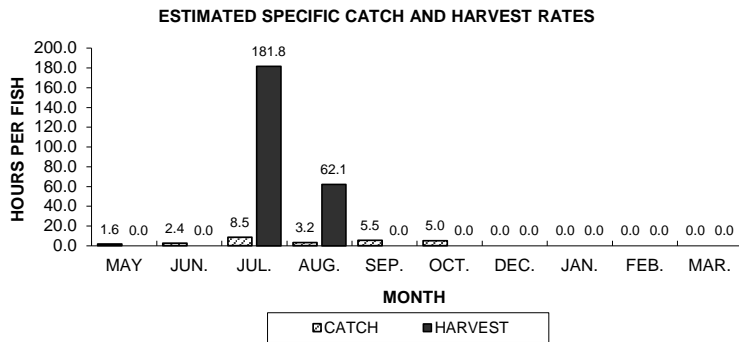
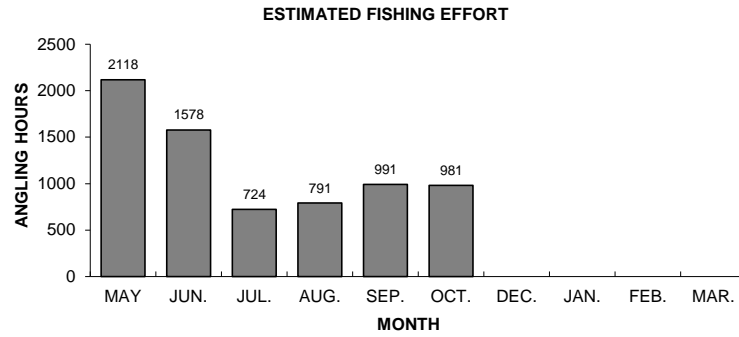
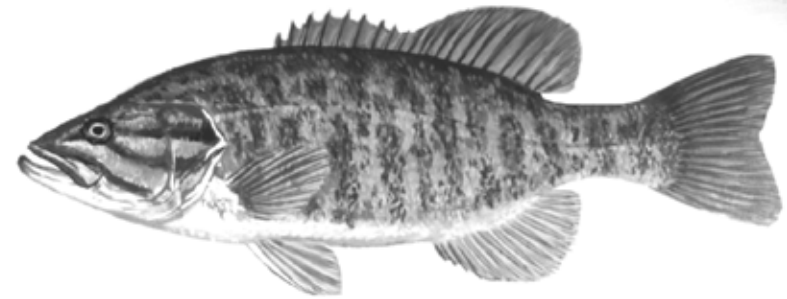
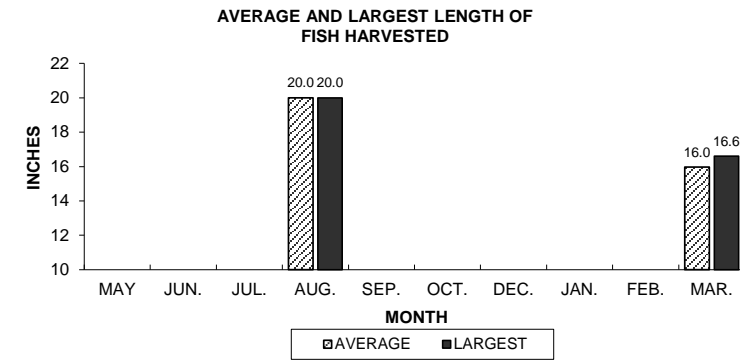
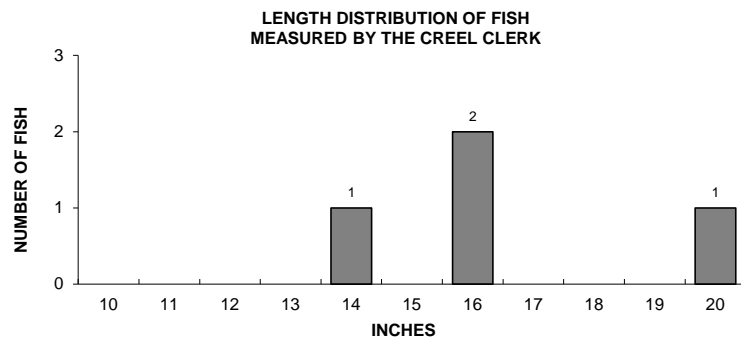
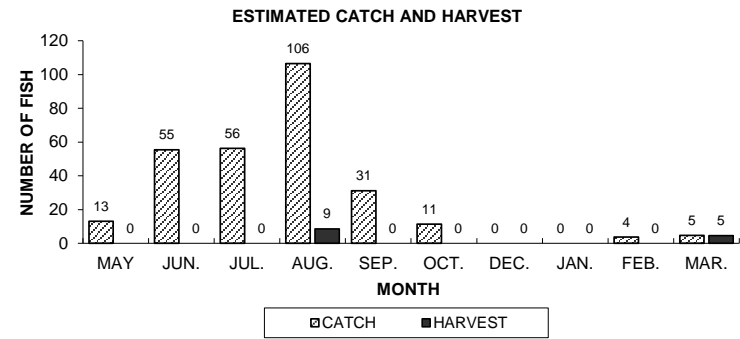
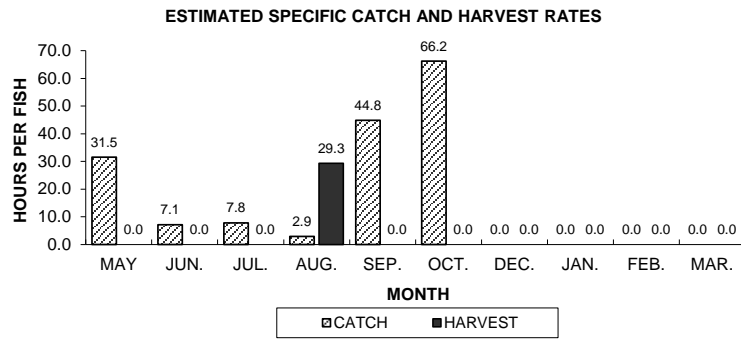
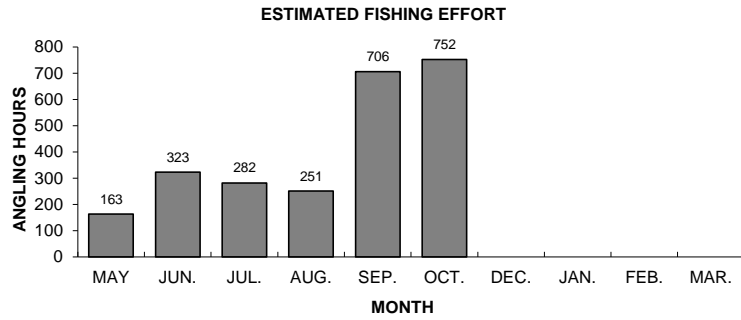
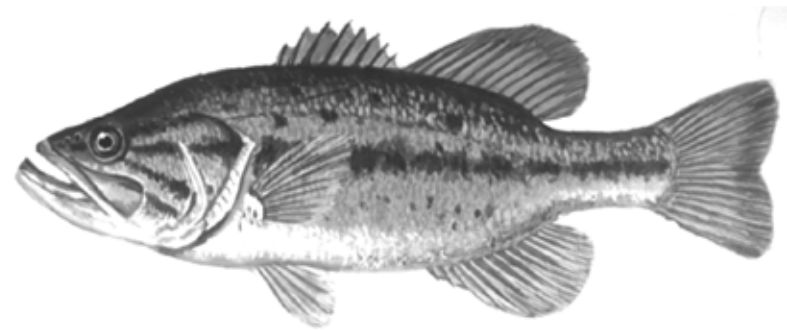


Figure 4. Smallmouth bass sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2015-16.

# LARGEMOUTH BASS



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Figure 5. Largemouth bass sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2015-16.

# YELLOW PERCH

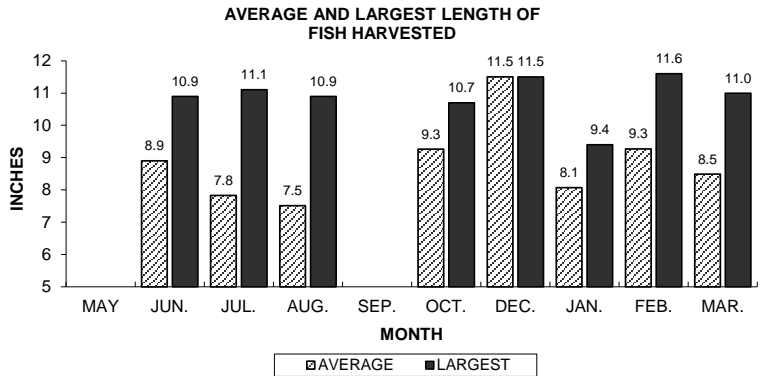
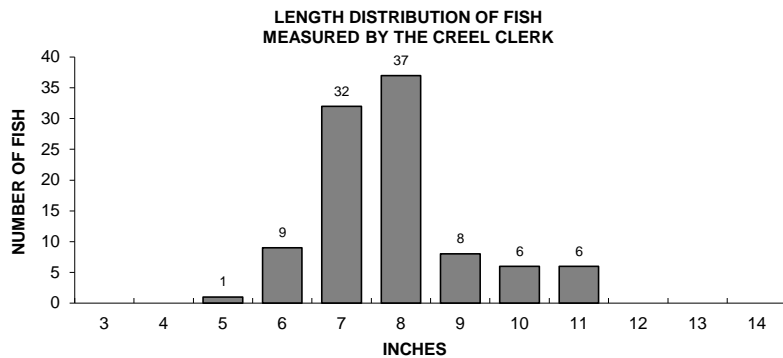
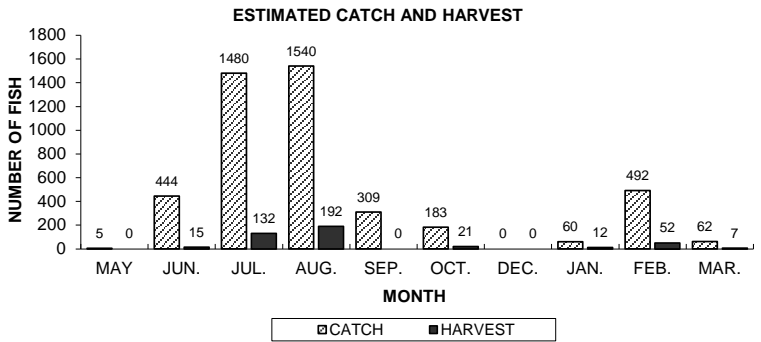
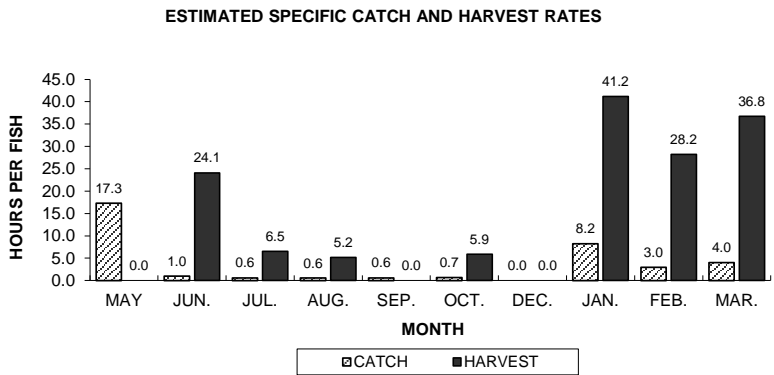
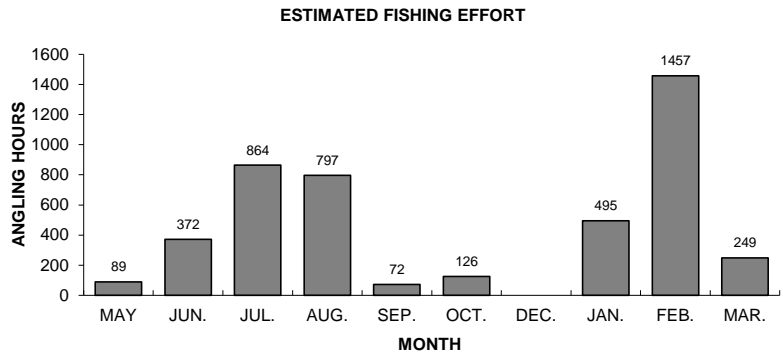


Figure 6. Yellow perch sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2015-16.

# BLUEGILL

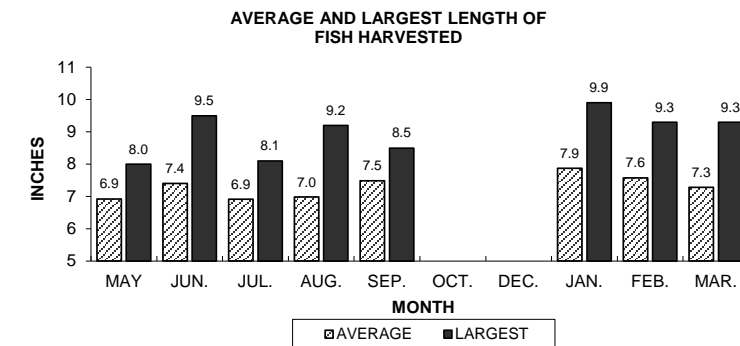
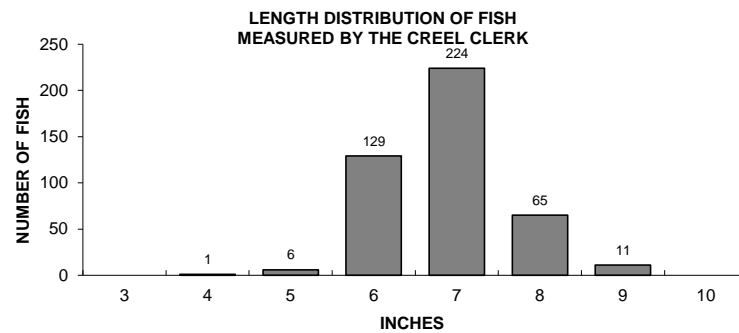
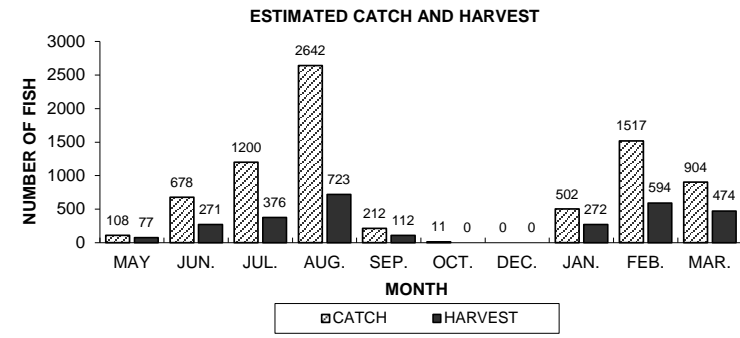
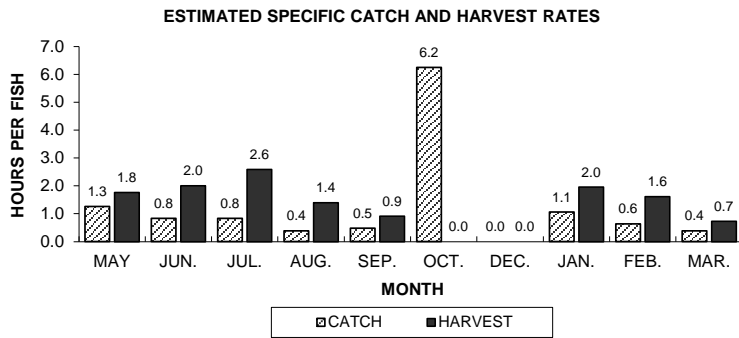
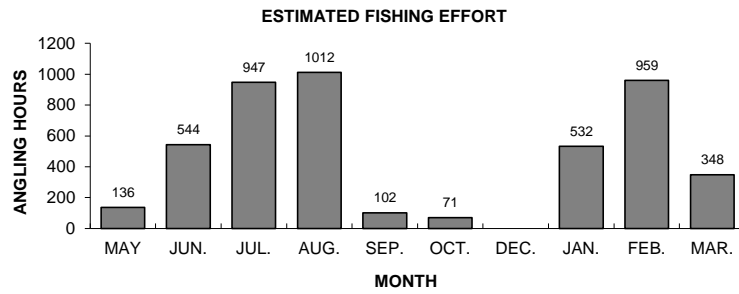


Figure 7. Bluegill sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2015-16.

# BLACK CRAPPIE

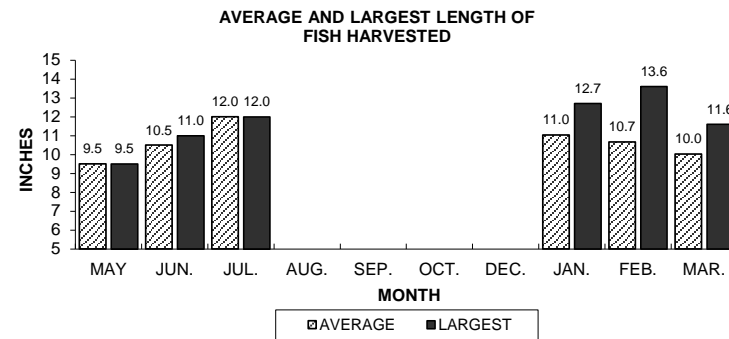
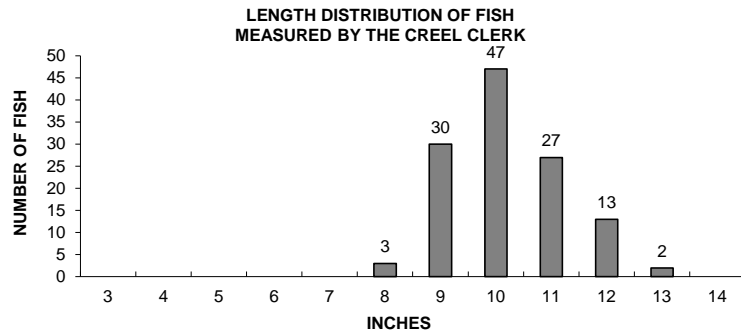
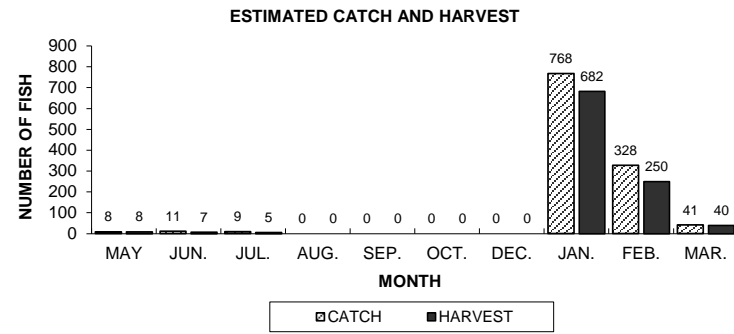
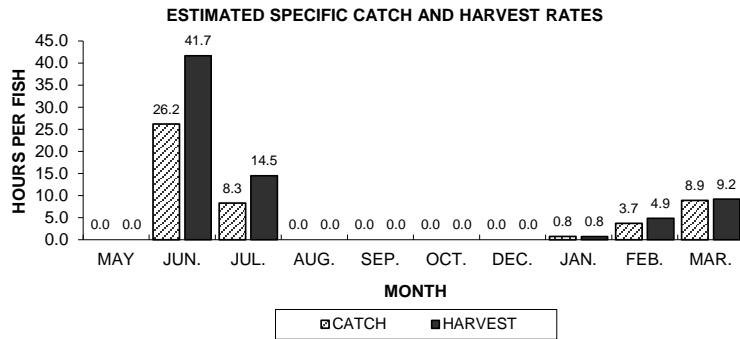
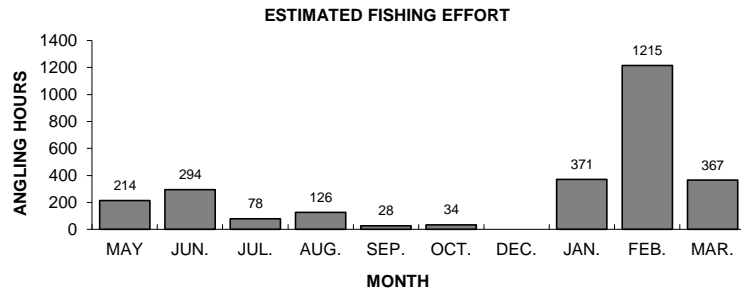
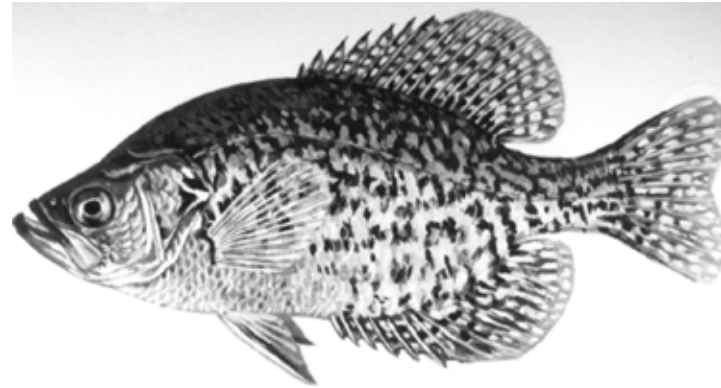


Figure 8. Black crappie sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2015-16.



# PUMPKINSEED

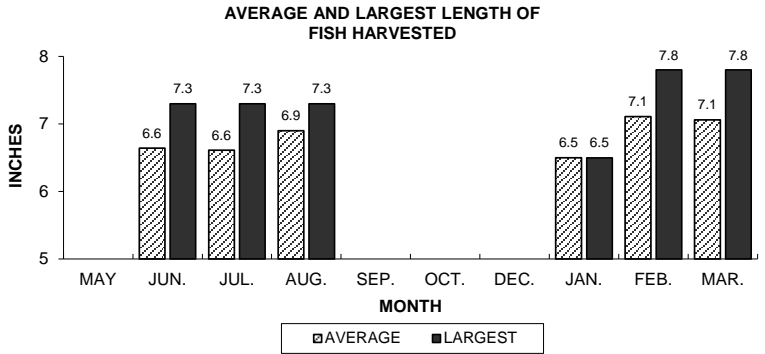
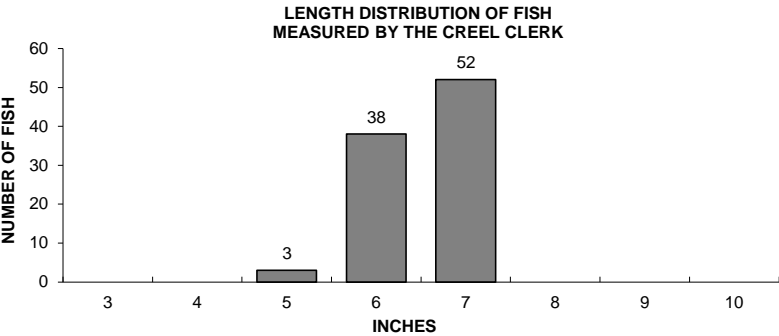
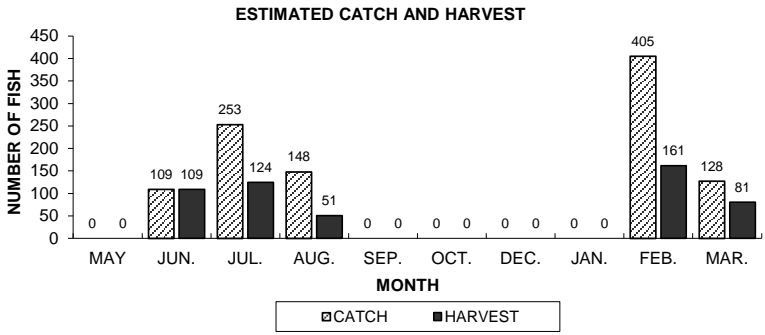
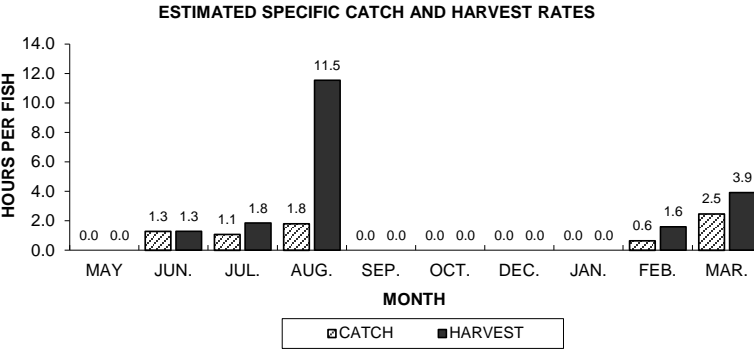
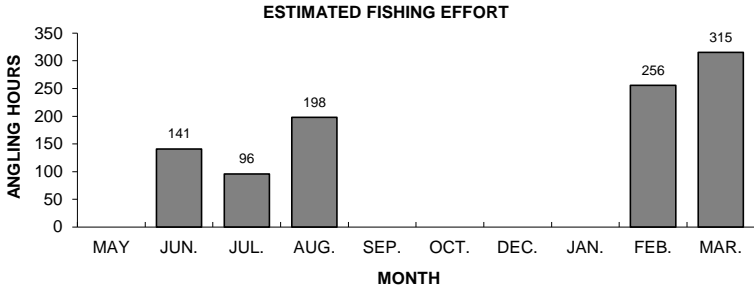
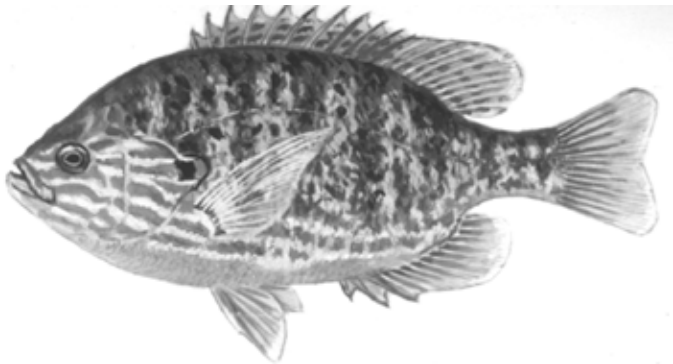


Figure 9. Pumpkinseed sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2015-16.

# ROCK BASS

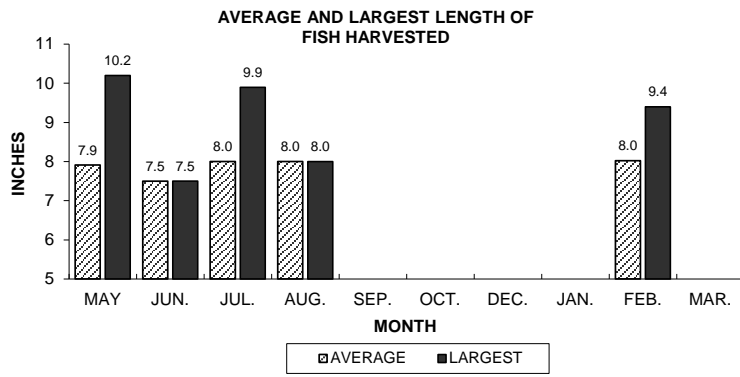
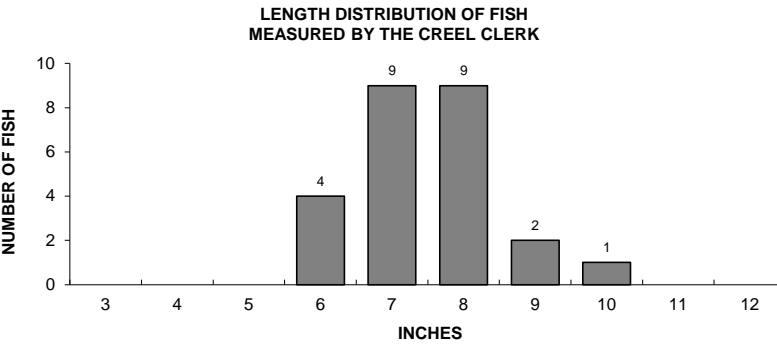
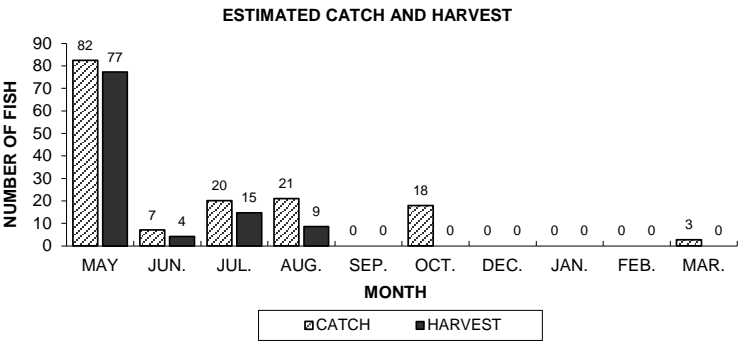
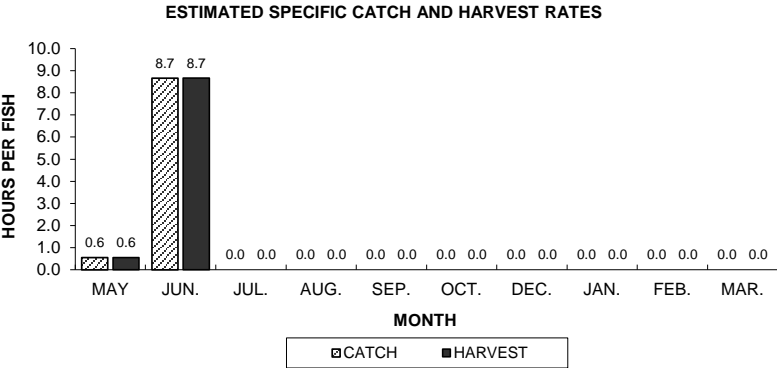
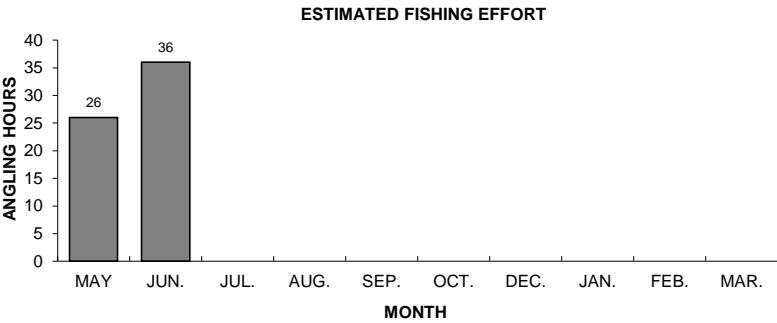
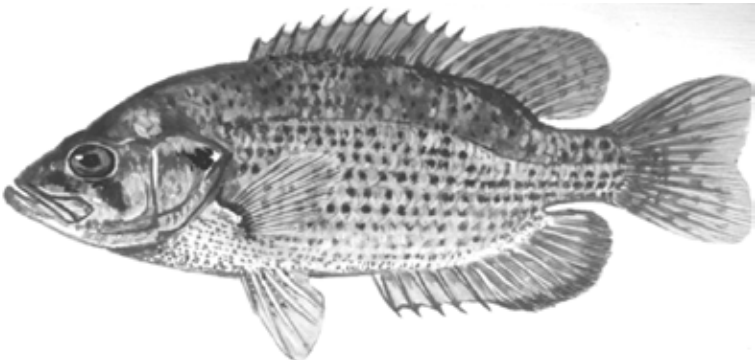


Figure 10. Rock bass sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2015-16.