WISCONSIN DEPARTMENT OF NATURAL RESOURCES
CREEL SURVEY REPORT

PLUM LAKE

VILAS COUNTY

2012-13

Treaty Fisheries Publication

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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 good 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). But 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 also measure the sport harvest to assess its impact on the fishery. But because it would be highly impractical and very costly to conduct a complete census of every angler who fishes on a lake, 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 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, except during the month of 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 numbers of anglers on a lake at predetermined times, and to interview anglers who have completed their fishing trip to collect data on what species they fished for, catch, harvest, lengths of fish harvested, marks (finclips 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 projections of total catch and harvest of each species, catch and harvest rates, and total fishing effort, by month and for the year in total. Keep in mind that these are only projections based on the best information available, and not a complete accounting of effort, catch, and harvest. Accurate projections 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.

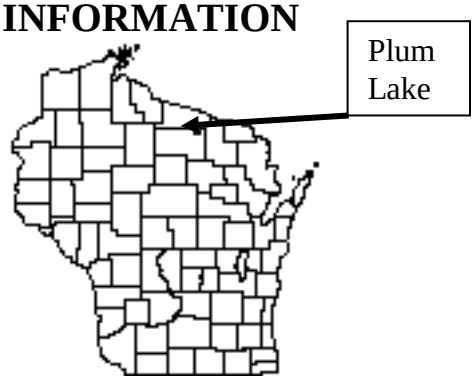
You may have encountered a DNR creel survey clerk on a recent fishing trip. We appreciate your cooperation during an interview. The survey only takes a moment of your time and it gives the Department valuable information needed for management of the fishery.

This report provides projections 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 in the Town of Sayner.

Physical Characteristics
Plum Lake is a 1,033-acre drainage lake of moderate fertility with a maximum depth of 57 feet. Littoral substrate consists primarily of sand, gravel and muck. Plum Lake has clear water of high transparency.

Seasons Surveyed
The period referred to in this report as the 2012-13 fishing season ran from May 5, 2012 through March 3, 2013. The open water creel survey ran from May 5 through October 31, 2012 and the ice fishing creel survey ran from December 1, 2012 through March 3, 2013.

Weather
Ice-out on Plum Lake was around March 24, 2012. Fishable-ice formed on Plum Lake in mid-December.

Sportfishing Regulations
The following seasons, daily bag limits, and length limits were in place on Plum Lake during the 2012-13 fishing season:

Species	Season	Bag Limit	Min. Size
Largemouth Bass&	5/5-6/15	Catch & Release	
Smallmouth Bass	6/16-3/3	1	18"
Musky	5/26-11/30	1	40"
Northern Pike	5/5-3/3	5	none
Walleye	5/5-3/3	3*	
No Minimum, 14"-18" Protected Slot, 1>18"			
Panfish	year round	25	none
Rock Bass	year round	none	none

* The statewide bag limit was 5 walleye, but due to tribal declarations it was reduced on Plum Lake.

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 3 should be considered minimum estimates. Each species page has up to five graphs depicting the following:

1. **PROJECTED FISHING EFFORT**
   Total calculated number of hours during each month that anglers spent fishing for a species.

2. **PROJECTED 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. **PROJECTED 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 projections 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 2009-10.

General Angler Information
Anglers spent 29,641 hours or 28.7 hours per acre fishing Plum Lake during the 2012-13 fishing season (Table 1). That was less than the Vilas County average of 34.6 hours per acre. September was the most heavily fished month (5.2 hours per acre). Fishing effort was lightest in December (0.6 hours per acre) for those months when the entire month was creeled.

RESULTS BY SPECIES
Walleye (Table 2, Figure 1)
Walleyes received the most fishing effort during the 2012-13 fishing season. Anglers spent 14,191 hours targeting walleyes. The greatest fishing effort for walleyes was in February (3,176 hours). January had the least amount of walleye fishing effort (417 hours).

The high specific harvest rate for February compared to other months is due to a one day tournament on Plum Lake.

Total catch of walleyes was 3,393 fish with a harvest of 1,020 fish. Highest catch (1,011 fish) and harvest (426 fish) occurred in September. Anglers fished 4.2 hours to catch and 13.9 hours to harvest a walleye during 2012-13.

The mean length of harvested walleyes was 13.5 inches and the largest walleye measured was a 24 inch fish.

Northern Pike (Table 2, Figure 2)
Fishing effort directed at northern pike was 8,110 hours during the 2012-13 fishing season. Northern pike fishing effort was greatest in February (3,086 hours).

Total catch of northern pike was 3,466 fish with a harvest of 598 fish.

The mean length of harvested northern pike was 20.1 inches and the largest northern pike measured was a 33.1 inch fish.

Muskellunge (Table 2, Figure 3)
Anglers spent 5,963 hours targeting muskellunge during the 2012-13 fishing season. Muskellunge fishing effort was greatest in June (1,251 hours).

Total catch of muskellunge was 97 fish. Highest catch (28 fish) occurred in August. Anglers fished 72.5 hours to catch a muskellunge during 2012-13.

Smallmouth Bass (Table 2, Figure 4)
Fishing effort targeted at smallmouth bass was 6,326 hours during the 2012-13 fishing season. Smallmouth bass fishing effort was greatest in May (1,721 hours).

Total catch of smallmouth bass was 2,698 fish with 68 harvested. Highest catch (1,534 fish) occurred in May. Anglers fished 2.5 hours to catch a smallmouth bass during 2012-13.

Largemouth Bass (Table 2, Figure 5)
Fishing effort directed at largemouth bass was 1,718 hours during the 2012-13 fishing season. Largemouth bass fishing effort was greatest in July (584 hours).

Total catch of largemouth bass was 346 fish with a harvest of 7 fish. Highest catch (247 fish) occurred in May. Anglers fished 5.7 hours to catch a largemouth bass during 2012-13.

Panfish (Table 2, Figures 6-10)

Bluegills were the most sought after panfish species during the survey. Fishing effort directed at bluegills was 6,790 hours.

Total catch of bluegills was 7,858 fish with 2,644 harvested. The mean length of bluegills harvested was 7.4 inches.

Yellow perch were the second most sought after panfish species during the survey. Fishing effort directed at yellow perch was 5,550 hours.

Total catch of yellow perch was 2,890 fish with 1,216 harvested. The mean length of yellow perch harvested was 9.7 inches.

Black crappies were the third most sought after panfish species during the survey. Fishing effort directed at black crappies was 1,381 hours.
Anglers caught 229 black crappies and harvested 111 fish. The mean length of black crappies harvested was 10.9 inches.

Pumpkinseeds and rock bass were also caught during the 2012-13 fishing season.

ACKNOWLEDGMENTS

Completion of this survey was possible because of the efforts of the technical staff of the fisheries management and Treaty Fisheries Unit. Treaty staff responsible for ensuring completion of this survey included Jonathan Pyatskowit, Jeff Blonski, Joelle Underwood, Marty Kiepke, Jason Halverson, and Tim Tobias. Lynn Robinson and Mike Rynski were the creel clerks on Plum Lake during the survey period.

We also 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 the cooperators, Gerald and Sue Kurth, and The Plum Lake Golf Course, who generously allowed the department to keep a boat and snowmobile on their property during this survey.

This creel report was reviewed by, Steve Gilbert and Dennis Scholl 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/fish/ceded/reports.html

Table 1. Sportfishing effort summary, Plum Lake, 2012-13 season.

Month	Total Angler Hours	Total Angler Hours/Acre	Vilas County Average Hours/Acre	Statewide Average Hours/Acre
May	4410	4.3	5.2	5.8
June	4208	4.1	6.8	6.1
July	4681	4.5	7.5	6.4
August	3559	3.4	6.4	5.4
September	5341	5.2	4.2	3.8
October	2328	2.3	2.0	1.6
December	626	0.6	0.5	1.7
January	733	0.7	0.8	1.5
February	3255	3.2	1.0	1.3
March	500	0.5	0.2	**
*Summer Total	24527	23.7	32.1	29.1
*Winter Total	5114	5.0	2.5	4.5
Grand Total	29641	28.7	34.6	33.6

*"Summer" is May-October; "Winter" is December-March
**Too few lakes have been surveyed in March to give a meaningful statewide average.

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 if you wish to compare effort on Plum Lake to other lakes.

County Average Hours/Acre is the average angler effort in hours per acre for county lakes that have been surveyed since 1990. This value can be useful in comparisons as well.

Statewide Average Hours/Acre is the average angler effort in hours per acre for inland lakes in the state surveyed between 1990 and 1995. This value can be used to compare Plum Lake to other lakes statewide.

Table 2. Comparison of creel survey synopses, Plum Lake, 2012-13 and 2009-10 fishing seasons.

CREEL YEAR: 2012-13

SPECIES	DIRECTED EFFORT (Hours)	PERCENT OF TOTAL	TOTAL CATCH	SPECIFIC CATCH RATE (Hrs/Fish) *	TOTAL HARVEST	SPECIFIC HARVEST RATE (Hrs/Fish) **	MEAN LENGTH OF HARVESTED FISH
Walleye	14191	27.74%	3393	4.2	1020	13.9	13.5
Northern Pike	8110	15.85%	3466	3.9	598	14.5	20.1
Muskellunge	5963	11.66%	97	72.5	5	1250.0	47.3
Smallmouth Bass	6326	12.37%	2698	2.5	68	104.2	19.5
Largemouth Bass	1718	3.36%	346	5.7	7	232.6	18.7
Yellow Perch	5550	10.85%	2890	2.2	1216	4.7	9.7
Bluegill	6790	13.27%	7858	0.9	2644	2.6	7.4
Pumpkinseed	920	1.80%	365	3.0	195	5.8	6.6
Rock Bass	206	0.40%	314	6.7	33	7.8	8.9
Black Crappie	1381	2.70%	229	6.5	111	14.7	10.9

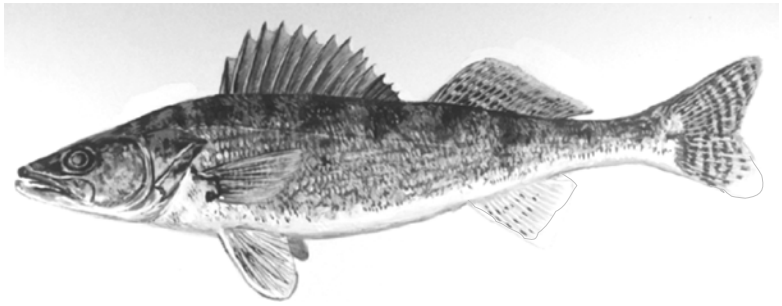
* A blank cell in this column indicates that no fish of a given species were caught by anglers who specifically targeted that species.

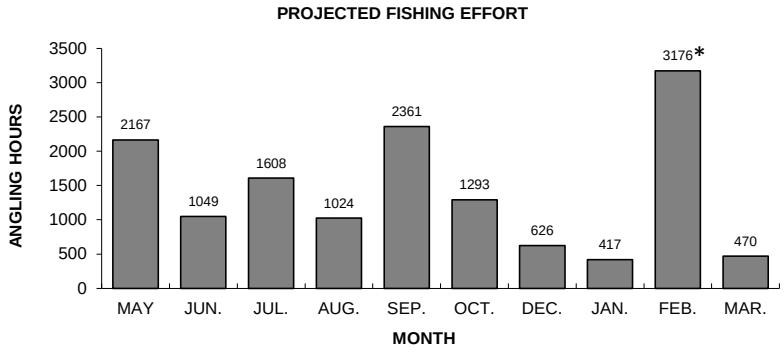
** A blank cell in this column indicates that no fish of a given species were harvested by anglers who specifically targeted that species.

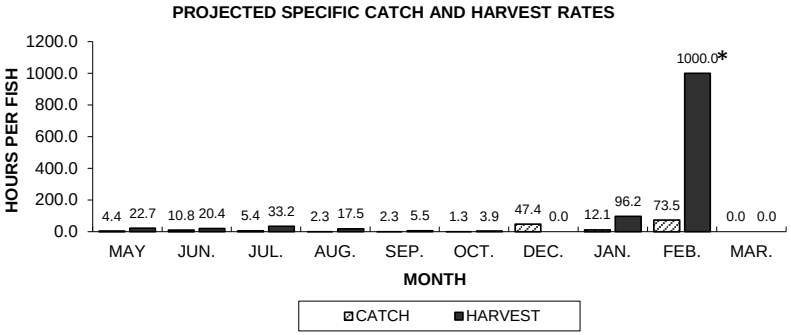
CREEL YEAR: 2009-10

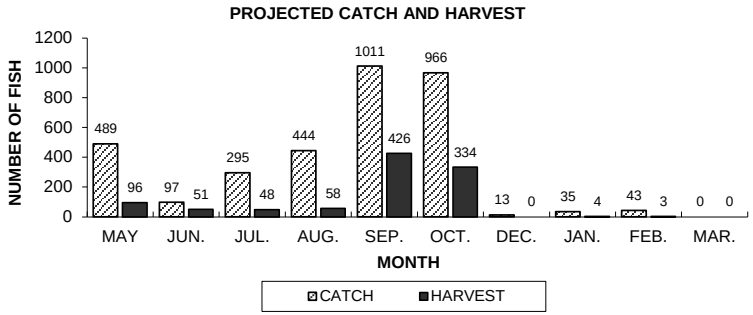
SPECIES	DIRECTED EFFORT (Hours)	PERCENT OF TOTAL	TOTAL CATCH	SPECIFIC CATCH RATE (Hrs/Fish)	TOTAL HARVEST	SPECIFIC HARVEST RATE (Hrs/Fish)	MEAN LENGTH OF HARVESTED FISH
Walleye	14344	33.54%	2455	5.8	700	20.5	13.7
Northern Pike	5208	12.18%	2615	5.7	345	21.8	20.3
Muskellunge	5495	12.85%	41	222.2	0		0.0
Smallmouth Bass	5570	13.02%	1619	3.9	12	454.5	20.2
Largemouth Bass	1204	2.82%	75	30.0	0		0.0
Yellow Perch	5765	13.48%	1785	3.7	744	9.0	9.1
Bluegill	3818	8.93%	3348	1.3	978	4.1	6.7
Pumpkinseed	0	0.00%	34		17		0.0
Rock Bass	53	0.12%	310	0.2	115	0.5	8.7
Black Crappie	1309	3.06%	129	14.2	97	17.9	11.1

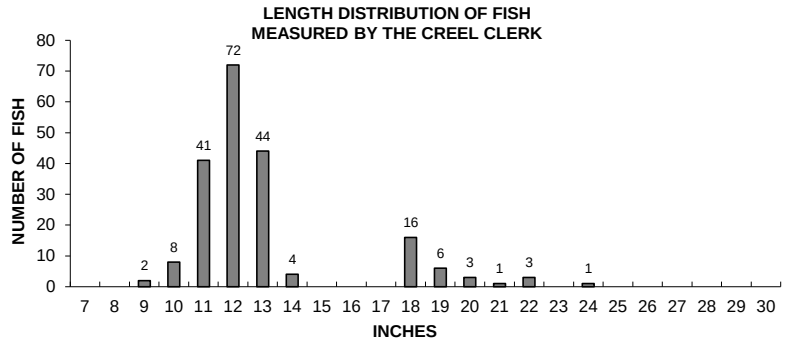
WALLEYE

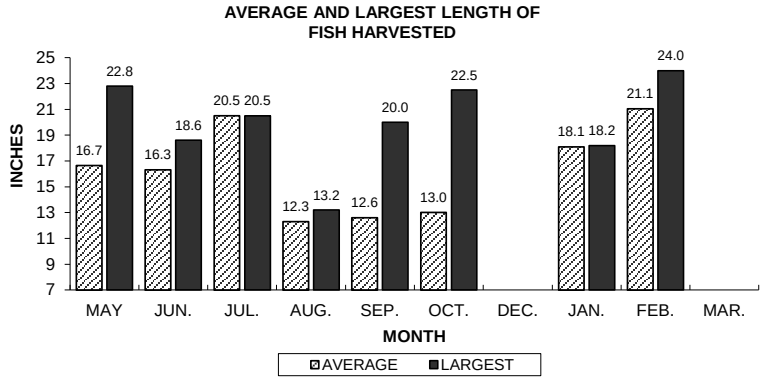






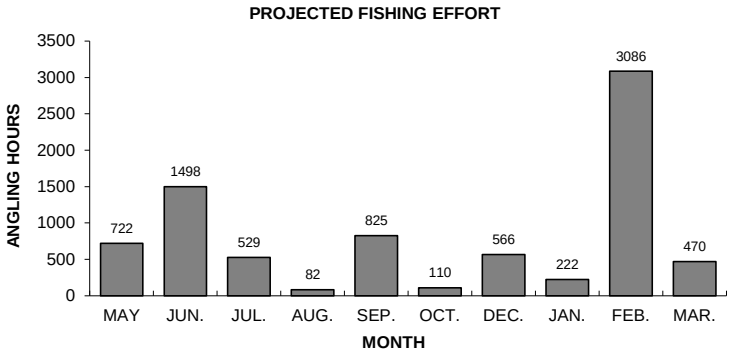




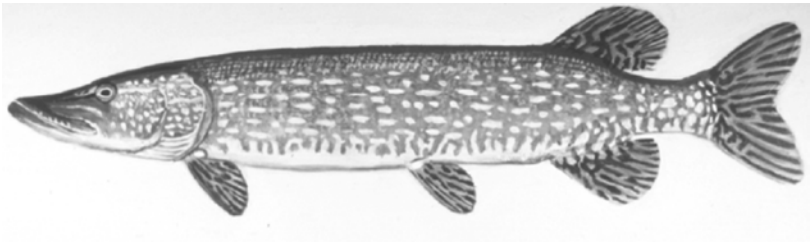


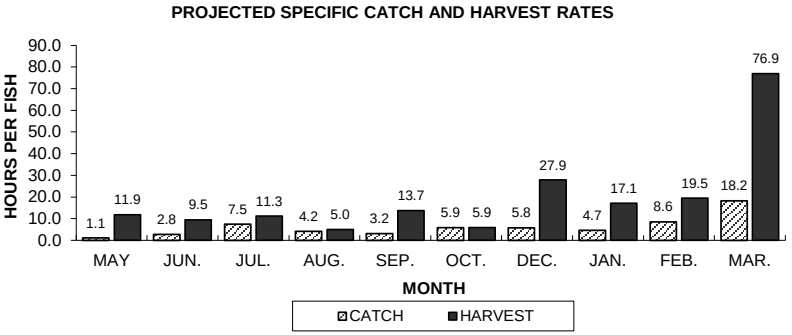
*This is due to a one day fishing tornament on Plum Lake

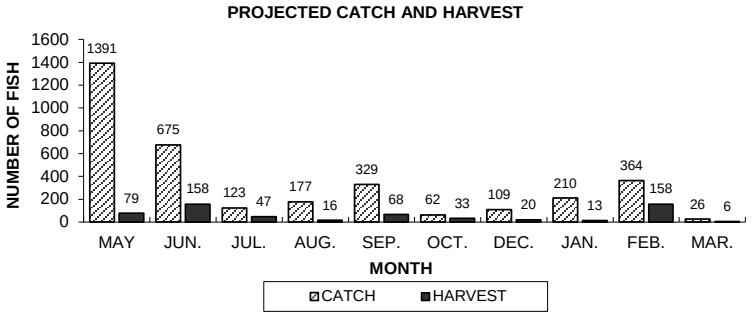
Figure 1. Walleye sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2012-13.

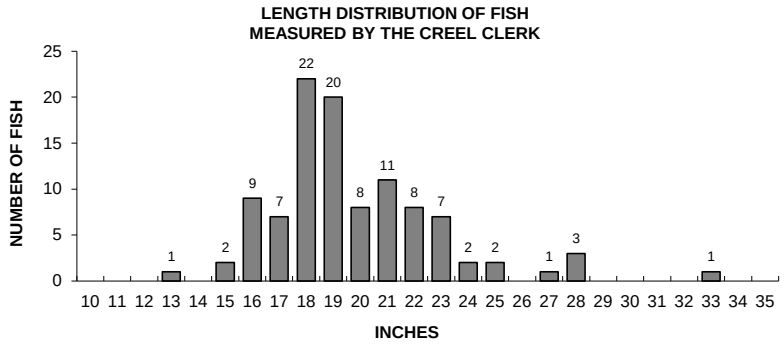


NORTHERN PIKE









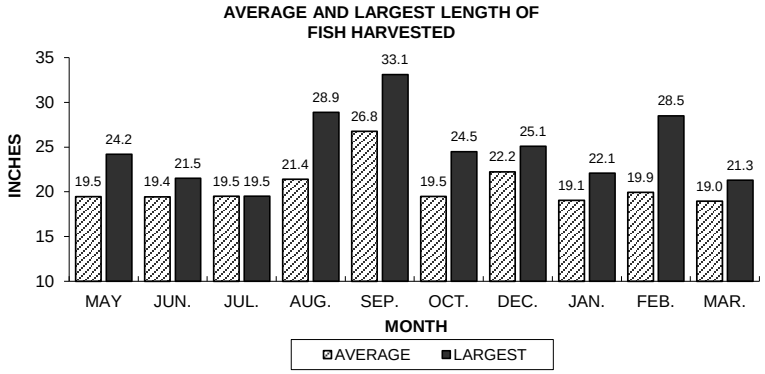
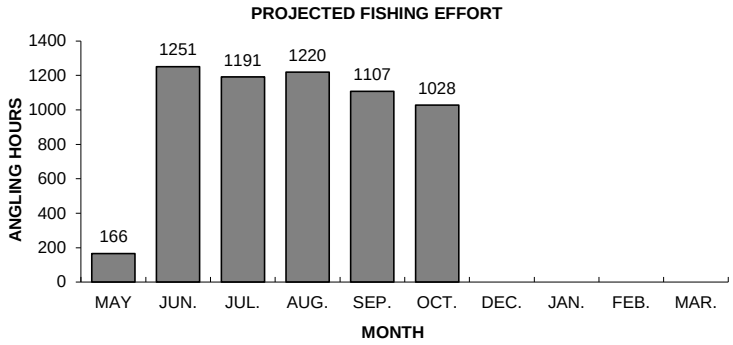
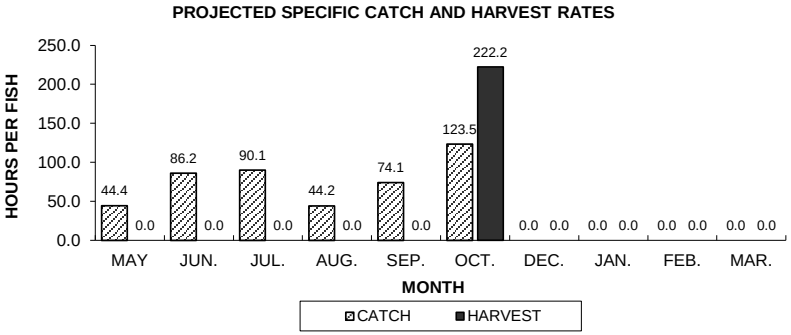
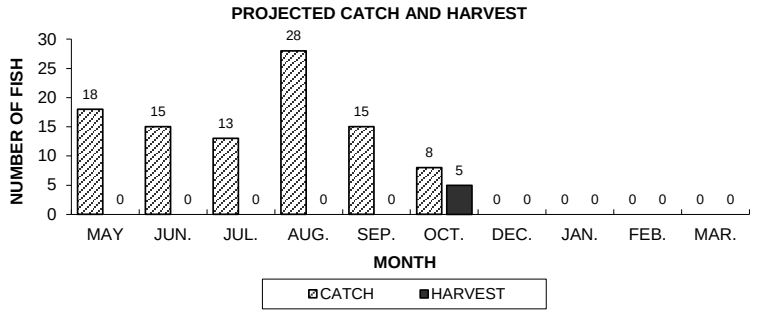


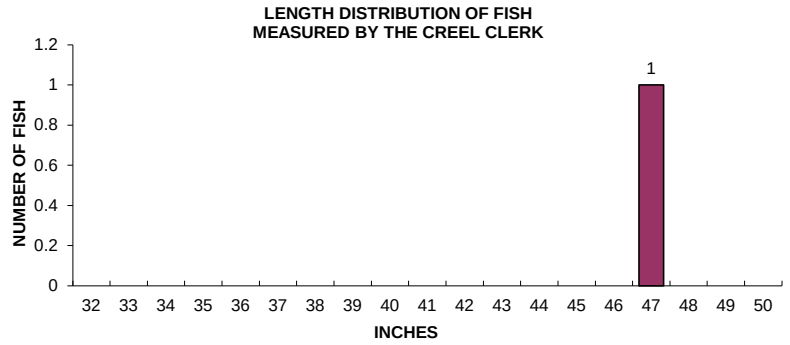
Figure 2. Northern pike sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2012-13.

MUSKELLUNGE









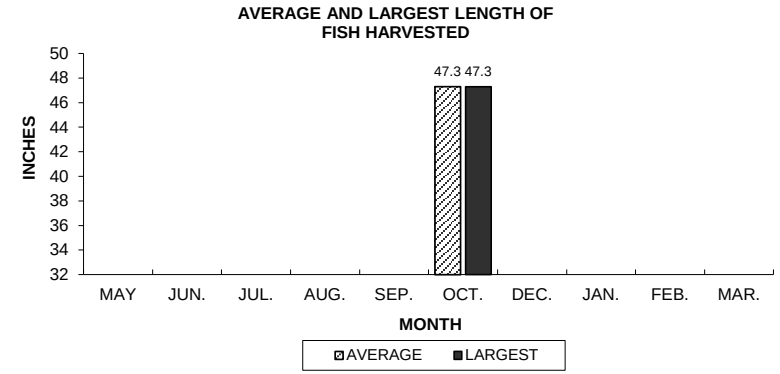
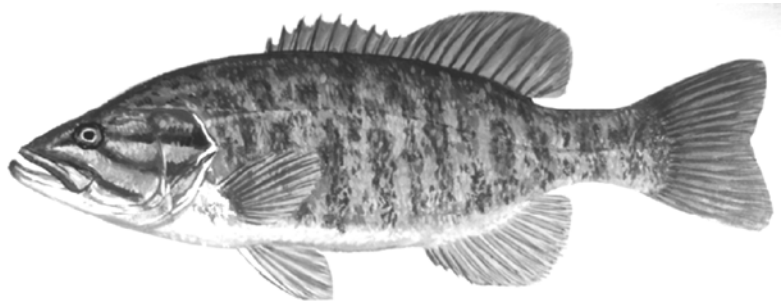
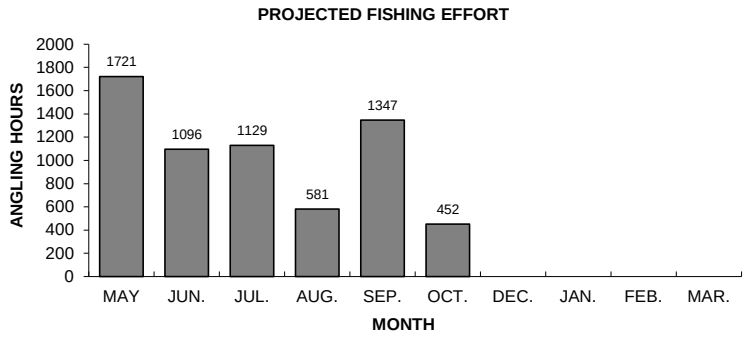
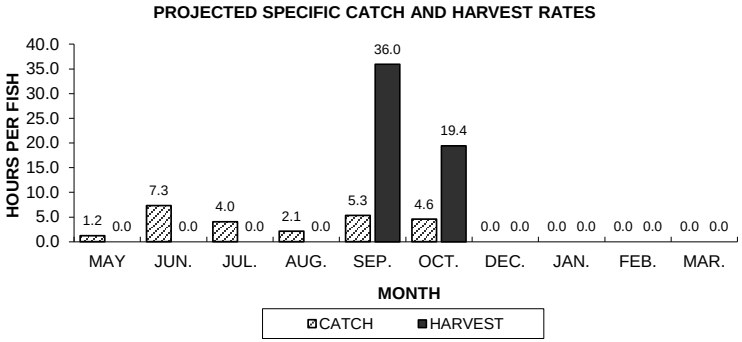


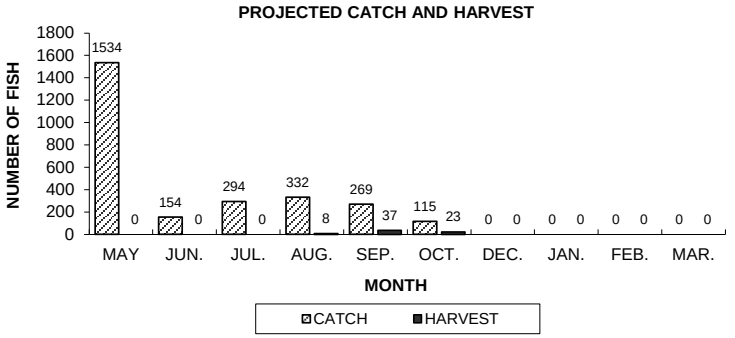
Figure 3. Muskellunge sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2012-13.

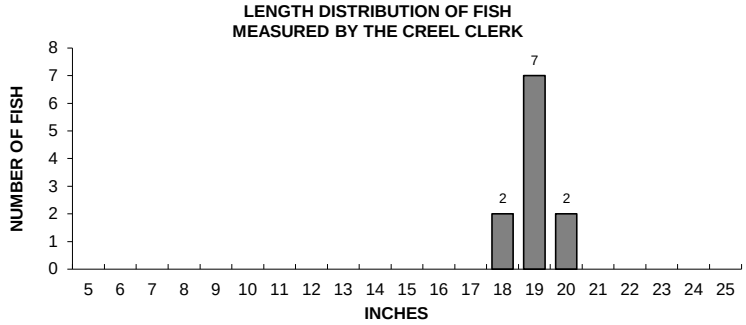
SMALLMOUTH BASS











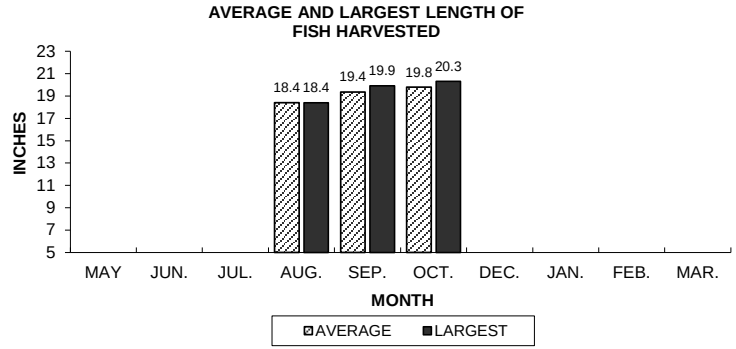
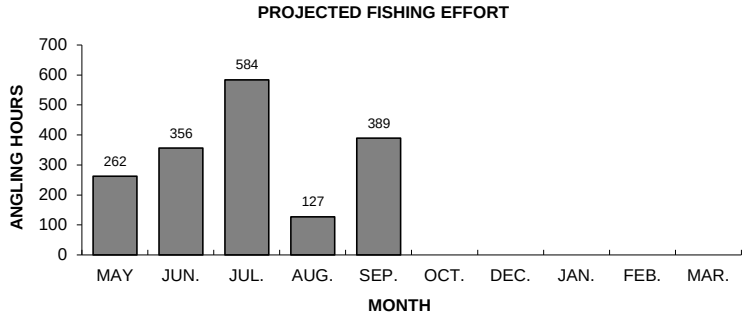
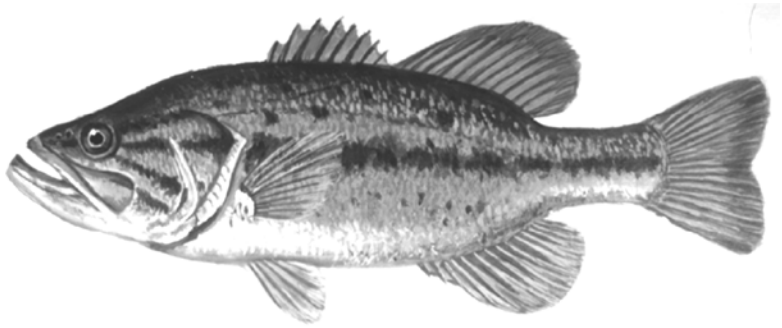
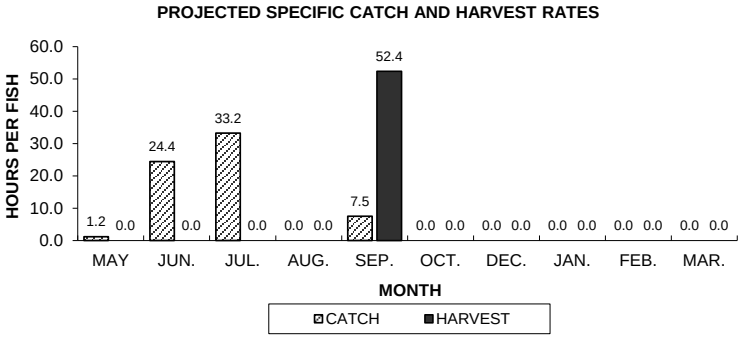


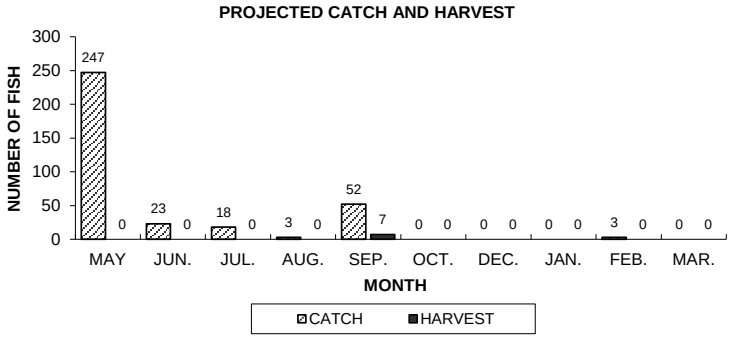
Figure 4. Smallmouth bass sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2012-13.

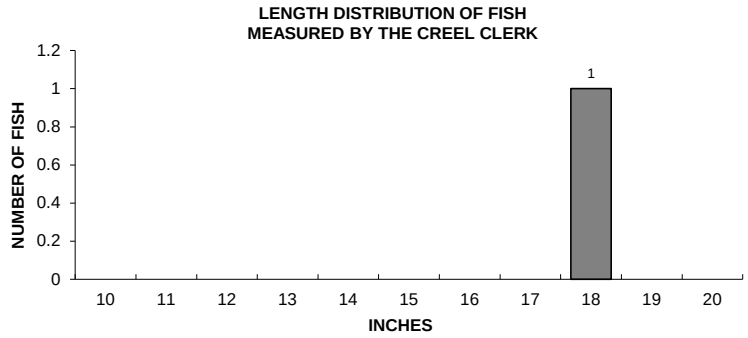
LARGEMOUTH BASS











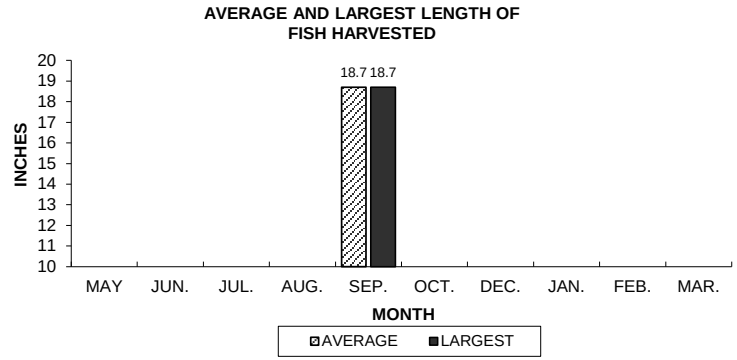
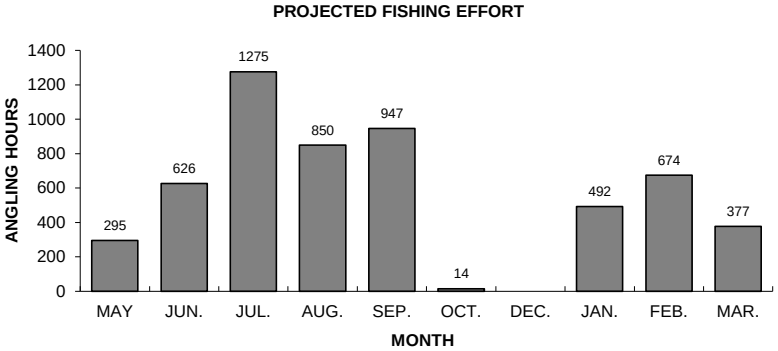
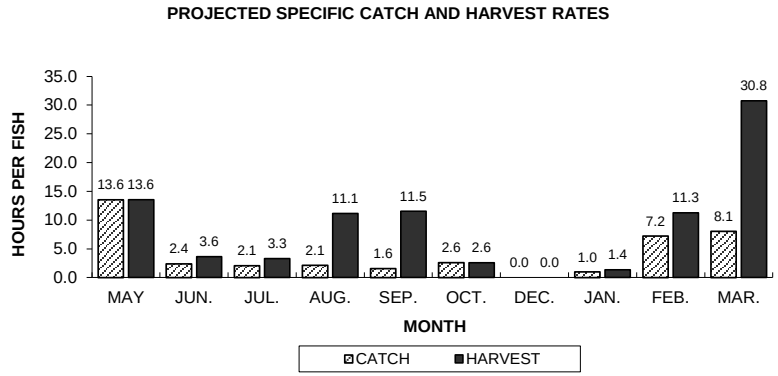
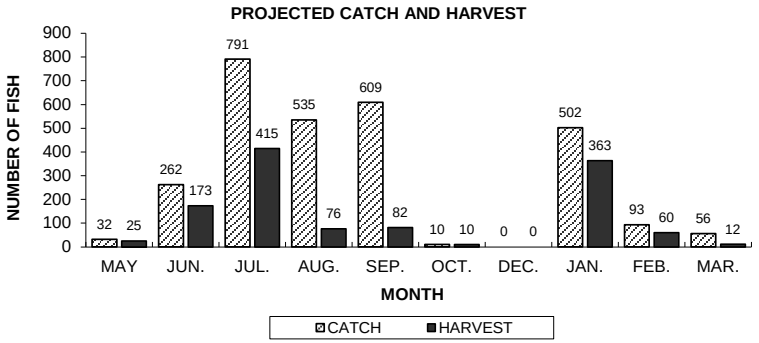


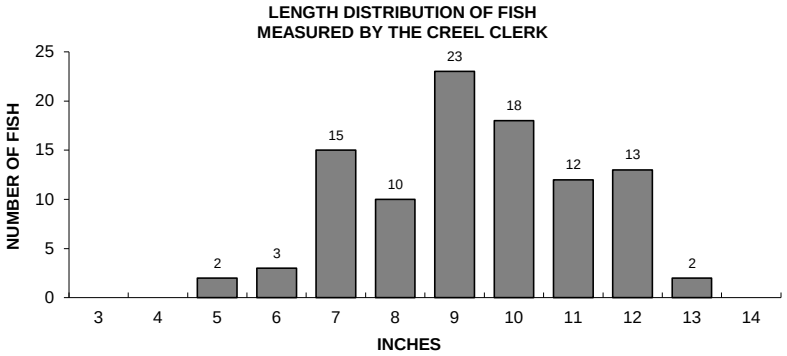
Figure 5. Largemouth bass sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2012-13.

YELLOW PERCH









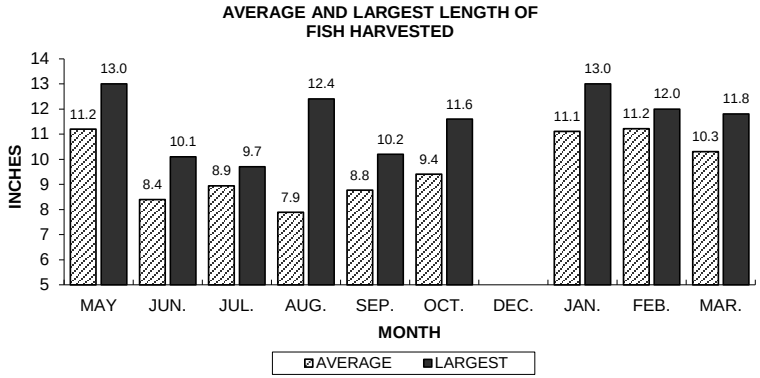
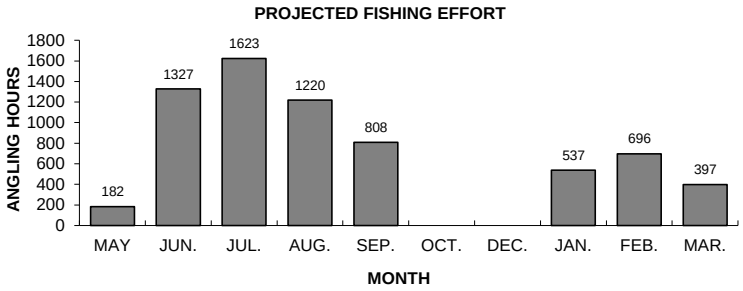
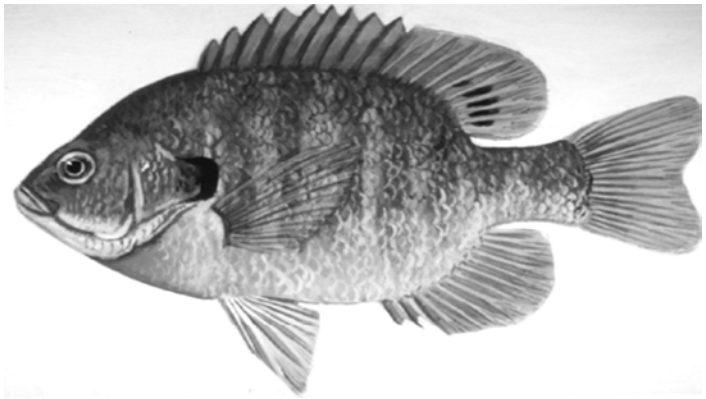
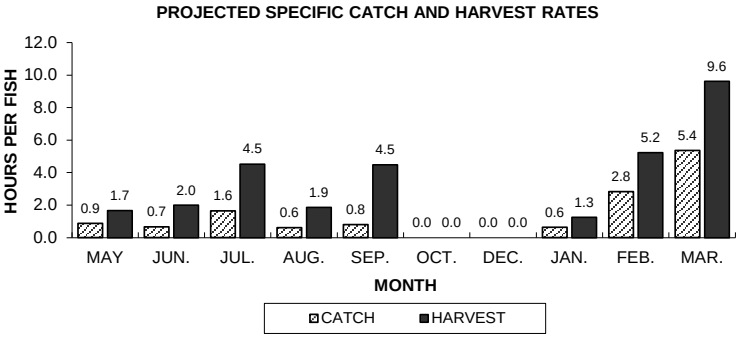


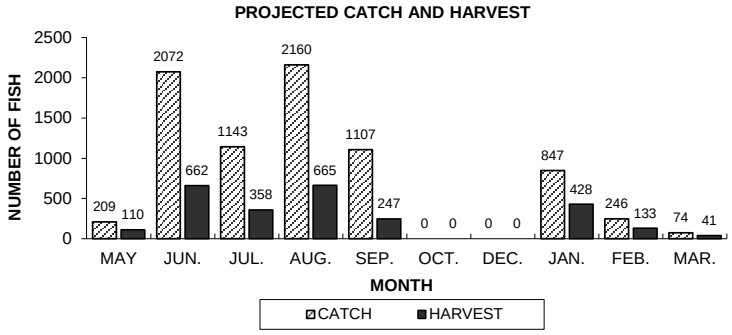
Figure 6. Yellow perch sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2012-13.

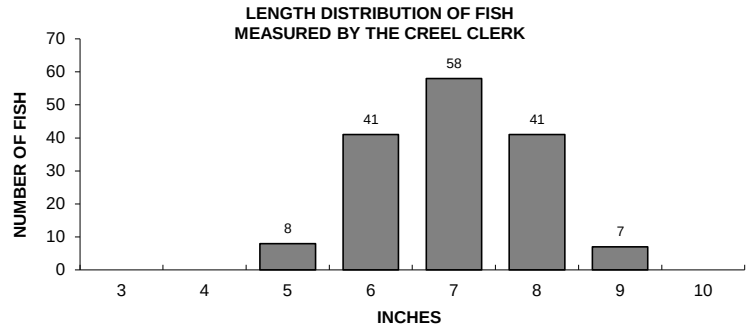
BLUEGILL











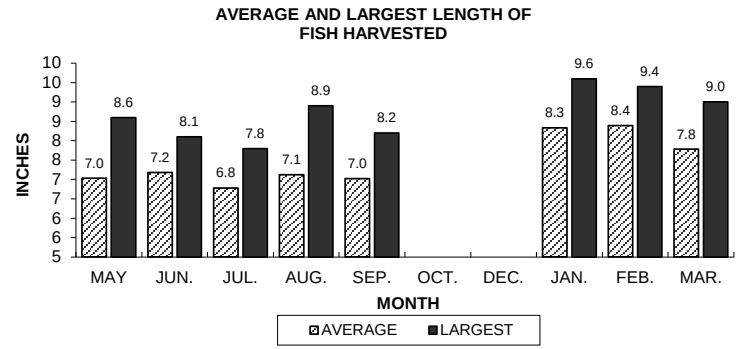
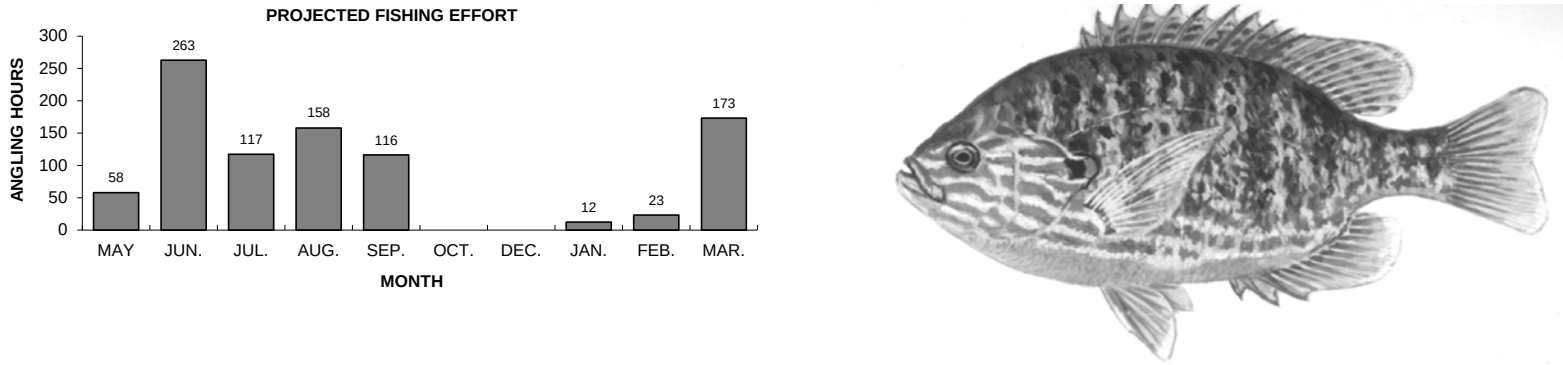
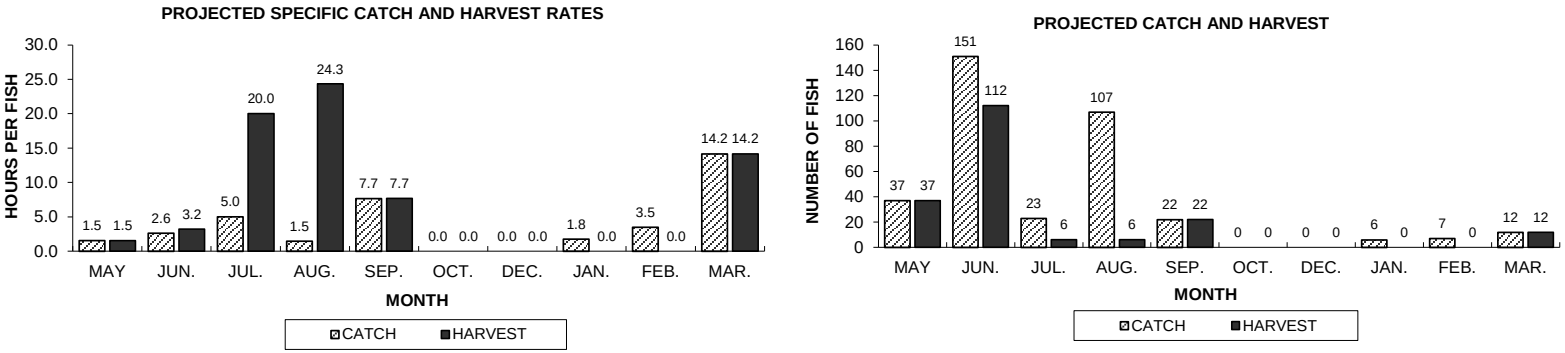
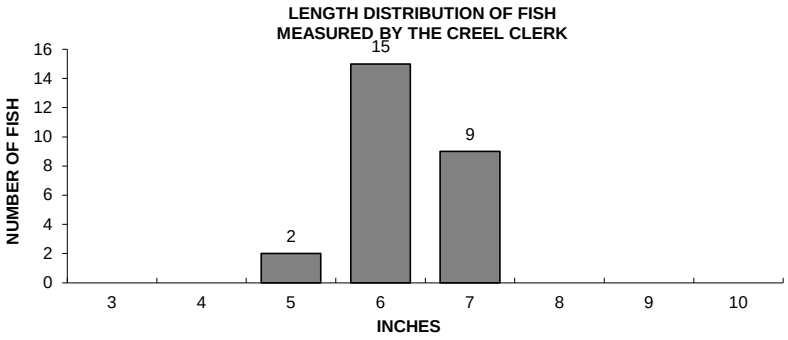


Figure 7. Bluegill sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2012-13.

PUMPKINSEED







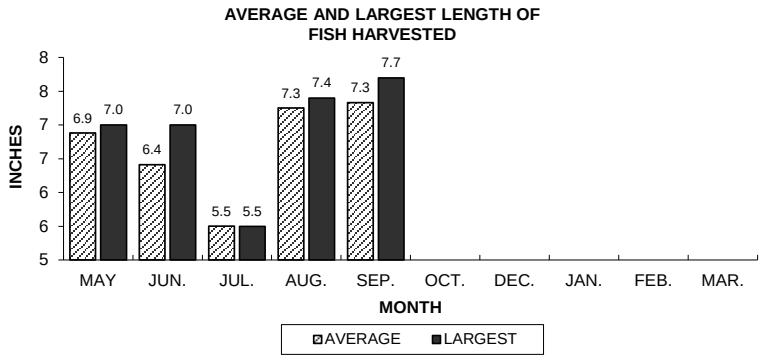
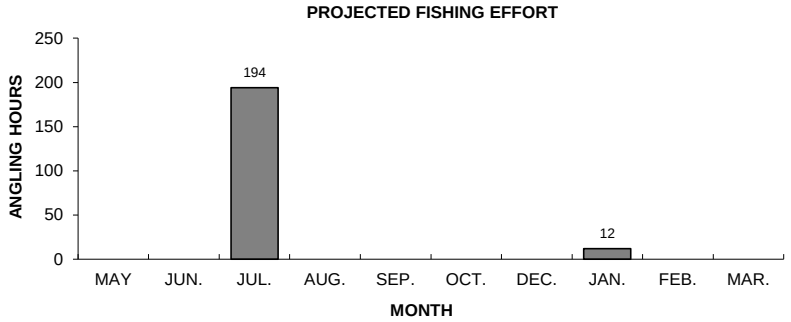
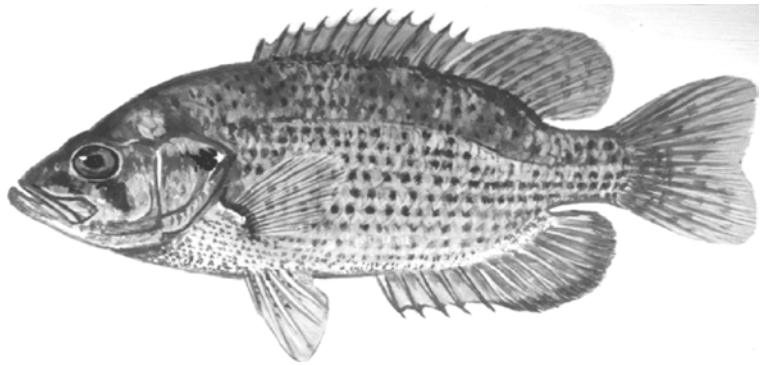
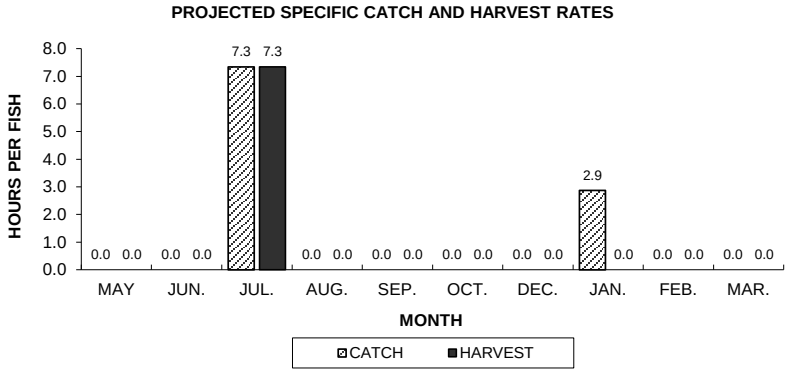


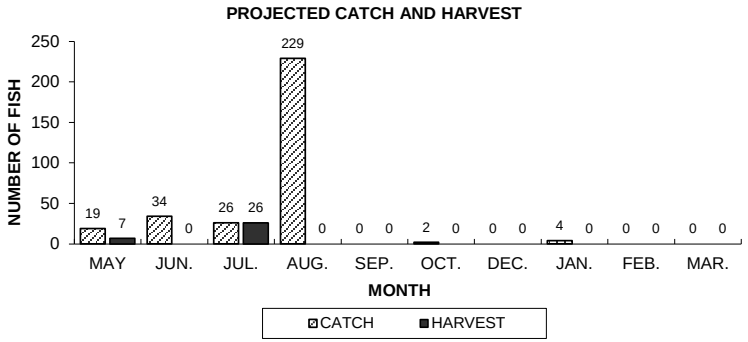
Figure 8. Pumpkinseed sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2012-13.

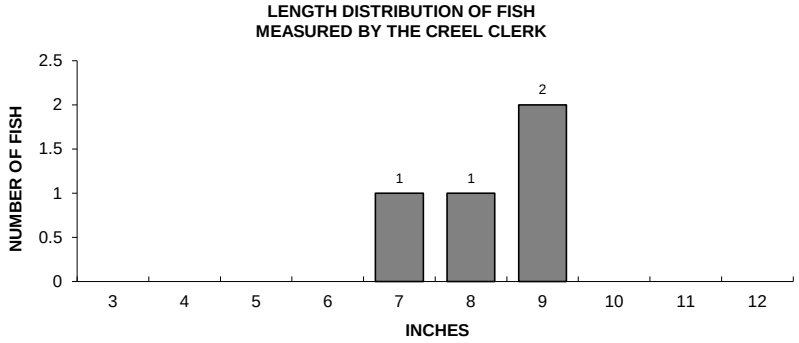
ROCK BASS











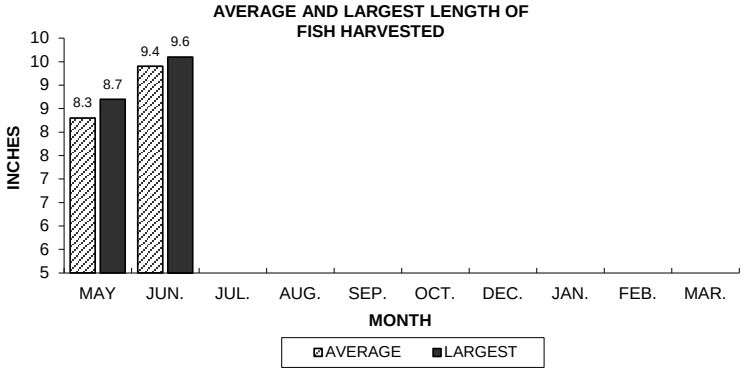
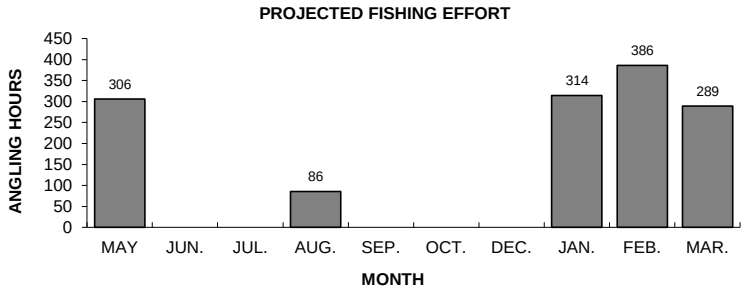
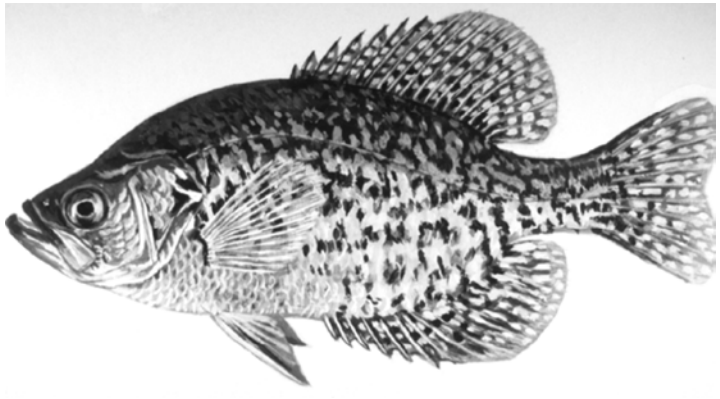
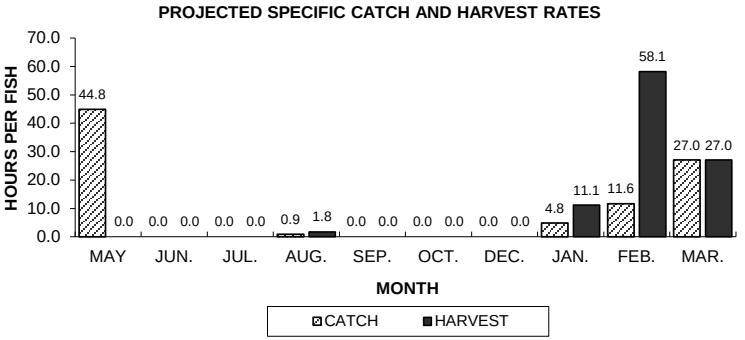


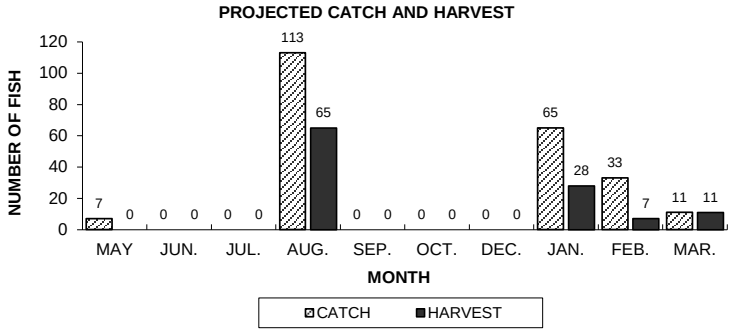
Figure 9. Rock bass sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2012-13.

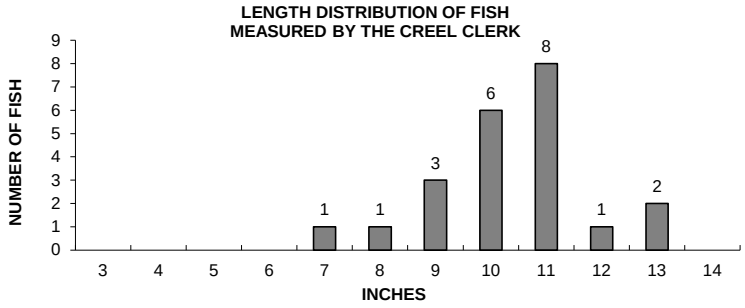
BLACK CRAPPIE











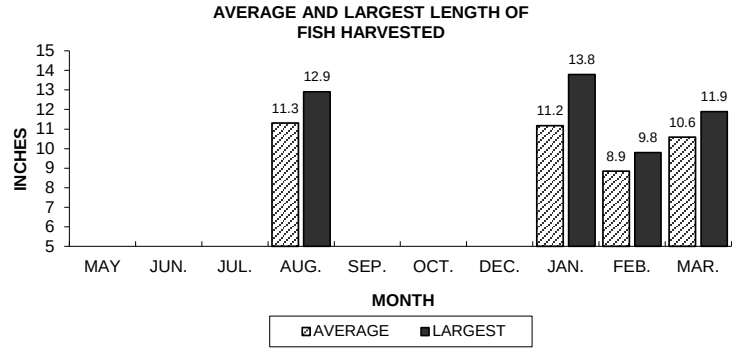


Figure 10. Black crappie sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2012-13.