WISCONSIN DEPARTMENT OF NATURAL RESOURCES
CREEL SURVEY REPORT

PLUM LAKE

VILAS COUNTY

2009-10

Treaty Fisheries Publication

Compiled by Tim Tobias
Treaty Fisheries Technician

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SUMMARY TABLES

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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.

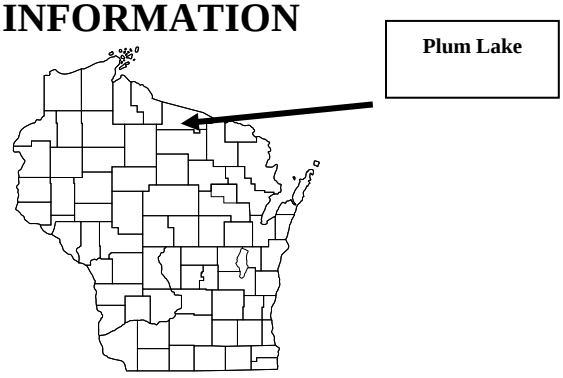
You may have encountered a DNR creel survey clerk on a recent fishing trip. We appreciate your cooperation during an interview. The survey only takes a moment of your time and it gives the Department valuable information needed for management of the fishery.

This report provides projections of:

1. Overall fishing 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 just north of 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 2009-10 fishing season ran from May 2, 2009 through March 7, 2010. The open water creel survey ran from May 2 through October 31, 2009 and the ice fishing creel survey ran from December 1, 2009 through March 7, 2010.

Weather

Ice-out on Plum Lake was around April 17, 2009 which is considered normal for northern Wisconsin. Ice-out typically occurs by mid-to-late April in northern Wisconsin. Spring, summer and fall weather was normal. Fishable-ice formed on Plum Lake in mid December. Fishable-ice typically forms on northern Wisconsin lakes by early December.

Sportfishing Regulations

The following seasons, daily bag limits, and length limits were in place on Plum Lake during the 2009-10 fishing season:

Species	Season	Bag Limit	Min. Size
Largemouth Bass&	5/02-6/19	Catch & Release	
Smallmouth Bass	6/20-3/07	1	18"
Musky	5/23-11/30	1	34"
Northern Pike	5/02-3/07	5	none
Walleye	5/02-3/07	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 fish, 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 7 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 sixth time the department conducted a creel survey on Plum Lake. Past creel surveys were conducted in 1990, 1995, 2000, 2003, and 2006.

General Angler Information
Anglers spent 26,150 hours or 25.3 hours per acre fishing Plum Lake during the 2009 season (Table 1). That was less than the statewide average of 33.6 hours per acre and the Vilas County average of 35.0 hours per acre. May was the most heavily fished month (4.5 hours per acre). Fishing effort was lightest in December (0.3 hours per acre).

RESULTS BY SPECIES
Walleye (Table 2, Figure 1)
Anglers spent 14,344 hours targeting walleye during the 2009 season. Walleye fishing effort was greatest in May (3,327 hours). December had the least amount of walleye fishing effort (274 hours).

Total catch was 2,455 walleye with a harvest of 700 fish. Highest catch (756 fish) occurred in May while highest harvest (238 fish) occurred in October. Anglers fished 5.8 hours to catch and 20.5 hours to harvest a walleye during 2009.

Northern Pike (Table 2, Figure 2)
Fishing effort directed at northern pike was 5,208 hours during the 2009 season. The month of February showed the highest fishing effort (2,155 hours), while October was the lowest (61 hours)

Catch was 2,615 fish and harvest was 345 fish. Anglers fished 5.7 hours to catch and 21.8 hours to harvest a northern pike during 2009.

Muskellunge (Table 2, Figure 3)
Fishing effort directed at muskellunge was 5,495 hours during the 2009 season. Muskellunge fishing effort was greatest in August (1,405 hours).

Catch was 41 fish with no harvest accounted for in the creel survey. Anglers fished 222.2 hours to catch a muskellunge during 2009.

Smallmouth Bass (Table 2, Figure 4)
Fishing effort targeted at smallmouth bass was 5,570 hours during the 2009 season. Smallmouth bass fishing effort was greatest in May (1,393 hours).

Catch was 1,619 smallmouth bass with 12 fish harvested. Highest catch (710 fish) occurred in May. Anglers fished 3.9 hours to catch and 454.5 hours to harvest a smallmouth bass during 2009.

Largemouth Bass (Table 2, Figure 5)
Fishing effort directed at largemouth bass was 1,204 hours during the 2009 season. Largemouth bass fishing effort was greatest in May (438 hours). Catch was 75 fish and no harvest was accounted for during the 2009 survey. Anglers fished 30.0 hours to catch a largemouth bass during 2009.

Panfish (Table 2, Figures 6-10)
Panfish effort was 10,945 hours during the 2009 season. Catch was 5,606 with a harvest of 1951 fish.

Yellow perch were the most sought after panfish during the survey. Yellow perch comprised 52% of panfish effort, 32% of catch and 38% of panfish harvest. Anglers fished 3.7 hours to catch and 9.0 hour to harvest a yellow perch during 2009. The mean length of harvested yellow perch was 9.1 inches and the largest yellow perch measured was a 12.5-inch fish harvested in May.

Bluegill accounted for 3,818 hours of directed effort during the 2009 season. Anglers caught 3,348 bluegills and harvested 978 fish. The mean length of harvested bluegills was 6.7 inches and the largest bluegill measured was 8.5 inches.

Other panfish caught during the 2009 survey include, pumpkinseed (34 caught, 17 harvested), rock bass (310 caught, 115 harvested) and black crappie (129 caught, 97 harvested).

ACKNOWLEDGMENTS

Completion of this survey was possible because of the efforts of the technical staff of the Fisheries Management and Treaty Fisheries Units. Treaty staff responsible for ensuring completion of this survey includes Steve Kramer, Joelle Underwood, Marty Kiepke, Tim Tobias, Jeff Blonski and Jason Halverson. Fisheries Management staff included Steve Gilbert, Wes Jahns, John Kubisiak and Steve Timler. Lynn Robinson and Jeff Blonski were the creel clerks on Plum Lake during the survey period.

The Department thanks the cooperators Gerald and Sue Kurth who generously allowed the department to keep a boat and Paul and Meadow Lofy who generously allowed the department to keep a snowmobile on their property during this survey.

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.

This creel report was reviewed by Mike Coshun, 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. Requests should be directed to:

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Table 1. Sportfishing effort summary, Plum Lake, 2009-10 season.

Month	Total Angler Hours	Total Angler Hours/Acre	Vilas County Average Hours/Acre	Statewide Average Hours/Acre
May	4599	4.5	5.4	5.8
June	3139	3.0	6.9	6.1
July	4020	3.9	7.5	6.4
August	3860	3.7	6.5	5.4
September	4067	3.9	4.2	3.8
October	2409	2.3	2.0	1.6
December	278	0.3	0.5	1.7
January	795	0.8	0.8	1.5
February	2441	2.4	1.0	1.3
March	542	0.5	0.2	--
*Summer Total	22094	21.4	32.5	29.1
*Winter Total	4056	3.9	2.5	4.5
Grand Total	26150	25.3	35.0	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, 2006 and 2009 fishing seasons.

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		
Smallmouth Bass	5570	13.02%	1619	3.9	12	454.5	20.2
Largemouth Bass	1204	2.82%	75	30.0	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		
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

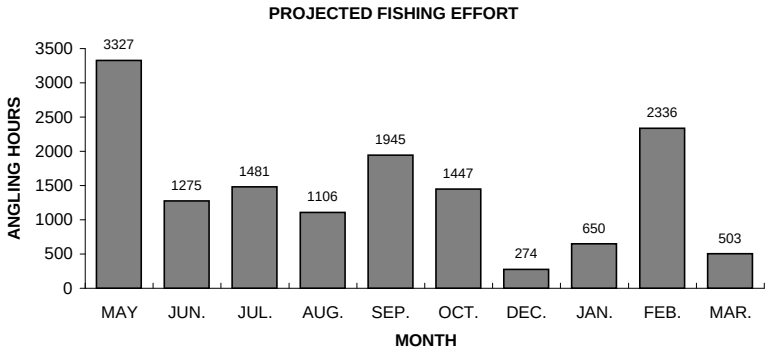
* A blank cell in this column indicates that no fish of a given species were caught by anglers who specifically targeted that species.

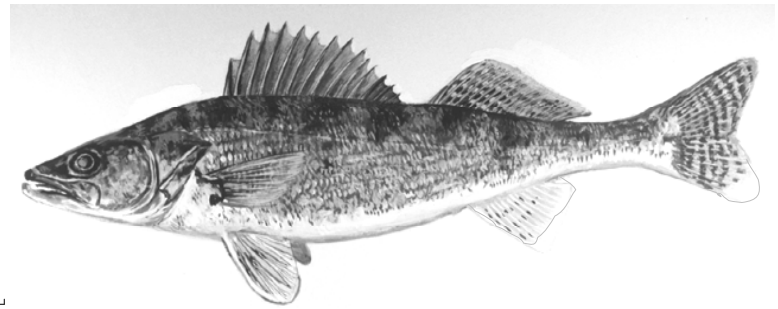
** A blank cell in this column indicates that no fish of a given species were harvested by anglers who specifically targeted that species.

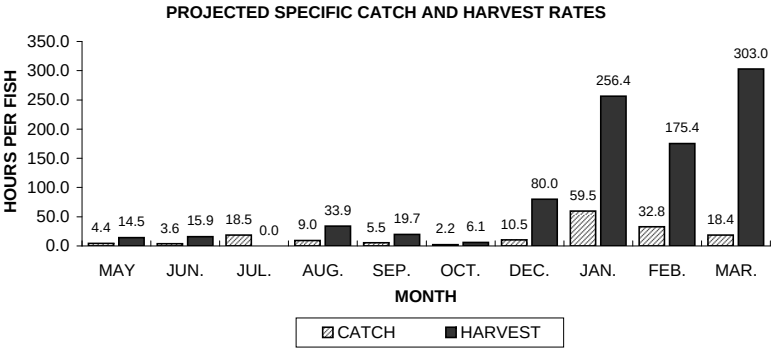
CREEL YEAR: 2006-07

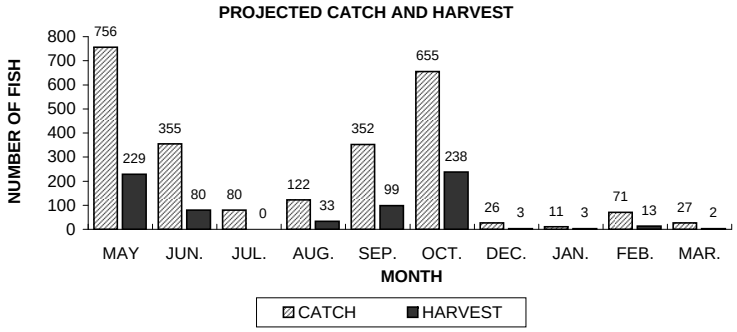
SPECIES	DIRECTED EFFORT (Hours)	PERCENT OF TOTAL	TOTAL CATCH	SPECIFIC CATCH RATE (Hrs/Fish)	TOTAL HARVEST	SPECIFIC HARVEST RATE (Hrs/Fish)	MEAN LENGTH OF HARVESTED FISH
Walleye	13740	31.65%	3408	4.2	802	17.4	13.6
Northern Pike	7887	18.17%	2057	6.6	509	16.9	21.0
Muskellunge	4887	11.26%	113	53.2	0		
Smallmouth Bass	4229	9.74%	1270	4.2	45	140.8	19.5
Largemouth Bass	1521	3.50%	182	18.0	0		
Yellow Perch	5806	13.37%	4617	1.4	1978	3.2	8.7
Bluegill	3209	7.39%	4042	0.9	766	5.1	7.3
Pumpkinseed	646	1.49%	408	1.7	167	3.9	6.9
Rock Bass	405	0.93%	389	1.2	204	2.2	8.9
Black Crappie	1080	2.49%	108	10.5	104	10.9	11.5

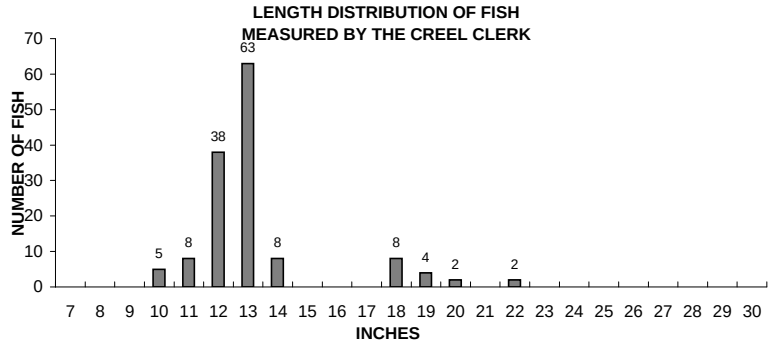
WALLEYE











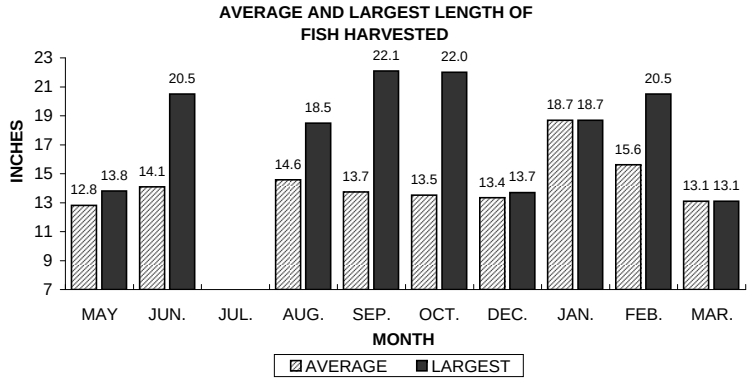
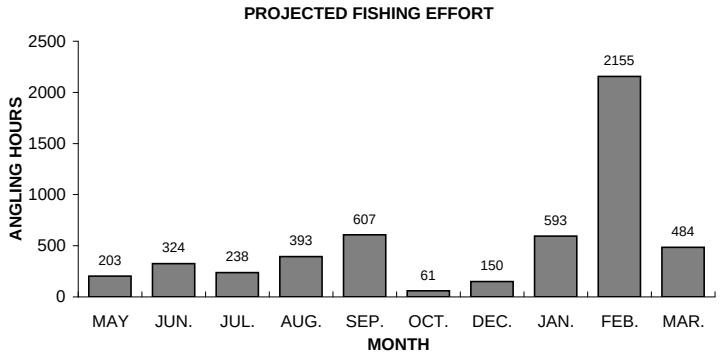
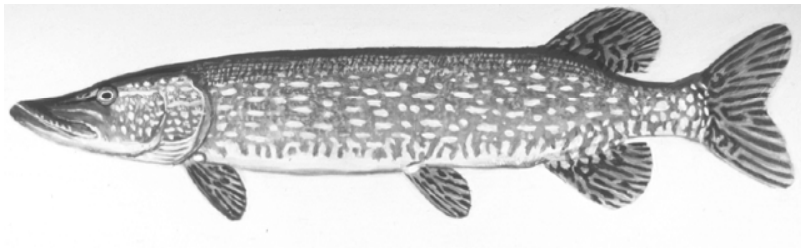
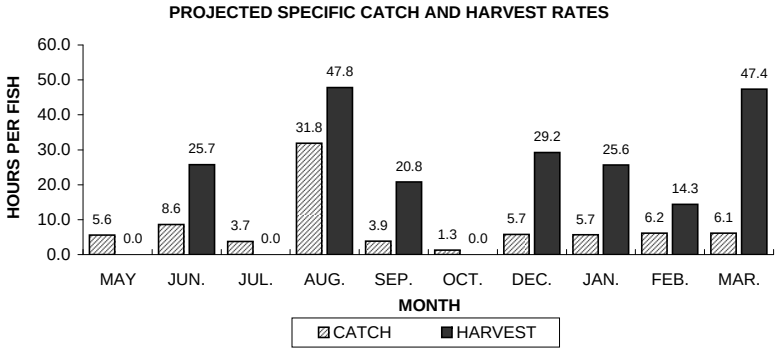


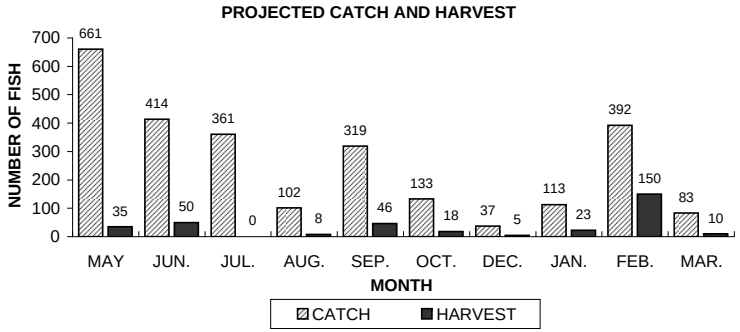
Figure 1. Walleye sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2009-10.

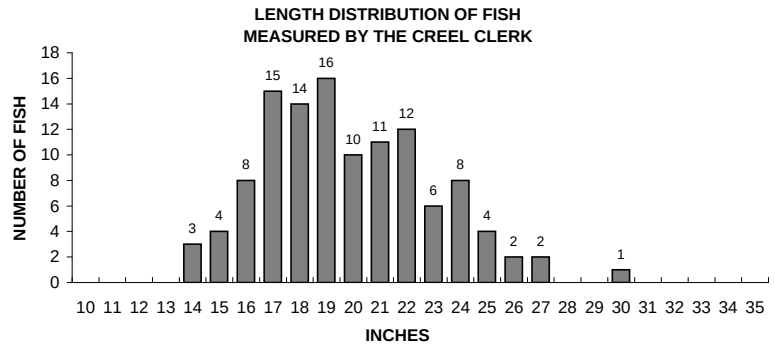


NORTHERN PIKE









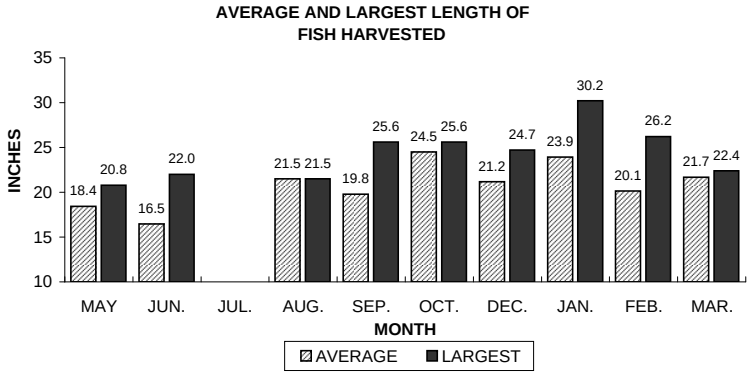
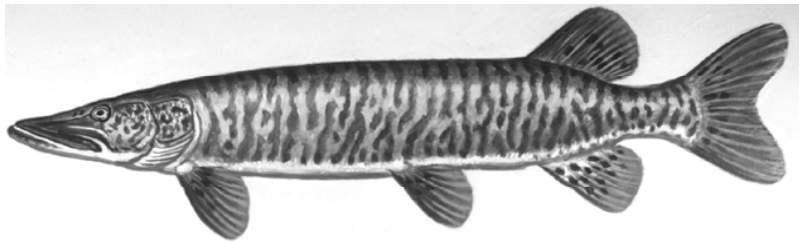
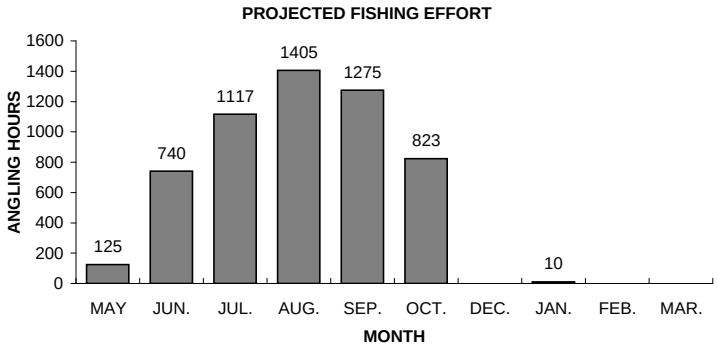
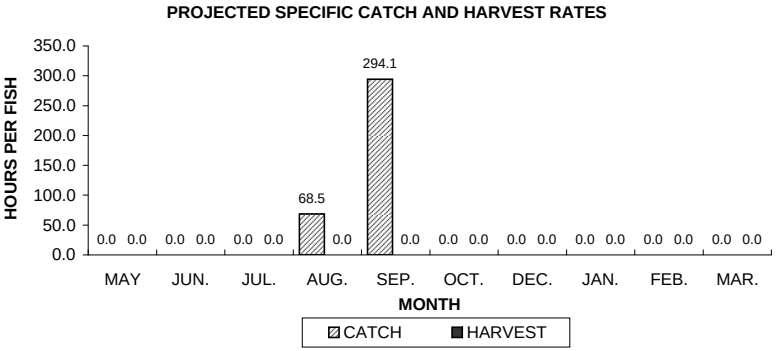


Figure 2. Northern pike sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2009-10.

MUSKELLUNGE







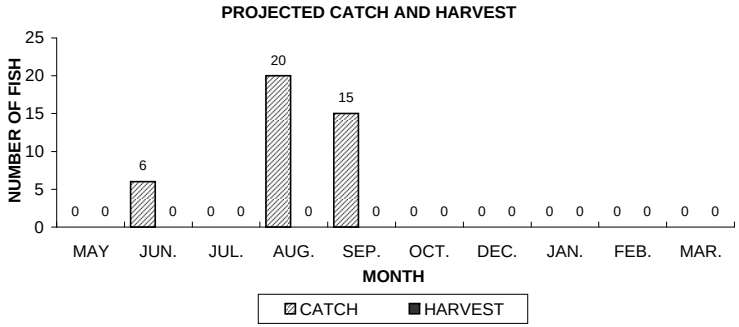
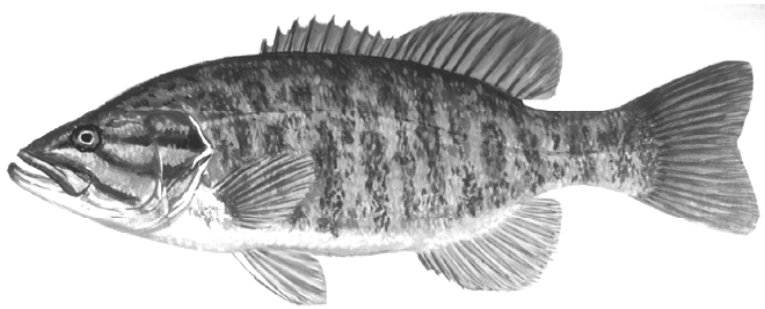
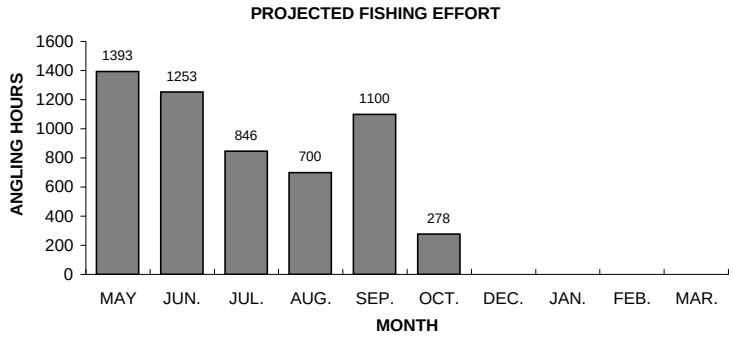
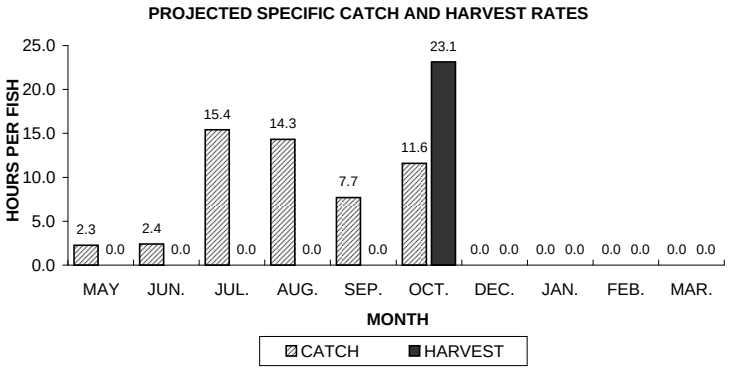


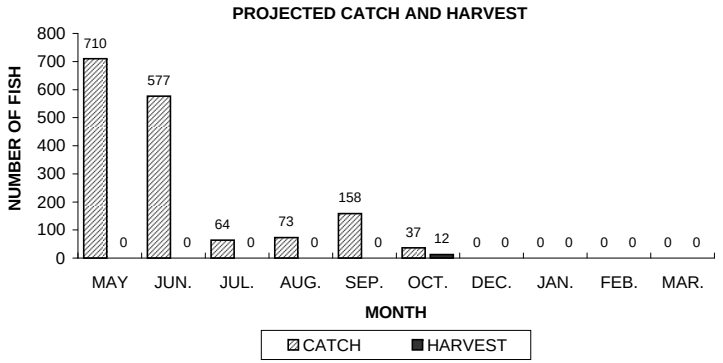
Figure 3. Muskellunge sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2009-10.

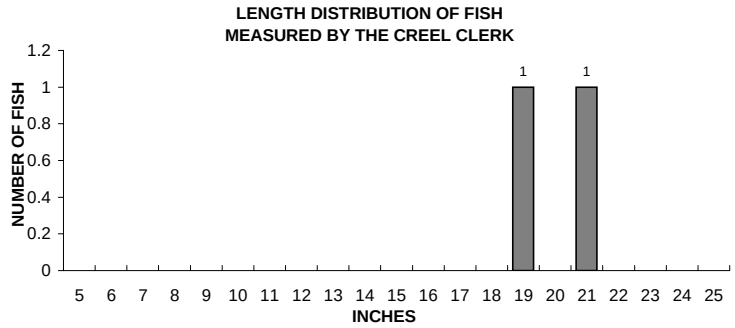
SMALLMOUTH BASS











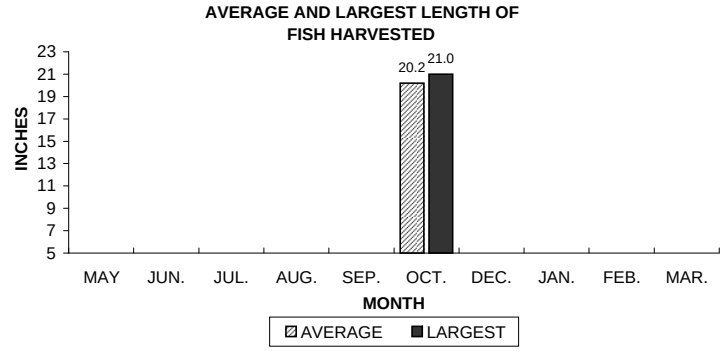


Figure 4. Smallmouth bass sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2009-10.

LARGEMOUTH BASS

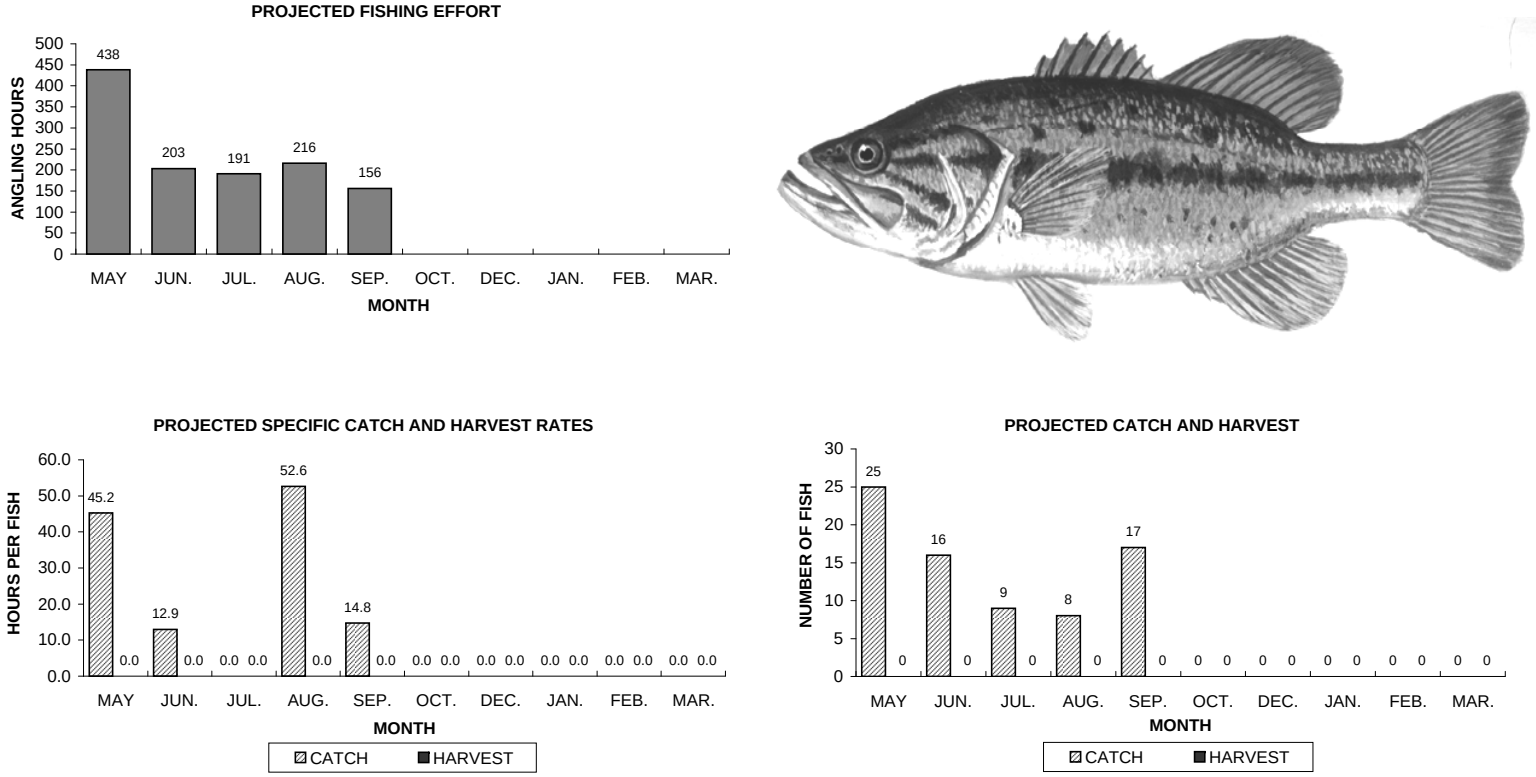
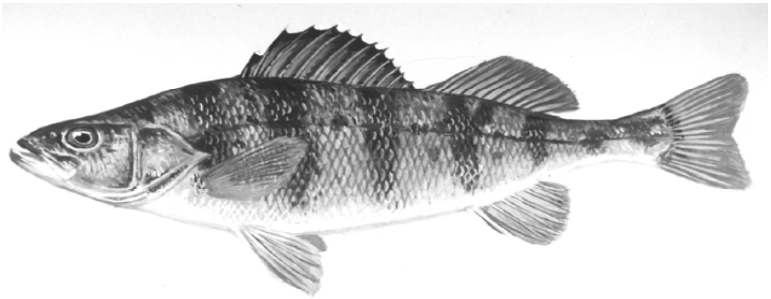
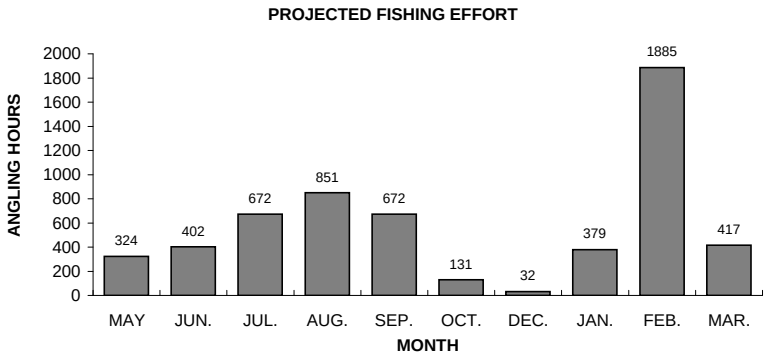
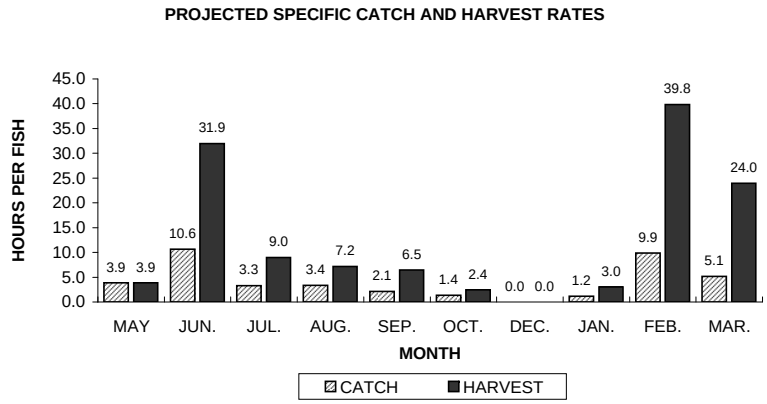


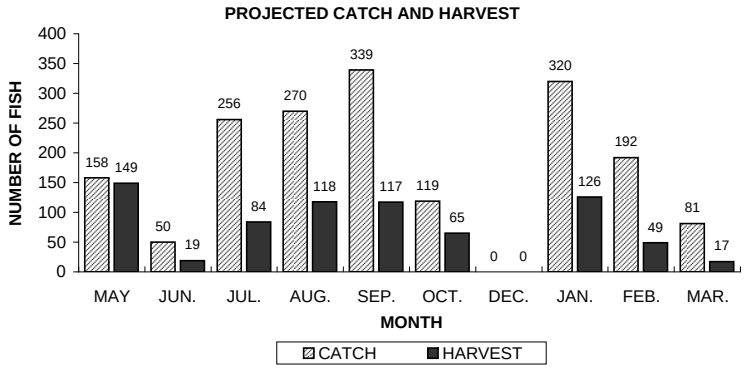
Figure 5. Largemouth bass sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2009-10.

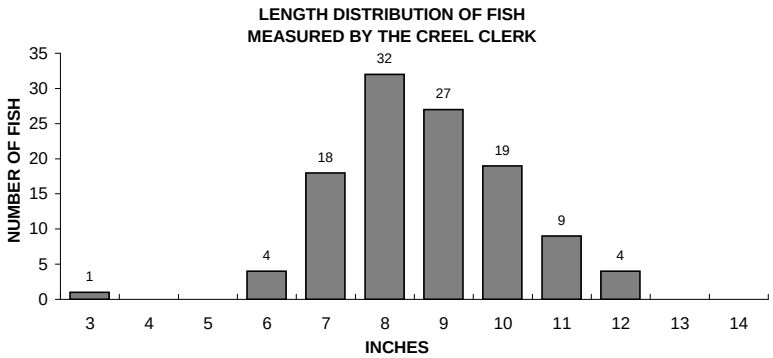
YELLOW PERCH











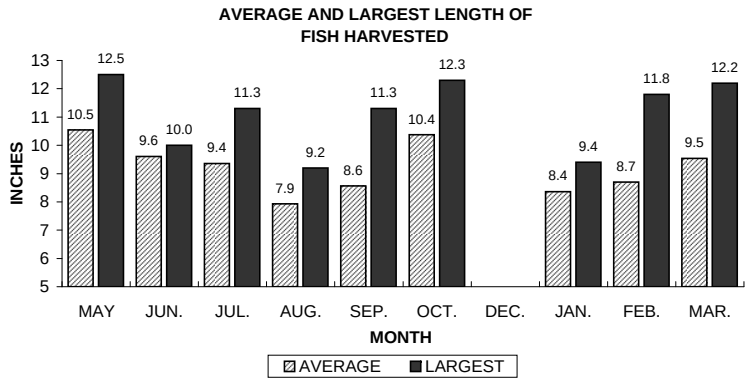
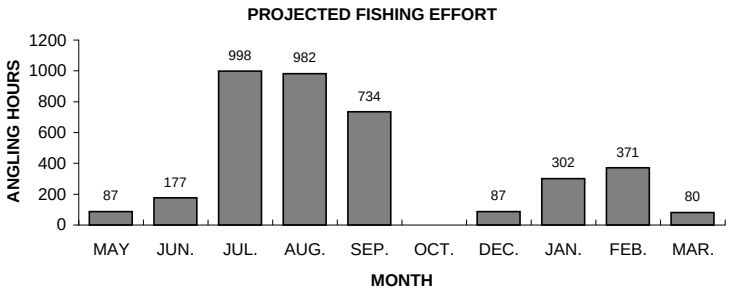
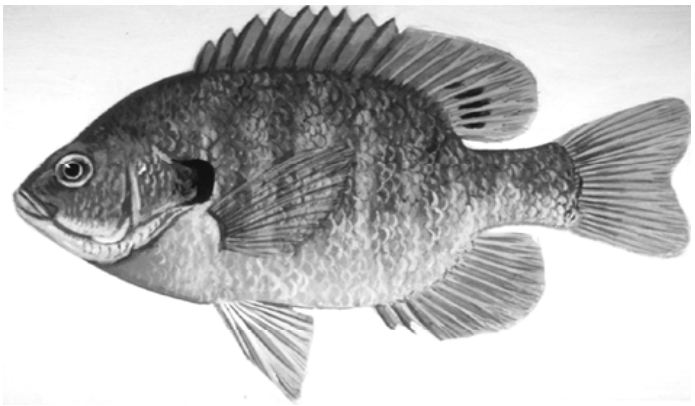
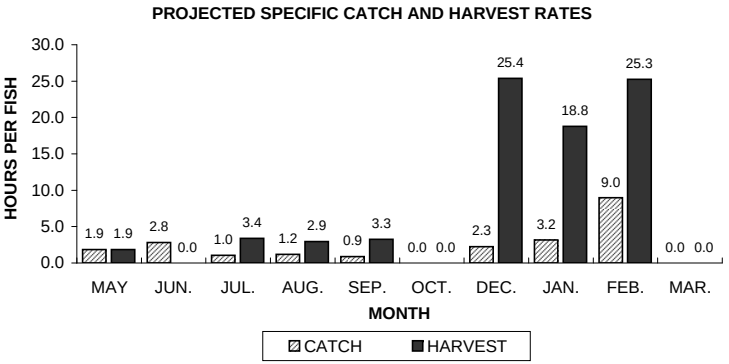


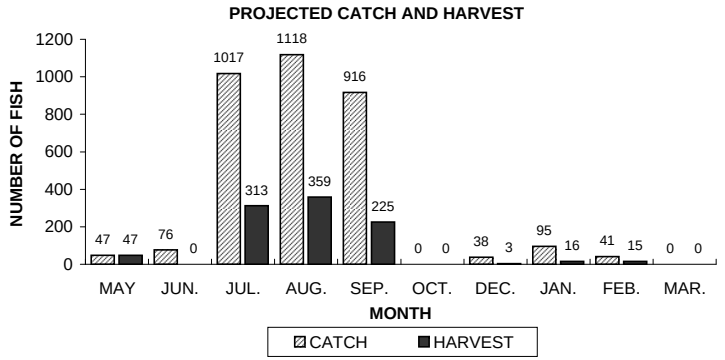
Figure 6. Yellow perch sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2009-10.

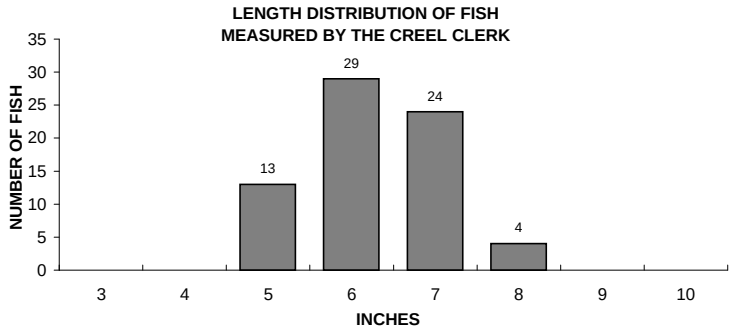
BLUEGILL











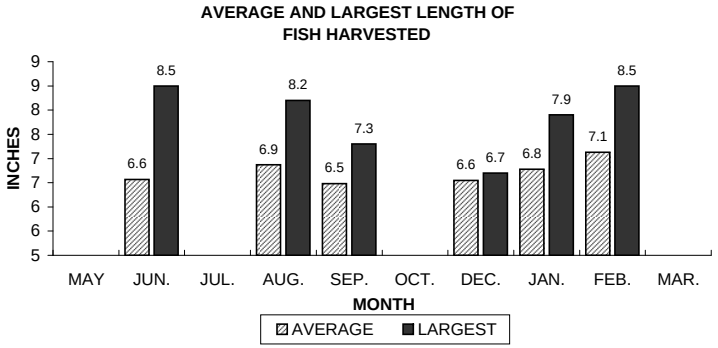
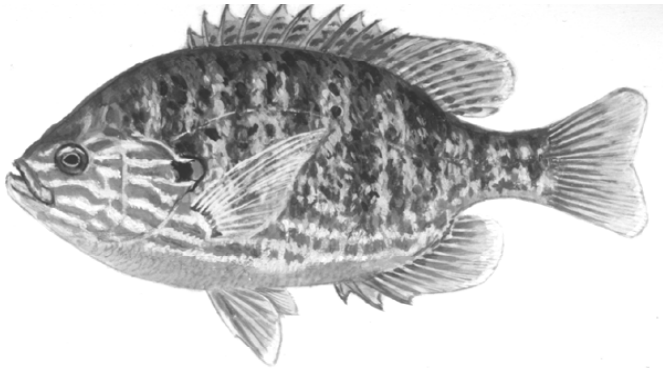


Figure 7. Bluegill sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2009-10.

PUMPKINSEED



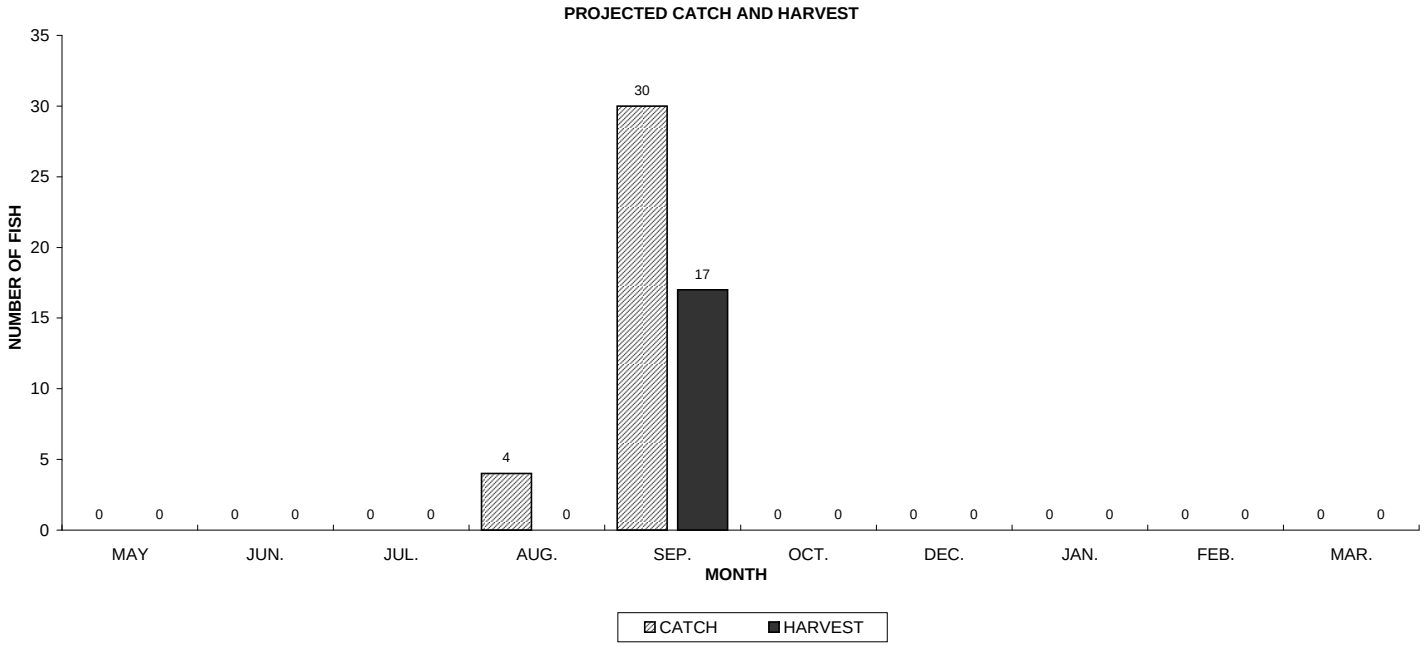
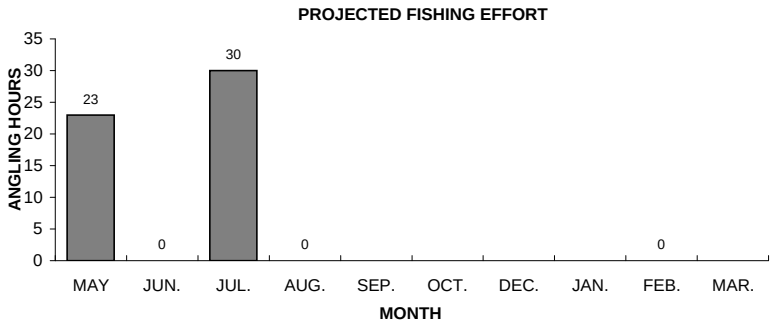
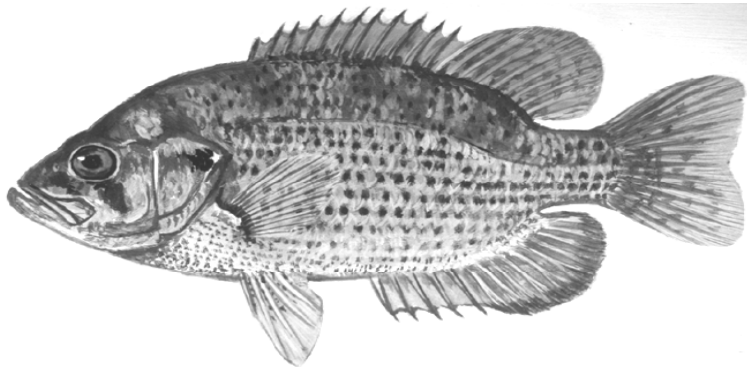
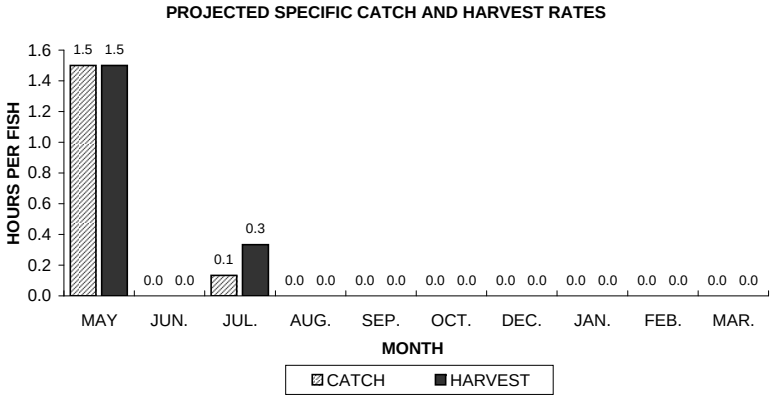


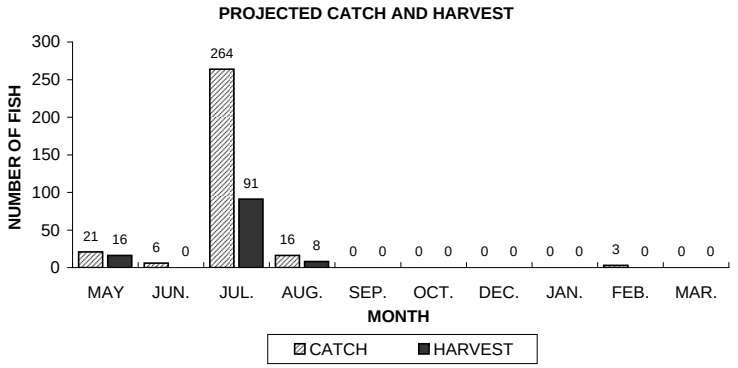
Figure 8. Pumpkinseed sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2009-10.

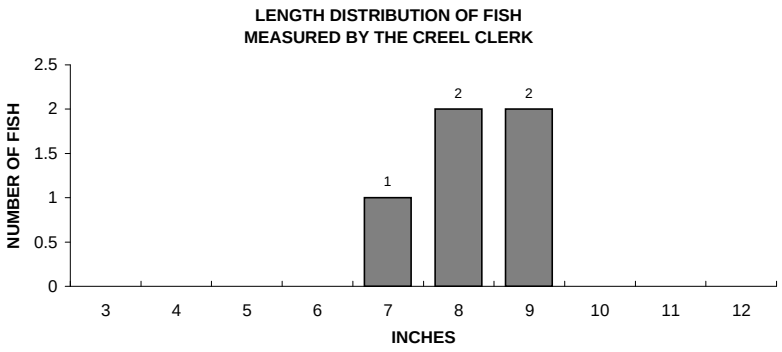
ROCK BASS











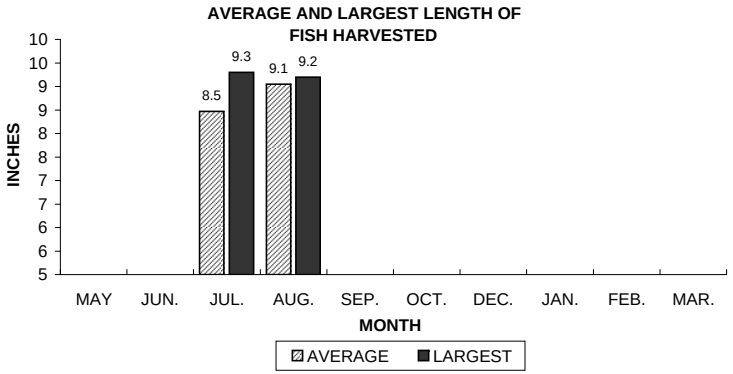
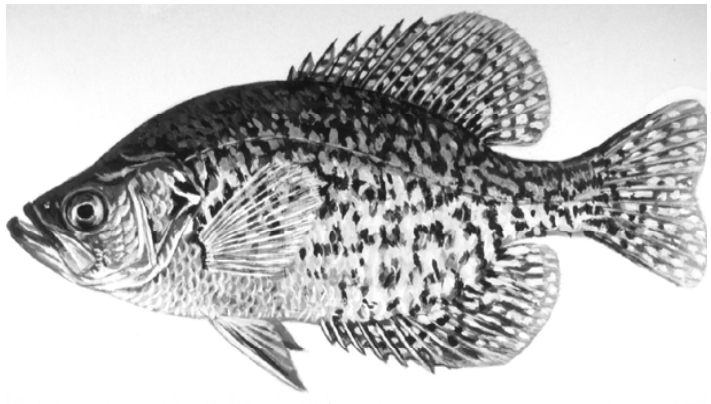
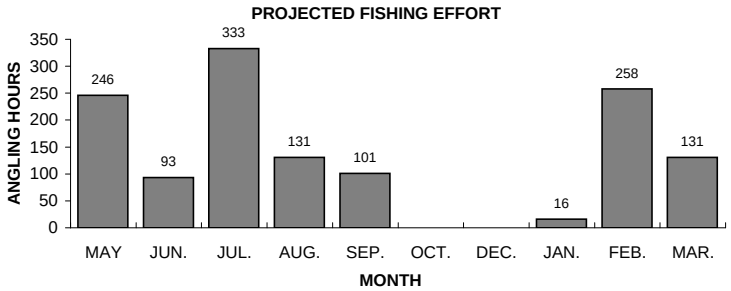
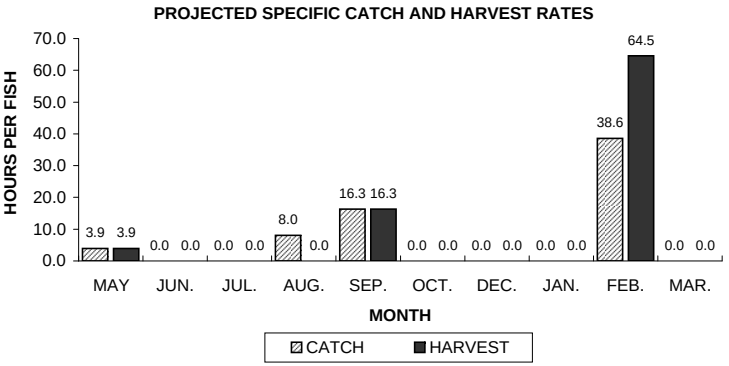


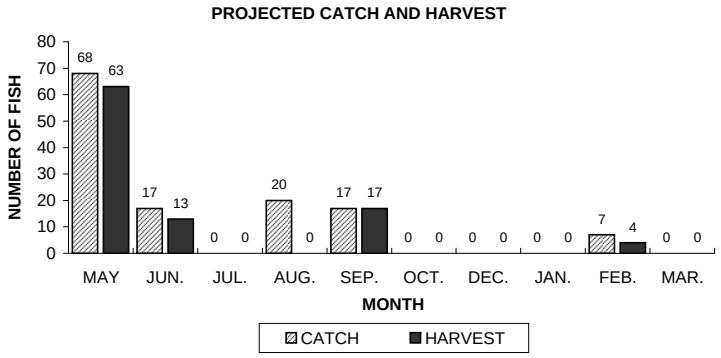
Figure 9. Rock bass sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2009-10.

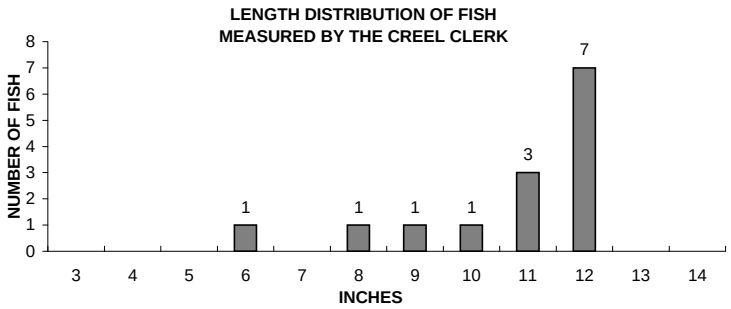
BLACK CRAPPIE











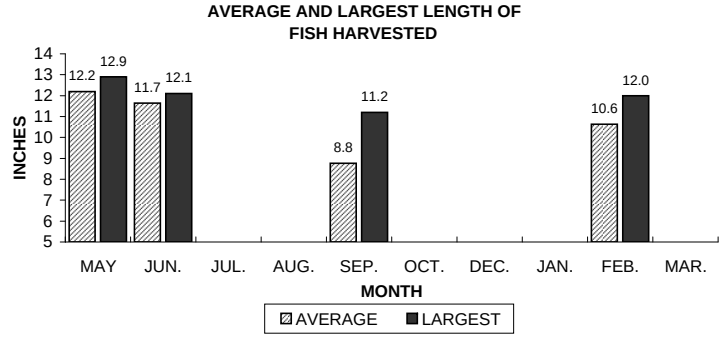


Figure 10. Black crappie sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2009-10.