WISCONSIN DEPARTMENT OF NATURAL RESOURCES
CREEL SURVEY REPORT

PLUM LAKE

VILAS COUNTY

2006-07

Treaty Fisheries Publication

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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.

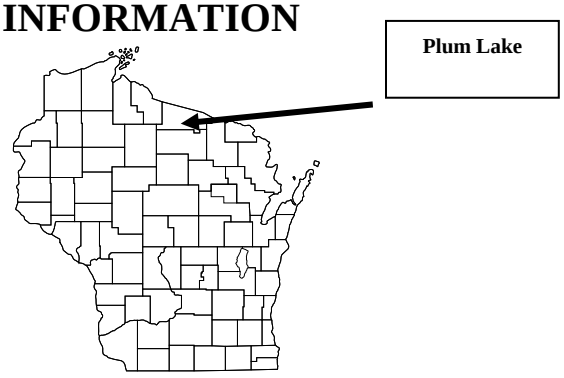
You may have encountered a DNR creel survey clerk on a recent fishing trip. We appreciate your cooperation during an interview. The survey only takes a moment of your time and it gives the Department valuable information needed for management of the fishery.

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 2006-fishing season ran from May 6, 2006 through March 4, 2007. The open water creel survey ran from May 6 through October 31, 2006 and the ice fishing creel survey ran from December 1, 2006 through March 4, 2007.

Weather
Ice-out on Plum Lake was around April 15, 2006 which is considered normal for northern Wisconsin. Spring, summer and fall weather was normal. Fishable-ice formed on Plum Lake in early December.

Sportfishing Regulations
The following seasons, daily bag limits, and length limits were in place on Plum Lake during the 2006-fishing season:

Species	Season	Bag Limit	Min. Size
Largemouth Bass&	5/06-6/17	Catch & Release	
Smallmouth Bass	6/18-3/04	5	14"
Musky	5/27-11/30	1	34"
Northern Pike	5/06-3/04	5	none
Walleye	5/06-3/04	2*	
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 information is summarized for each species (Figures 1-10) with effort and/or catch information. Information presented about species whose fishing season extends beyond March 4 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. A previous survey was done during 2003-04 fishing season.

General Angler Information
Anglers spent 26,964 hours or 26.1 hours per acre fishing Plum Lake during the 2006 season (Table 1). That was less than the statewide average of 33.6 hours per acre and the Vilas County average of 36.2 hours per acre. August was the most heavily fished month (4.4 hours per acre). Fishing effort was lightest in February (0.2 hours per acre).

SPECIES INFORMATION

Walleye (Table 2, Figure 1)
Walleye received the most fishing pressure in Plum Lake during the 2006 season. Anglers spent 13,740 hours targeting walleye. Walleye fishing effort was greatest in February (2,487 hours). July had the least amount of walleye fishing effort (527 hours).

Catch was 3,408 fish and harvest 802 fish. Highest catch (1,196 fish) and harvest (300 fish) occurred in October. Anglers fished 4.2 hours to catch and 17.4 hours to harvest a walleye during 2006.

The mean length of harvested walleye was 13.6 inches and the largest walleye measured was a 27.2-inch fish harvested in June.

Northern Pike (Table 2, Figure 2)
Fishing effort directed at northern pike was 7,887 hours during the 2006 season. The month of February showed the highest fishing effort (2,477 hours), while October was the lowest (25 hours)

Catch was 2,057 fish and harvest was 509 fish.

The mean length of harvested northern pike was 21.0 inches and the largest northern pike measured was a 29.9-inch fish.

Muskellunge (Table 2, Figure 3)
Fishing effort directed at muskellunge was 4,887 hours during the 2006 season. Muskellunge fishing effort was greatest in July (1,261 hours).

Catch was 113 fish with no harvest accounted for in the creel survey. Anglers fished 53.2 hours to catch a muskellunge during 2006.

Smallmouth Bass (Table 2, Figure 4)
Fishing effort targeted at smallmouth bass was 4,229 hours during the 2006 season. Smallmouth bass fishing effort was greatest in August (1,044 hours). 1,270 smallmouth bass were caught with 45 fish harvested. Highest catch (505 fish) occurred in May. Anglers fished 4.2 hours to catch a smallmouth bass during 2006.

Largemouth Bass (Table 2, Figure 5)
Fishing effort directed at largemouth bass was 1,521 hours during the 2006 season. Largemouth bass fishing effort was greatest in August (527 hours).

Catch was 182 fish and no harvest was accounted for during the 2006 survey. Anglers fished 18.0 hours to catch a largemouth bass during 2006.

Panfish (Table 2, Figures 6-10)
Panfish effort was 11,146 hours during the 2006 season.

Yellow perch were the most sought after panfish during the survey. Yellow perch comprised 52% of panfish effort, 48% of catch and 62% of panfish harvest. Anglers fished 1.4 hours to catch and 3.2 hour to harvest a yellow perch during 2006. The mean length of harvested yellow perch was 8.7inches and the largest yellow perch measured was a 12.5-inch fish harvested in February.

Other panfish caught during the 2005 survey include, bluegill (4,042 caught, 766 harvested), pumpkinseed (408 caught, 167 harvested), rock bass (389 caught, 204 harvested) and black crappie (108 caught, 104 harvested).

ACKNOWLEDGMENTS

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

The Department thanks the cooperators who generously allowed the department to keep a boat and snowmobile on their property during this survey.

We also thank fish management staff who worked in conjunction with the creel survey performing in-water sampling of the fish community.

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.

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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WI Department of Natural Resources
8770 Hwy. J
Woodruff, WI 54568
e-mail:
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Table 1. Sportfishing effort summary, Plum Lake, 2006-07 season.

Month	Total Angler Hours	Total Angler Hours/Acre	Vilas County Average Hours/Acre	Statewide Average Hours/Acre
May	3704	3.6	5.4	5.8
June	3644	3.5	7.1	6.1
July	4581	4.4	7.7	6.4
August	4565	4.4	6.7	5.4
September	3317	3.2	4.2	3.8
October	2198	2.1	2.0	1.6
December	681	0.7	0.5	1.7
January	1544	1.5	0.7	1.5
February	2519	2.4	0.9	1.3
March	213	0.2	0.1	**
*Summer Total	22008	21.3	34.1	29.1
*Winter Total	4955	4.8	2.1	4.5
Grand Total	26964	26.1	36.2	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, 2006-07 and 2003-04 fishing seasons.

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
extra	0	0.00%	0		0		

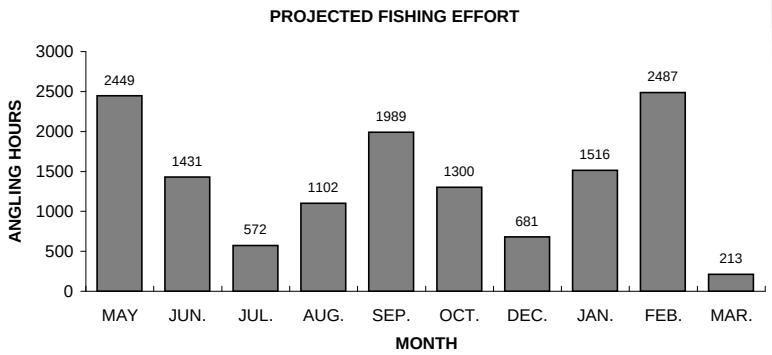
* A blank cell in this column indicates that no fish of a given species were caught by anglers who specifically targeted that species.

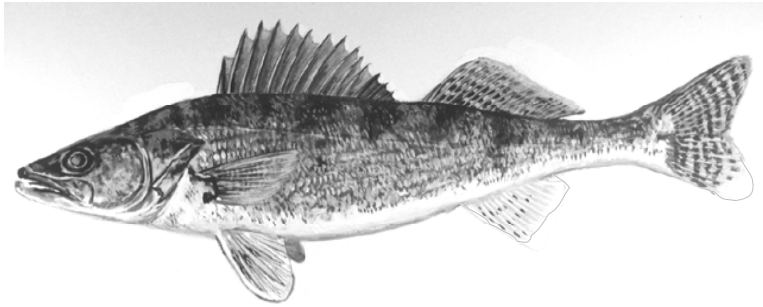
** A blank cell in this column indicates that no fish of a given species were harvested by anglers who specifically targeted that species.

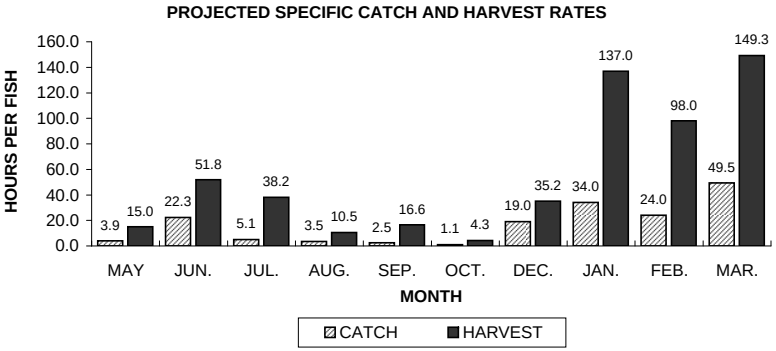
CREEL YEAR: 2003-04

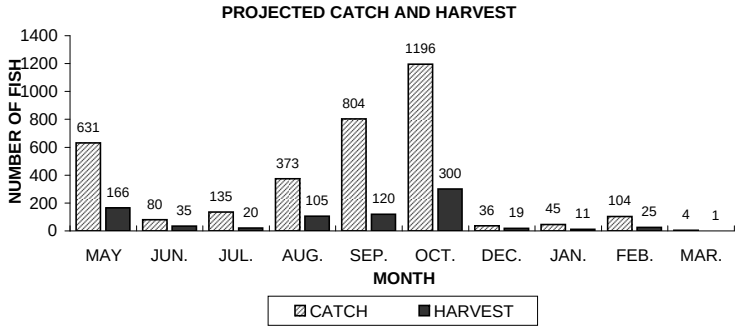
SPECIES	DIRECTED EFFORT (Hours)	PERCENT OF TOTAL	TOTAL CATCH	SPECIFIC CATCH RATE (Hrs/Fish)	TOTAL HARVEST	SPECIFIC HARVEST RATE (Hrs/Fish)	MEAN LENGTH OF HARVESTED FISH
Walleye	11697	30.12%	2716	4.4	800	14.9	13.7
Northern Pike	6796	17.50%	1889	5.8	655	11.4	20.7
Muskellunge	6495	16.73%	82	88.5	0		
Smallmouth Bass	3937	10.14%	978	4.4	11	454.5	20.1
Largemouth Bass	2385	6.14%	220	18.4	7	322.6	19.2
Yellow Perch	3418	8.80%	1920	2.0	356	11.8	8.4
Bluegill	2919	7.52%	284	11.4	126	26.9	7.4
Pumpkinseed	254	0.65%	48	5.3	35	7.2	7.1
Rock Bass	159	0.41%	174	1.5	51	8.8	8.4
Black Crappie	772	1.99%	47	16.5	47	16.5	11.6
extra		0.00%					

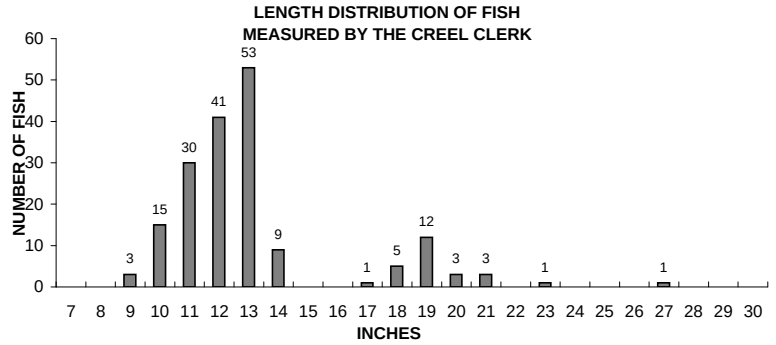
WALLEYE











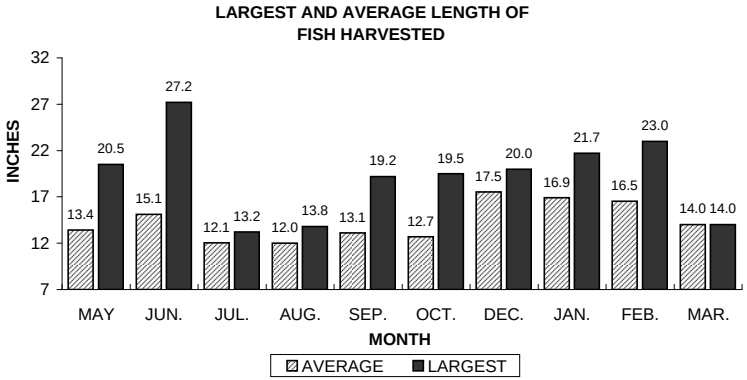
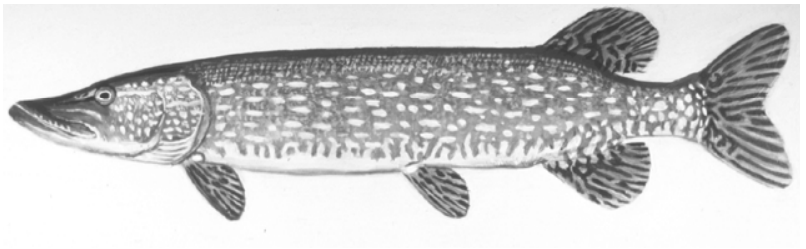
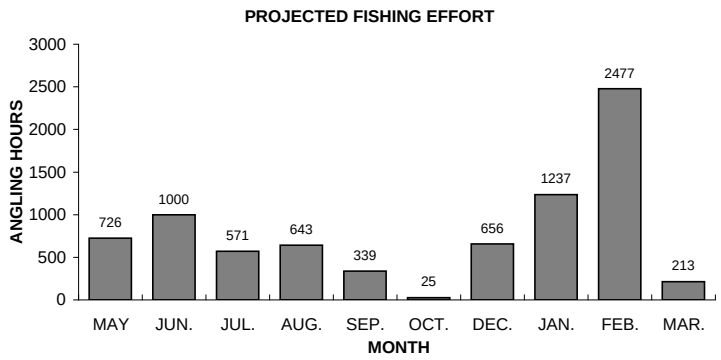
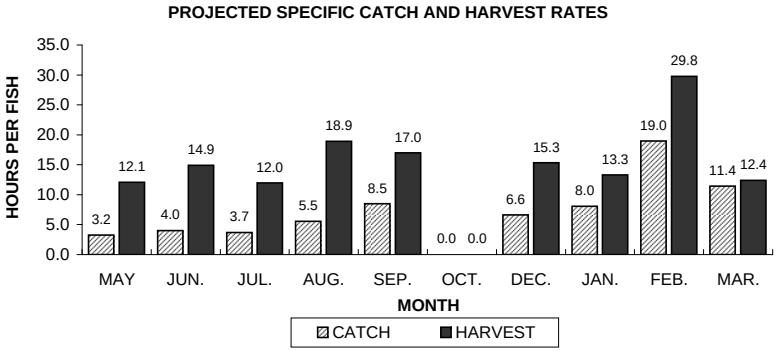


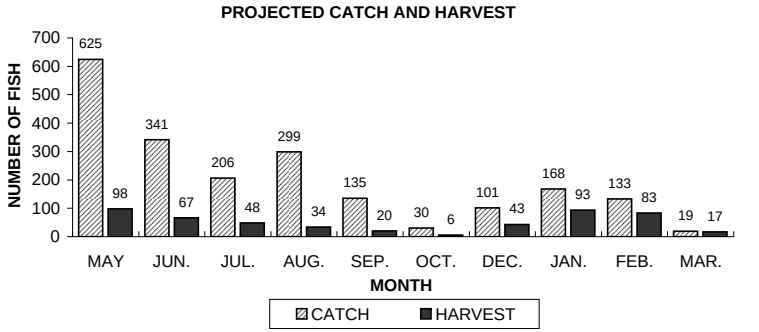
Figure 1. Walleye sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2006-07.

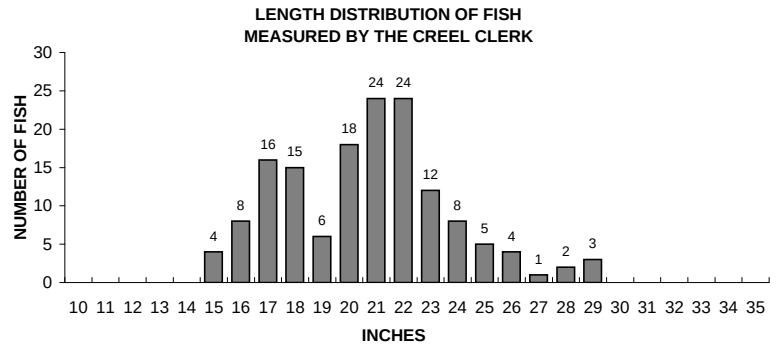
NORTHERN PIKE











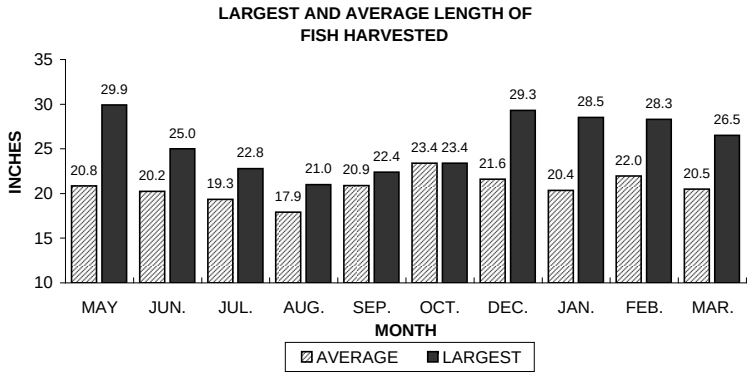
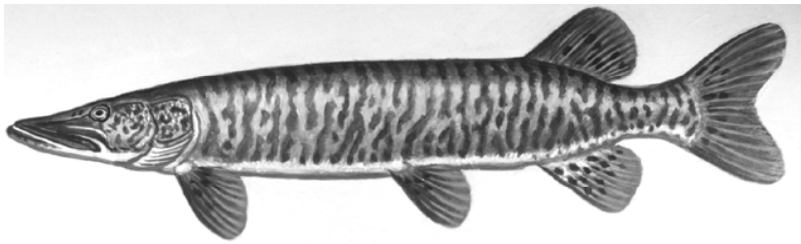
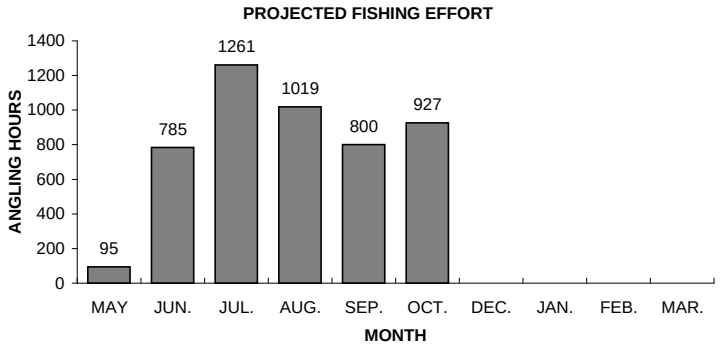
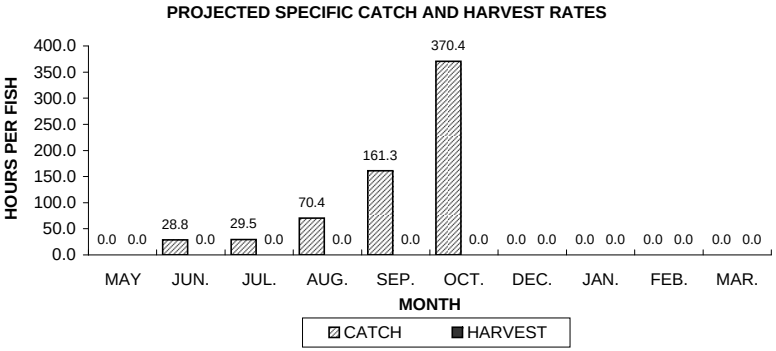


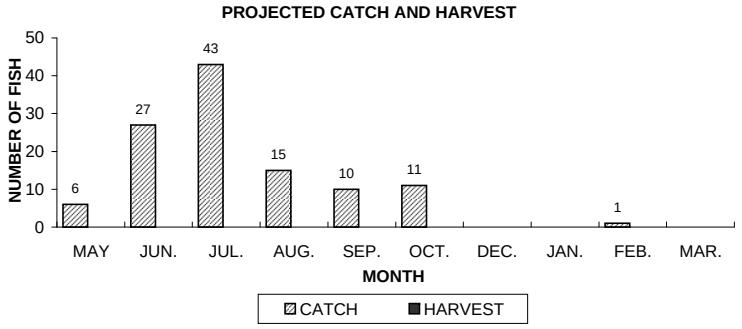
Figure 2. Northern pike sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2006-07.

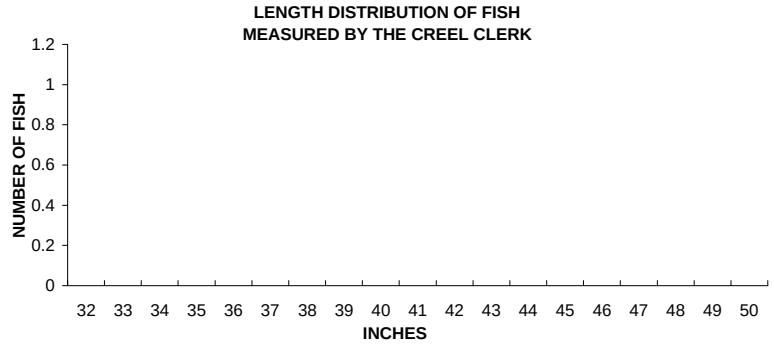
MUSKELLUNGE











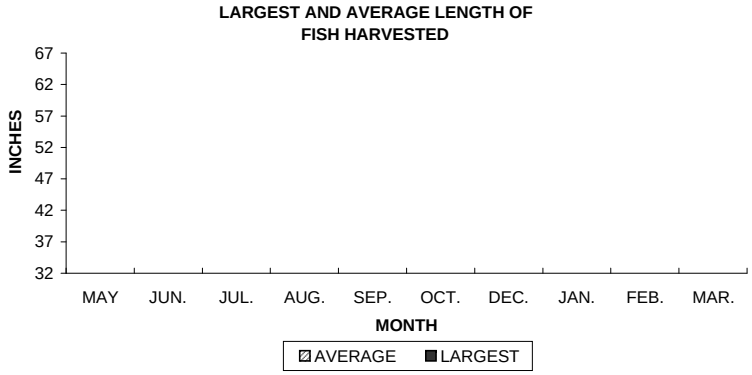
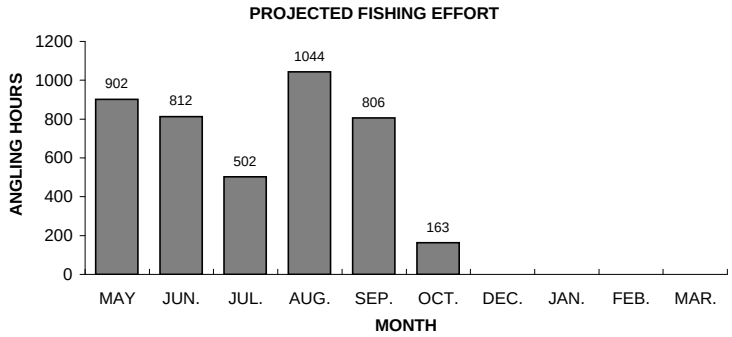
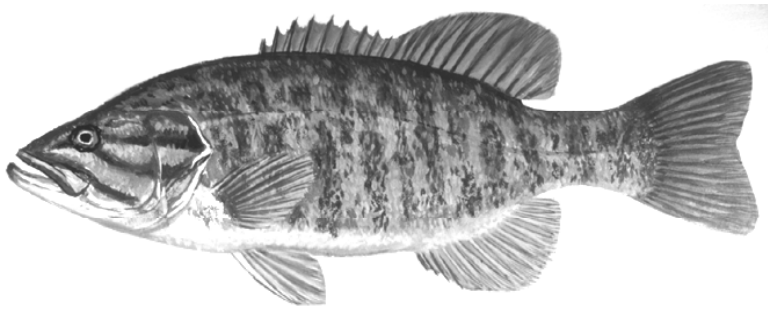
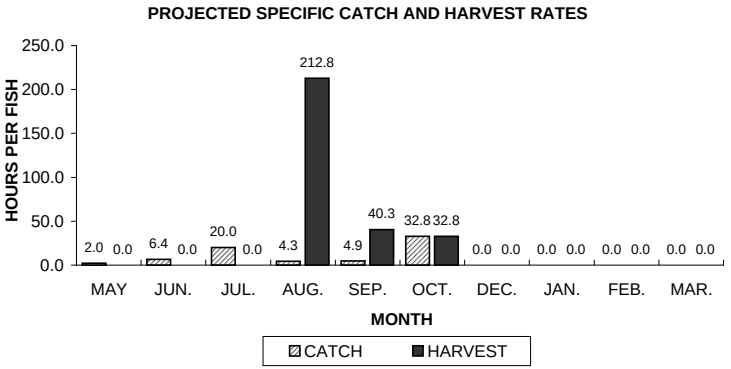


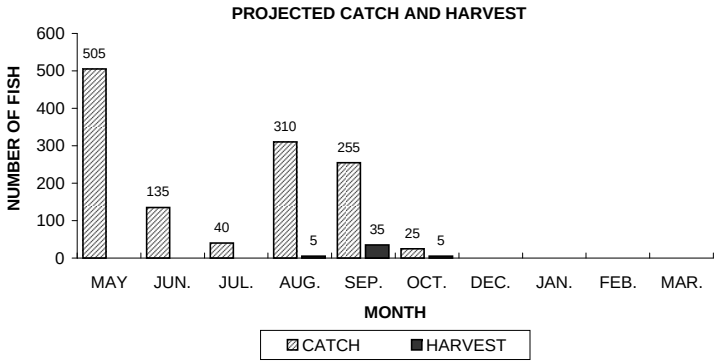
Figure 3. Muskellunge sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2006-07.

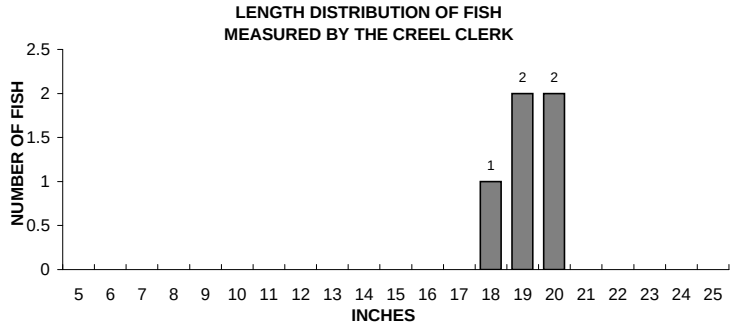
SMALLMOUTH BASS











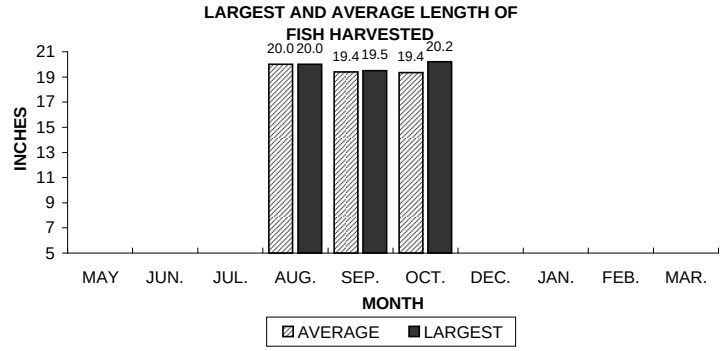
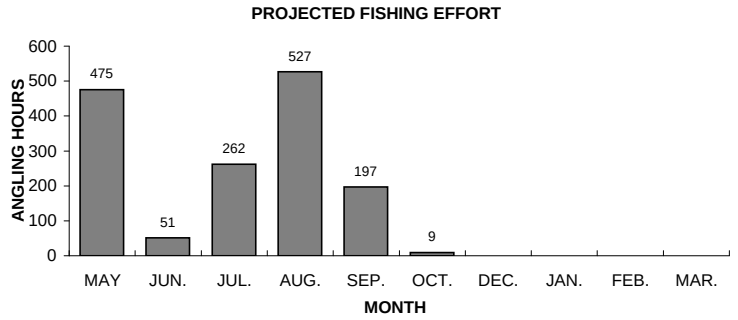
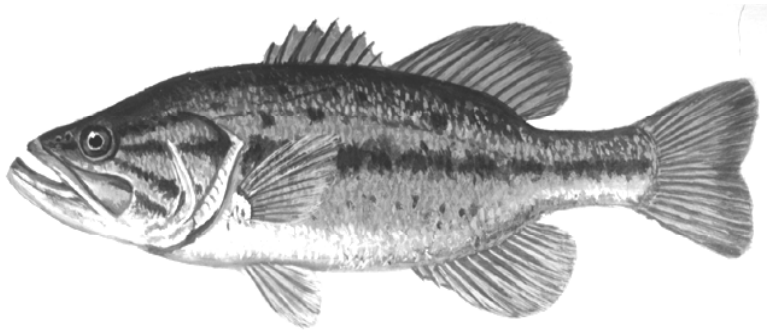
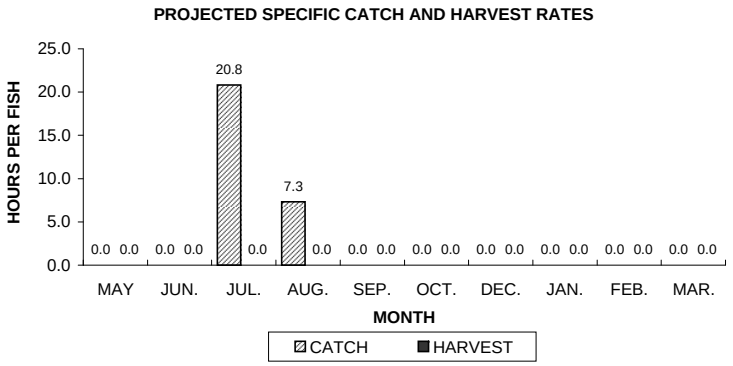


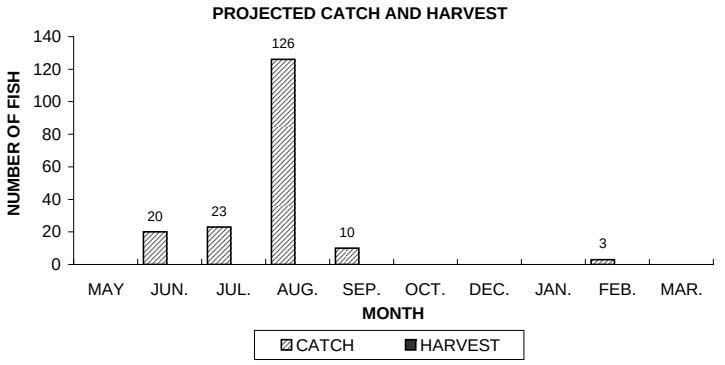
Figure 4. Smallmouth bass sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2006-07.

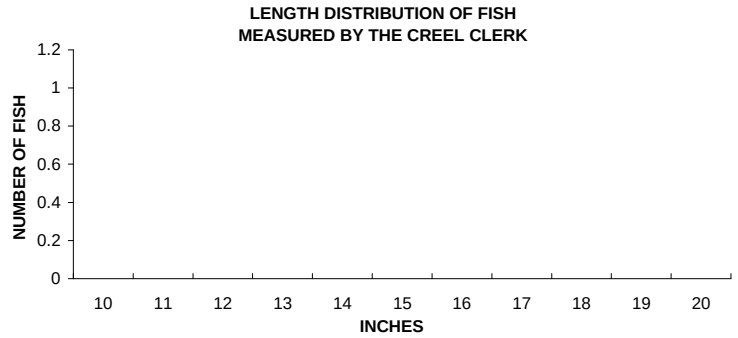
LARGEMOUTH BASS











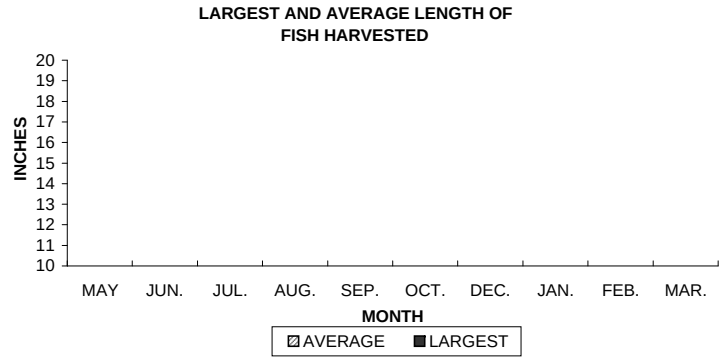
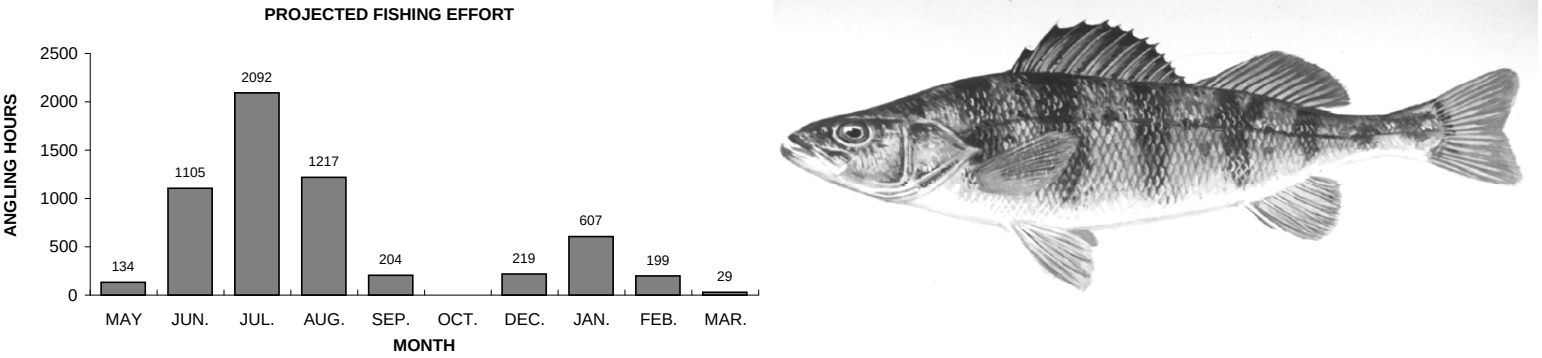
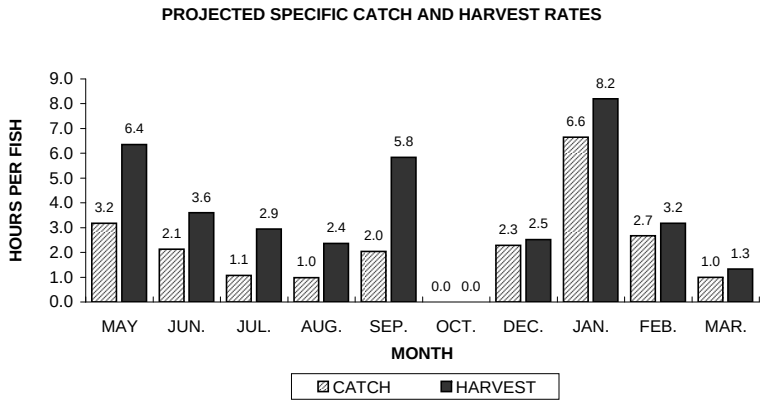
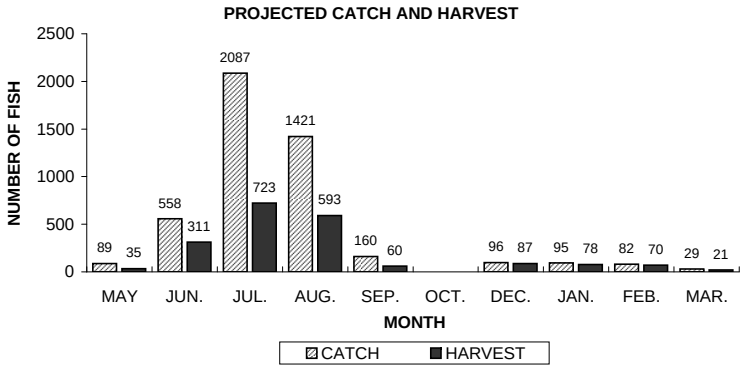


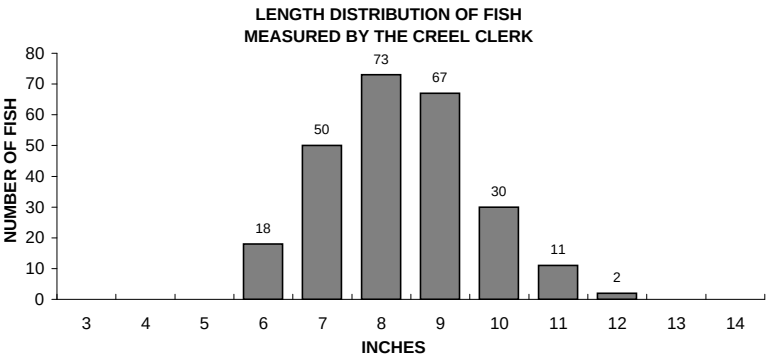
Figure 5. Largemouth bass sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2006-07.

YELLOW PERCH









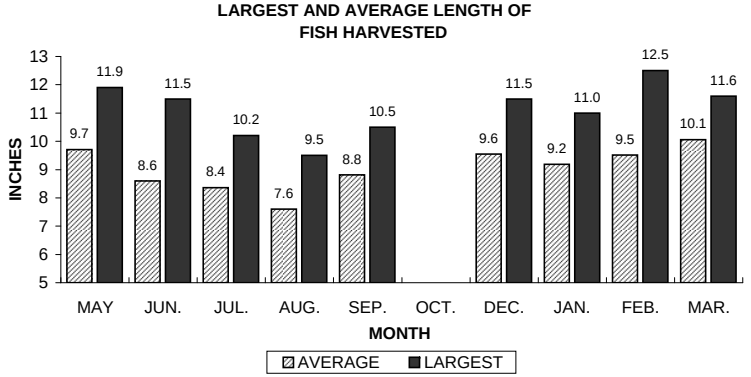
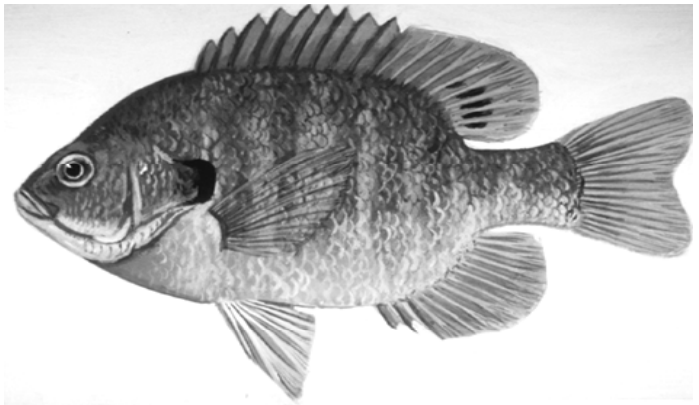
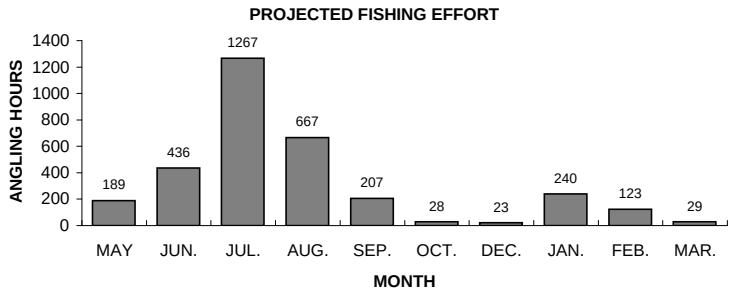
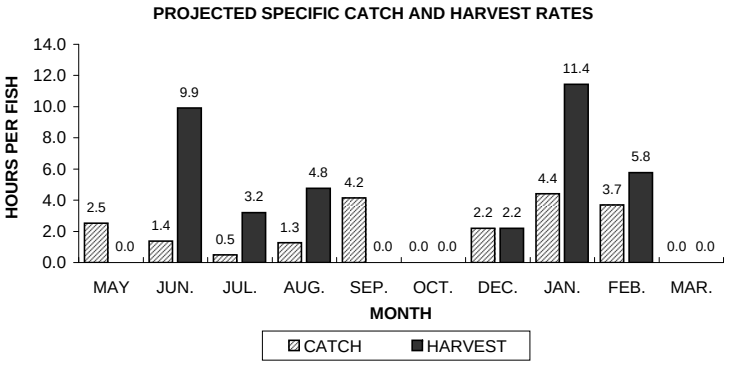


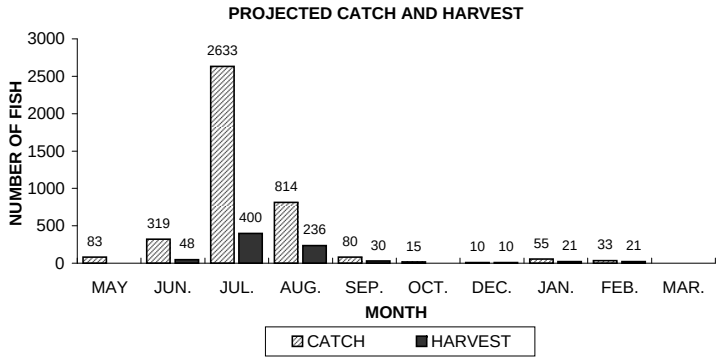
Figure 6. Yellow perch sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2006-07.

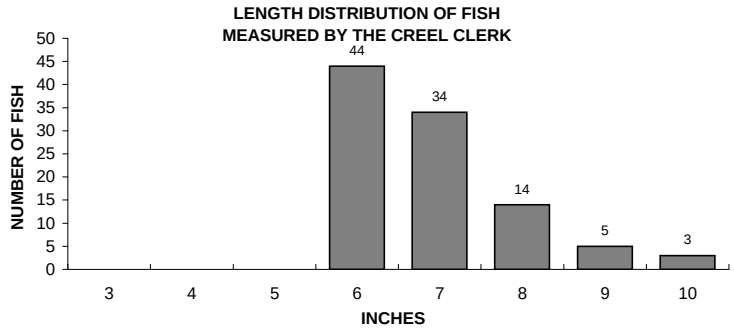
BLUEGILL











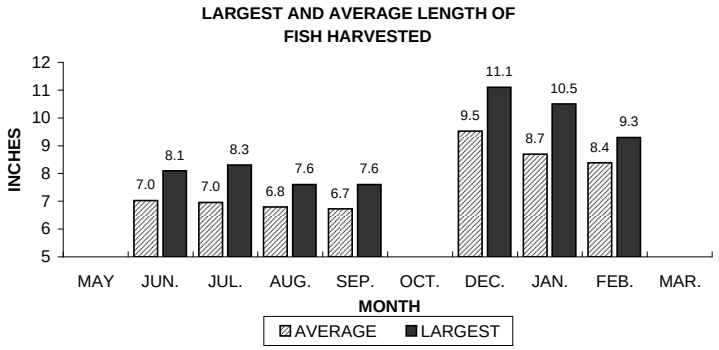
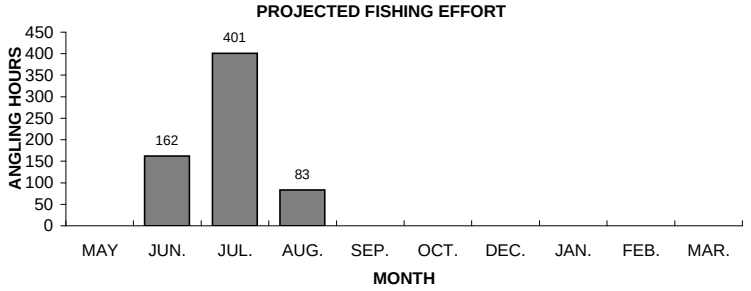
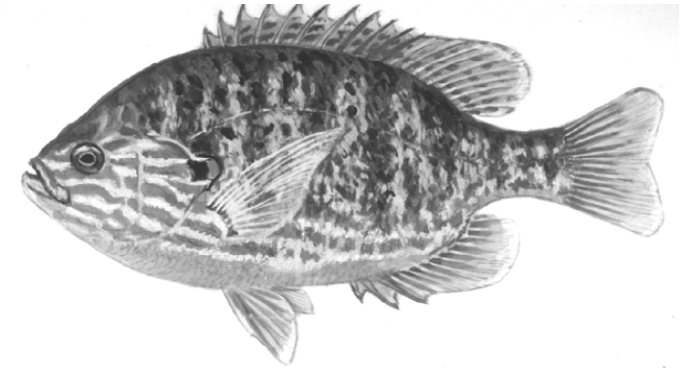
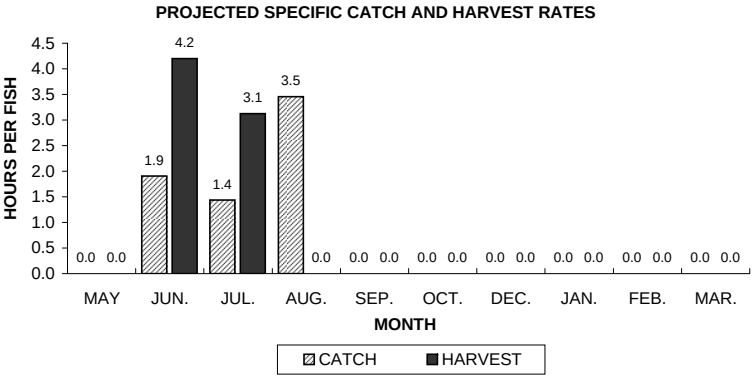


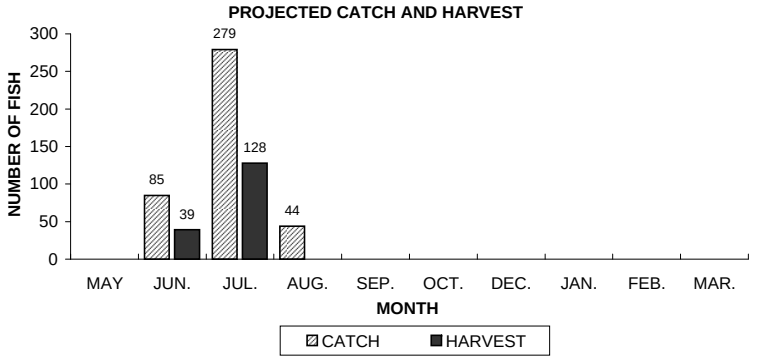
Figure 7. Bluegill sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2006-07.

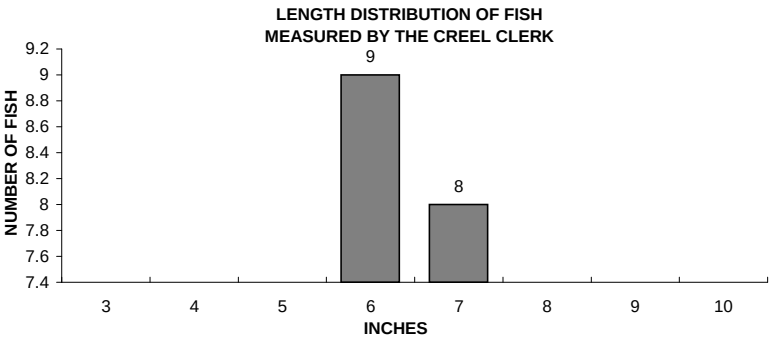
PUMPKINSEED











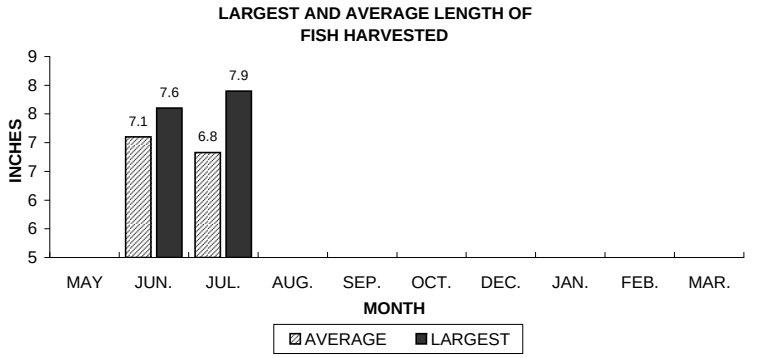
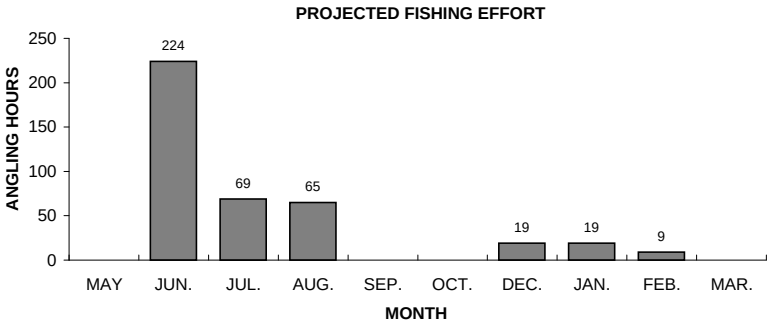
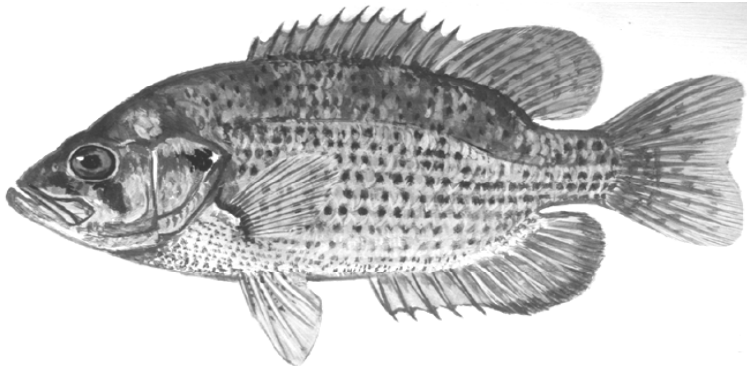
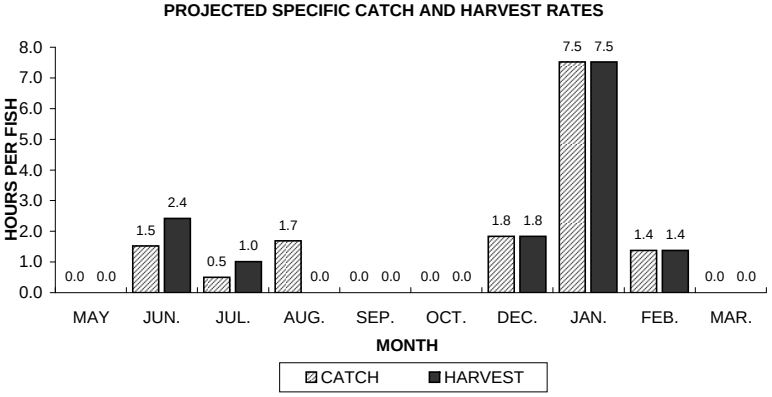


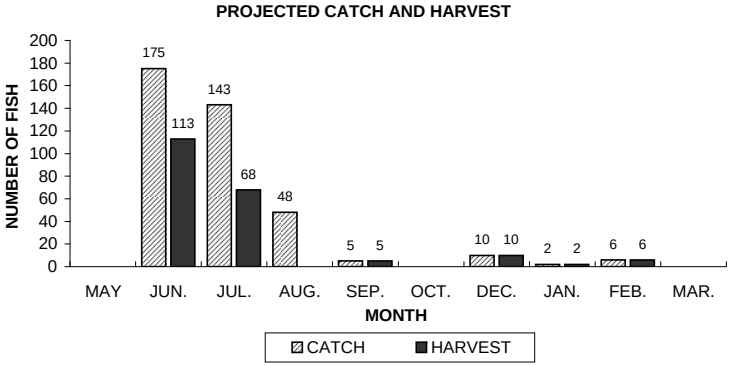
Figure 8. Pumpkinseed sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2006-07.

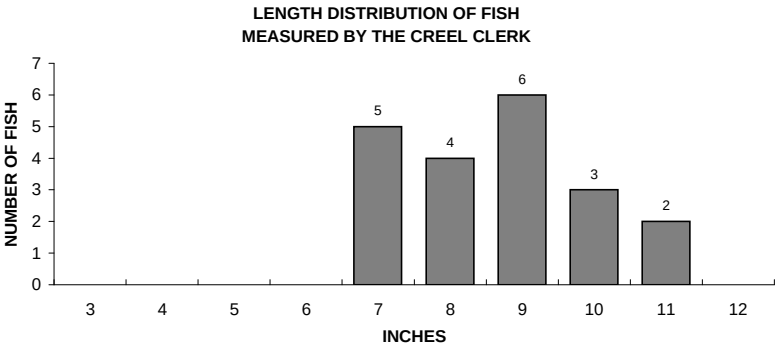
ROCK BASS











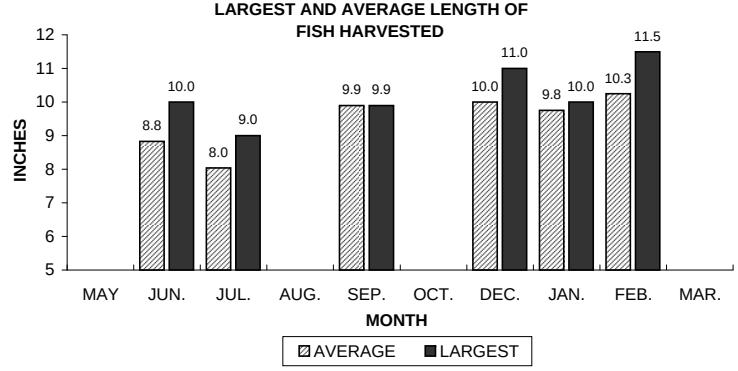
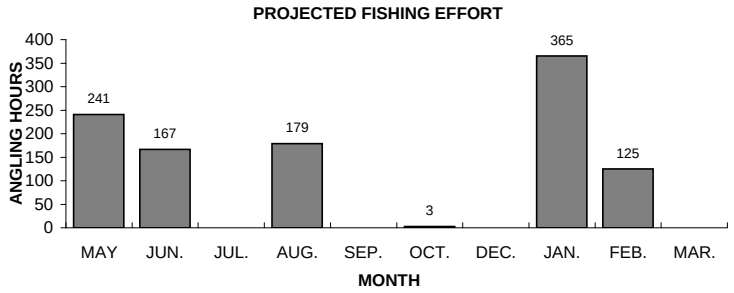
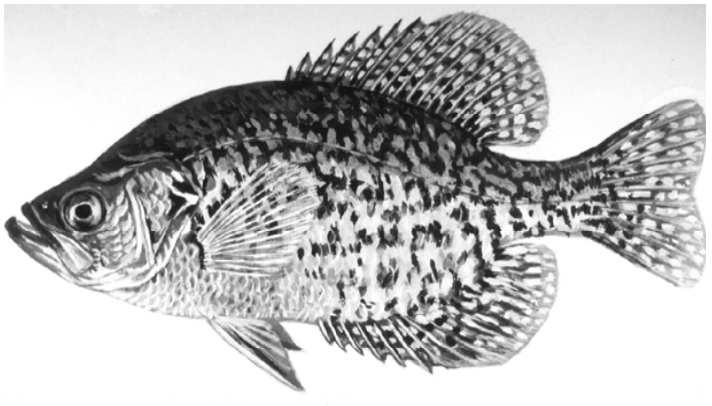
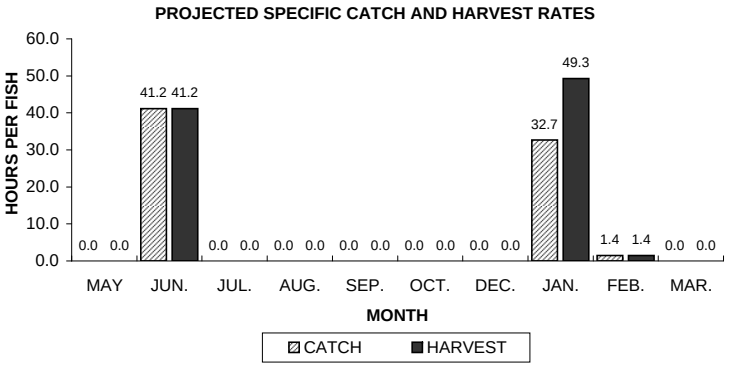


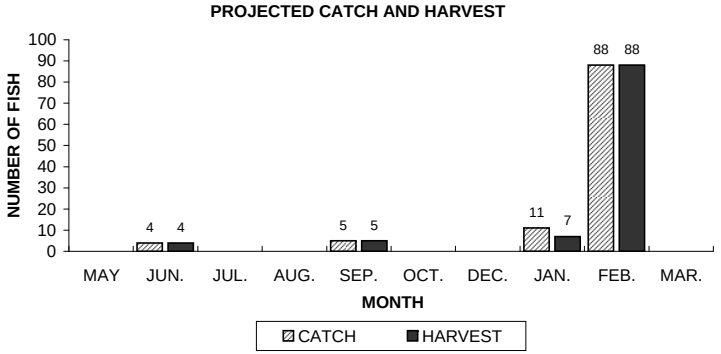
Figure 9. Rock bass sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2006-07.

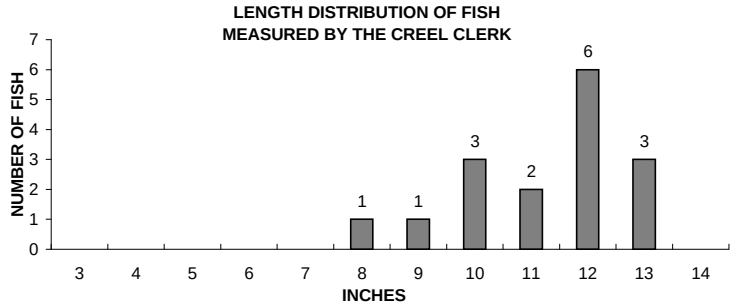
BLACK CRAPPIE











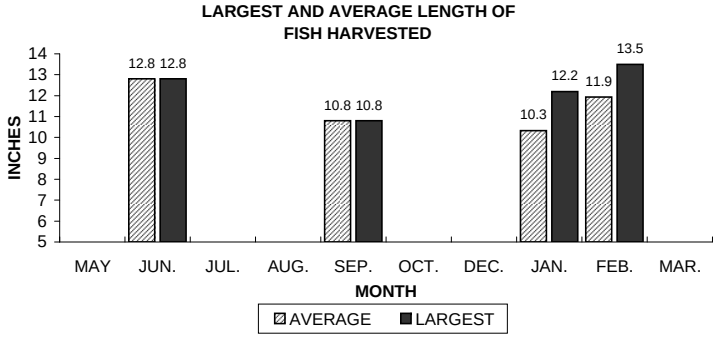


Figure 10. Black crappie sportfishing effort, catch, harvest, and length distribution, Plum Lake, during 2006-07.