

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

LITTLE ARBOR VITAE LAKE

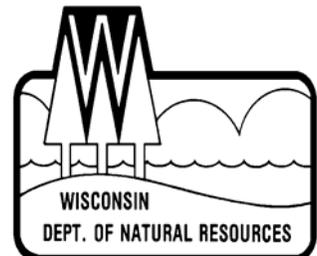
VILAS COUNTY

2007-08



Treaty Fisheries Publication

**Written by Steve Kramer
Treaty Fisheries Technician
Wisconsin DNR
Woodruff, Wisconsin**



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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.

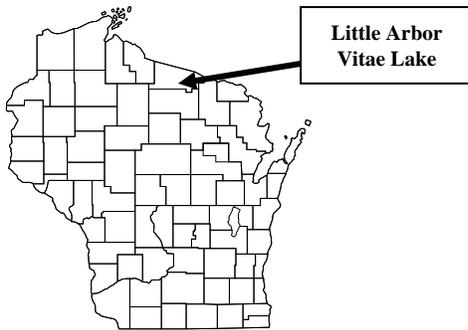
You may have encountered a DNR creel survey clerk on a recent fishing trip. We appreciate your cooperation during an interview. The survey only takes a moment of your time and it gives the Department valuable information needed for management of the fishery.

This report provides estimates 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 general information about the lake, discussion of results of the survey, and detailed summaries, by species, of fishing effort, catch and harvest.

GENERAL LAKE INFORMATION



Location

Little Arbor Vitae Lake is located in the town of Arbor Vitae in Vilas County.

Physical Characteristics

Little Arbor Vitae Lake covers 534 acres, has a maximum depth of 32 feet, and 5.8 miles of shoreline. It is a highly fertile drainage lake. Bottom substrate is fifty-percent sand, forty-percent muck, five-percent gravel, and five-percent rock. Aquatic vegetation is abundant. Pondweed beds are abundant, as is coontail and milfoil beds. Rushes and lily pads are present in back bays. Little Arbor Vitae lake develops a heavy algae bloom in the summer, greatly reducing light penetration in the lake. Forty five percent of the shoreline is State owned.

Seasons Surveyed

The creel survey started on opening day (May 5th) of the 2007 gamefishing season and ran through March 2, 2008. The only

portion of the gamefishing season not covered by the survey was November 1 to December 1, due to unsafe ice conditions.

Weather

Spring weather conditions were normal. Ice cleared the lake around April 16. The summer was warm and dry.

Harvest Regulations

The following seasons, daily bag limits, and length limits were in place on Little Arbor Vitae Lake during the 2007-08 gamefish season.

Species	Season	Bag Limit	Minimum Size
Largemouth Bass & Smallmouth Bass	5/5-6/15 6/16-3/02	catch and release 5 of each	14 inch minimum
Muskellunge	5/26-11/30	1	34 inches
Northern Pike	5/5-3/2	5	none
Walleye	5/5-3/2	3*	no minimum, one > 14"
Panfish	year round	25	none

* The statewide bag limit was 5 fish, but due to tribal declarations it was reduced on this lake.

SPECIES CATCH AND HARVEST INFORMATION

Angling information is summarized for each species caught or fished for (Figures 2-10). 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 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 their intended target.

4. LENGTH DISTRIBUTION OF HARVESTED FISH

All fish of a species that were measured by the creel clerk during the entire survey season.

5. LARGEST AND AVERAGE LENGTH OF FISH HARVESTED

Largest and average length of harvested fish of the indicated species measured by the creel each month.

CREEL RESULTS AND DISCUSSION

Survey Logistics

There were no unusual problems associated with the survey. The department also conducted a creel survey of Little Arbor Vitae Lake in 1996.

General Angler Information

Anglers spent 25,233 hours or 47 hours/acre fishing Little Arbor Vitae Lake within the standard daylight survey period during the 2007 gamefishing season (Table 1). That was higher than the statewide average of 33.6 hours per acre and the Vilas County average of 36.2 hours per acre. Fishing activity during the 2007 fishing season peaked in June (5,137 hours) and was lowest

in December (724 hours).

SPECIES INFORMATION

Walleye (Table 2, Figure 1)

Walleye were the primary target of anglers who fished Little Arbor Vitae Lake during the 2007 gamefishing season. Anglers directed 15,925 hours of effort at walleye within the standard daylight survey period during the 2007 season. That is very similar to the amount of effort directed at walleye during the 1996 season (16,642).

Anglers caught 3,412 and harvested 2,333 walleye from Little Arbor Vitae Lake during the 2007 season. The catch dropped considerably from 13,002 in the 1996 survey to 3,412 in the 2007 survey. Harvest, however, increased by 53% from 1,082 in 1996 to 2,333 fish harvested in 2007.

Walleye anglers spent more time, on average, to catch a walleye during the 2007 season (4.7 hours) than during the 1996 season (1.3 hours). However, walleye anglers expended less effort to harvest a walleye from Little Arbor Vitae Lake in 2007 (6.8 hours) than in 1996 (15.3 hours). The estimated number of adult walleye in Little Arbor Vitae Lake in 2007 (4,247) was almost identical to the 1996 population (4,240 fish). Walleye fishing effort on Little Arbor Vitae Lake during the 2007 season peaked in May (3,598 hours). Catch (1,477) peaked in May, and harvest (905) of walleye was highest in May.

The average length of walleye harvested dropped from 16.2 inches in 1996 to 13.6 in the 2007 survey. The largest harvested walleye measured by the creel clerk was a 26.8-inch fish caught in May.

These changes in walleye harvest, catch and mean length are a direct result of the

different regulations in effect on Little Arbor Vitae Lake during each survey year.

Northern Pike (Table 2, Figure 2)

Little Arbor Vitae Lake northern pike numbers seem to be on the rise. Anglers devoted 762 hours of effort pursuing northern pike during the 2007 compared to 0 hours during the 1996 season.

Total catch and harvest for 2007 were 484 and 221 respectively compared to 0 for both in 1996.

The largest northern pike measured was 33.1 inches.

Muskellunge (Table 2, Figure 3)

Approximately 15 percent of directed effort was focused on muskellunge during the 2007 season compared to 33 percent in the 1996 survey.

Total catch of muskellunge decreased from 1,132 in 1996 to 220 in 2007. Catch was highest in July (57).

The clerk measured three muskellunge, the largest being a 36.3-inch fish.

2007 spring sampling showed an above average population (0.53/acre) of muskellunge in the lake, the largest musky measured was a 45.7-inch female.

Smallmouth Bass (Table 2, Figure 4)

The Smallmouth bass population seems to be increasing in Little Arbor Vitae Lake. Although less than five percent of directed effort was focused on smallmouth bass, total catch of smallmouth bass increased from 4 fish 1996 to 1,861 in 2007.

Largemouth Bass (Table 2, Figure 5)

Just less than three percent of directed effort

was focused on largemouth bass. Total catch increased from 46 fish in 1996 to 814 in the 2007 survey.

Yellow Perch (Table 2, Figure 6)

Yellow perch were the primary target for panfish anglers focusing 5,344 hours of directed effort during the 2007 season.

It took anglers an average of 30 minutes to catch and 1.1 hours to harvest a yellow perch during the 2007 season.

An estimated 5,132 yellow perch were harvested from Little Arbor Vitae Lake in 2007, up considerably from the 1,737 fish kept in 1996. The greatest monthly catch of yellow perch during the 2007 season occurred in June (2,980 fish). The number of yellow perch caught in 2007 (13,937) was three times more than the 1996 catch of 4,384 fish.

The average length of yellow perch measured by the clerk was 8.1 inches in 2007.

Bluegill (Table 2, Figure 7)

Three percent of directed effort was focused on bluegill. Anglers caught 1,523 and harvested 548 during the 2007 season. The average length of bluegill measured was 6.7 inches.

Black Crappie (Table 2, Figure 10)

2007 black crappie directed effort has increased two fold from the 1996 creel survey, indicating a substantial increase in the black crappie population.

Total catch and harvest increased to 9,248 caught and 7,274 kept in 2007 from 526 caught and 259 kept in 1996.

The average length of black crappie measured was 9.5 inches.

Panfish (Table 2, Figure 8 & 9)

Other species of panfish taken in small numbers during the 2007 survey include rock bass and pumpkinseed.

ACKNOWLEDGEMENTS

John Logan was the survey clerk on the lake from May through October, and Bob Consolo from December through March.

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

This creel survey report was reviewed by Mike Coshun, Steve Gilbert and Dennis Scholl of the Wisconsin Department of Natural Resources, Woodruff, WI.

Additional copies of this report and those covering other local lakes can be obtained from the Woodruff DNR. Requests should be directed to:

Mike Coshun
Treaty Fisheries Biologist
Wisconsin Department of Natural
Resources
8770 Hwy J
Woodruff, Wi. 54568
(715-358-9209)
michael.coshun@wisconsin.gov

Table 1. Sportfishing effort summary, Little Arbor Vitae Lake, 2007-08 season.

Month	Total Angler Hours	Total Angler Hours/Acre	Vilas County Average Hours/Acre	Statewide Average Hours/Acre
May	4334	8.1	5.4	5.8
June	5137	9.6	7.1	6.1
July	4501	8.4	7.7	6.4
August	2731	5.1	6.7	5.4
September	2787	5.2	4.2	3.8
October	2207	4.1	2.0	1.6
December	724	1.4	0.5	1.7
January	784	1.5	0.7	1.5
February	1671	3.1	0.9	1.3
March	357	0.7	0.1	**
*Summer Total	21697	40.6	34.1	29.1
*Winter Total	3536	6.6	2.1	4.5
Grand Total	25233	47.3	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 Little Arbor Vitae 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 Little Arbor Vitae 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 Little Arbor Vitae Lake to other lakes statewide.

Table 2. Comparison of creel survey synopses, Little Arbor Vitae Lake, 1999-97 and 2007-08 fishing seasons.

CREEL YEAR: 2007-08

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	15925	44.42%	3412	4.7	2333	6.8	13.6
Northern Pike	762	2.13%	484	5.6	221	8.9	25.1
Muskellunge	5337	14.89%	220	40.2	13	659.6	35.6
Smallmouth Bass	1655	4.62%	1861	2.3	54	42.0	15.4
Largemouth Bass	997	2.78%	814	3.0	10	96.2	17.2
Yellow Perch	5344	14.91%	13937	0.5	5132	1.1	8.1
Bluegill	1100	3.07%	1523	1.4	548	2.6	6.7
Pumpkinseed	23	0.06%	99	0.5	4		7.2
Rock Bass	291	0.81%	2082	1.2	316	2.5	7.4
Black Crappie	4413	12.31%	9248	0.5	7274	0.6	9.5

* 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: 1996

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	16642	43.39%	13002	1.3	1082	15.3	16.2
Northern Pike	0	0.00%	0	0.0	0	0.0	0.0
Muskellunge	12992	33.88%	1132	12.2	31	417.0	38.1
Smallmouth Bass	71	0.19%	4	1.6	0	0.0	0.0
Largemouth Bass	456	1.19%	46	16.9	8	0.0	0.0
Bluegill	1467	3.83%	1017	1.5	728	2.1	6.7
Pumpkinseed	0	0.00%	10	0.0	0	0.0	0.0
Black Crappie	1834	4.78%	526	3.6	259	7.4	11.0
Yellow Perch	4861	12.67%	4384	1.3	1737	3.2	8.3
Rock Bass	29	0.08%	408	0.9	27	0.0	7.0
extra	0	0.00%	0		0		

WALLEYE

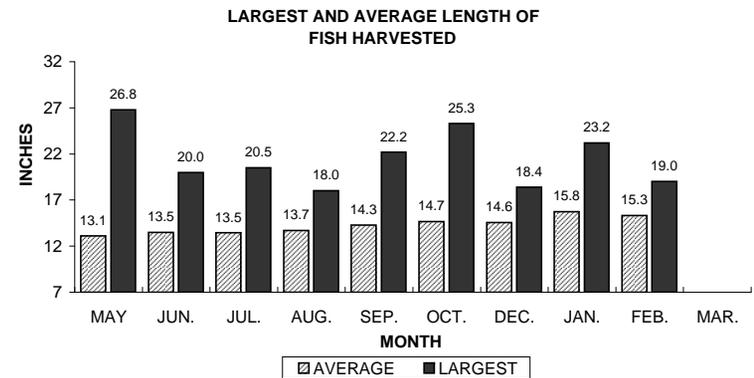
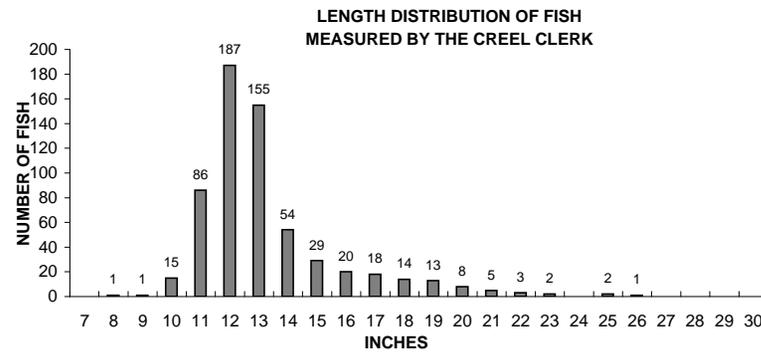
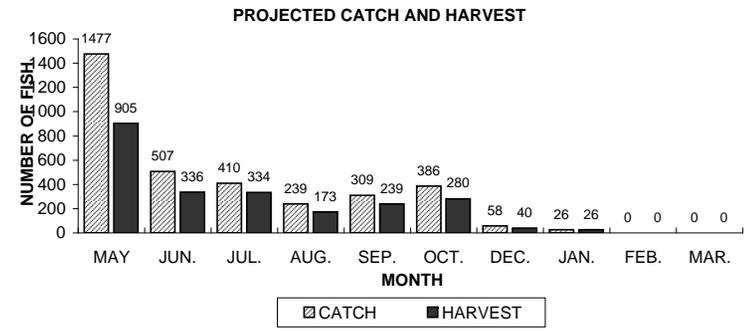
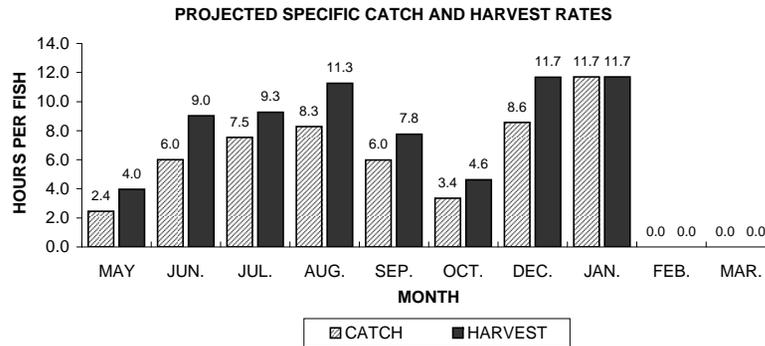
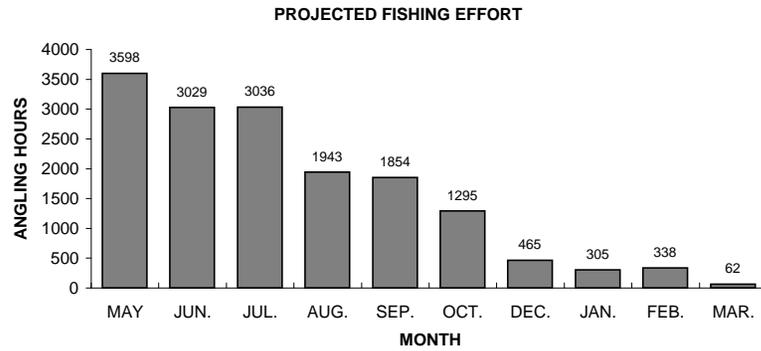
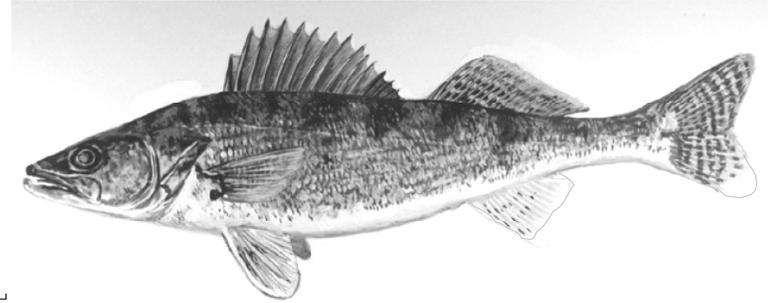
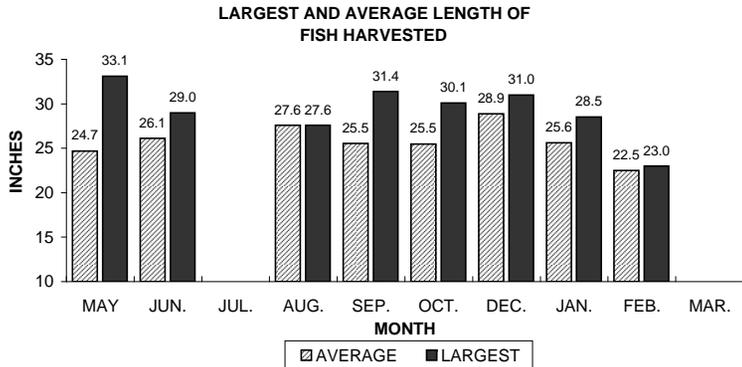
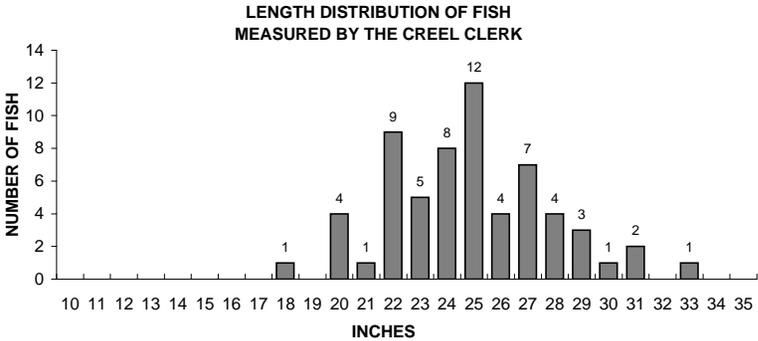
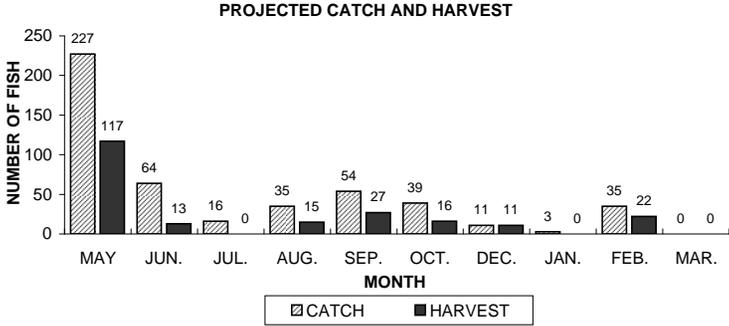
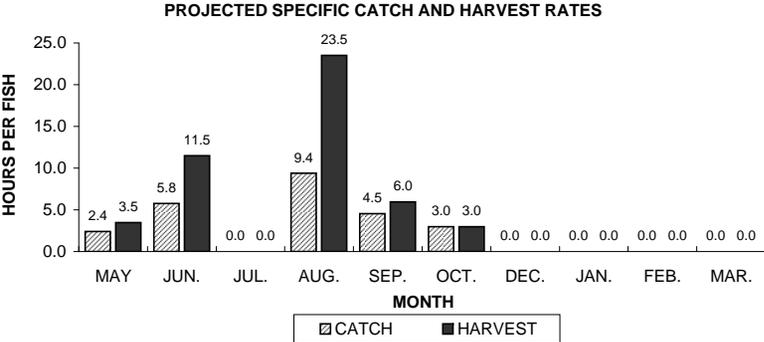
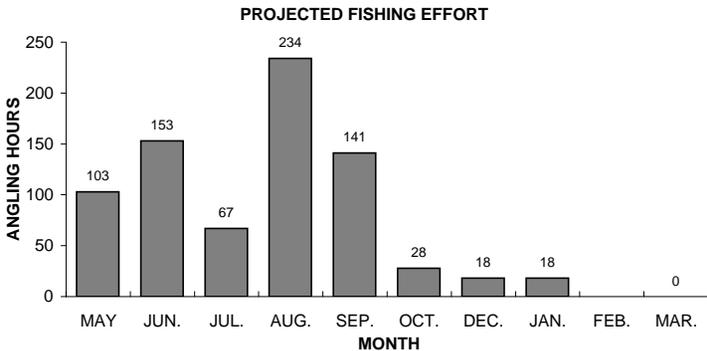
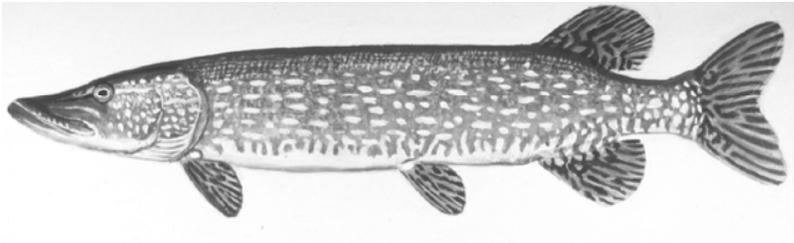


Figure 1. Walleye sportfishing effort, catch, harvest, and length distribution, Little Arbor Vitae Lake, during 2007-08.

NORTHERN PIKE



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Figure 2. Northern pike sportfishing effort, catch, harvest, and length distribution, Little Arbor Vitae Lake, during 2007-08.

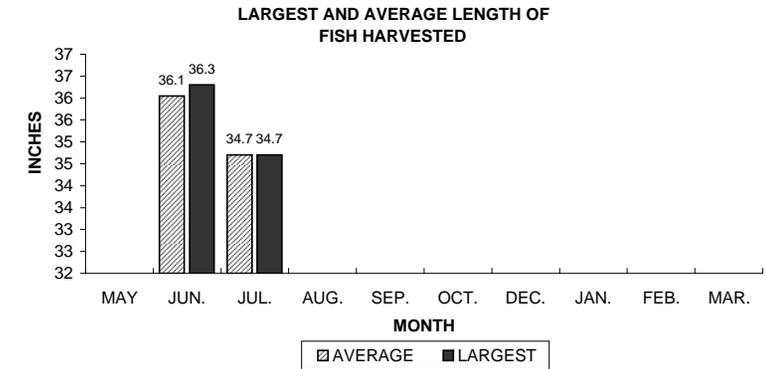
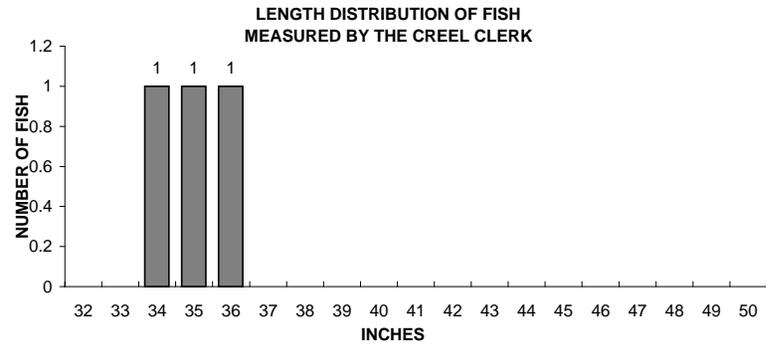
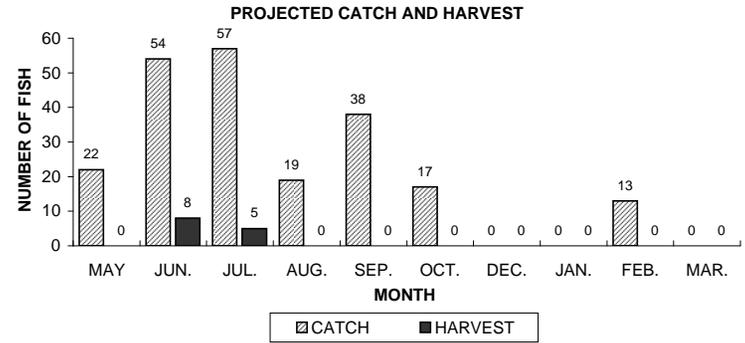
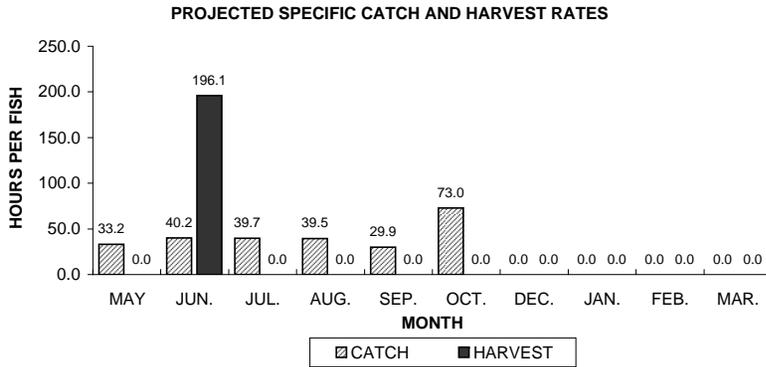
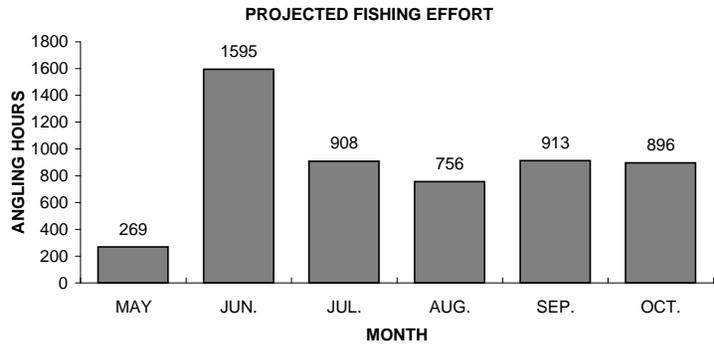


Figure 2. Northern pike sportfishing effort, catch, harvest, and length distribution, Little Arbor Vitae Lake, during 2007-08.

SMALLMOUTH BASS

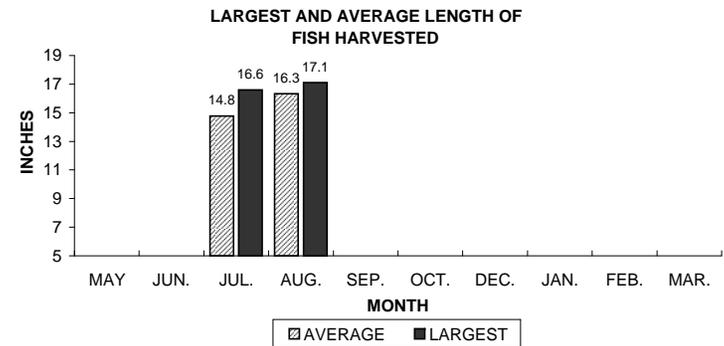
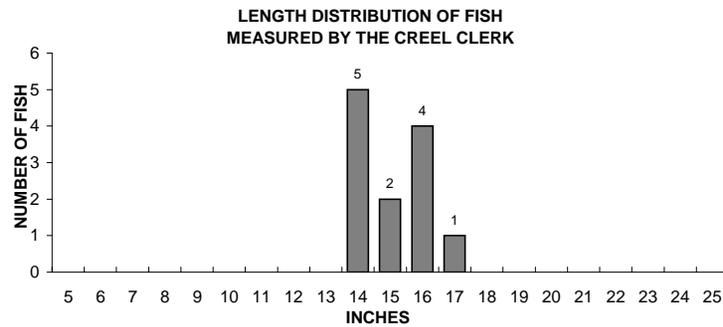
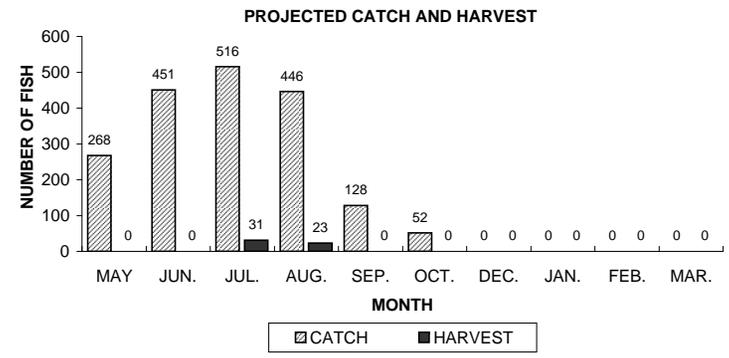
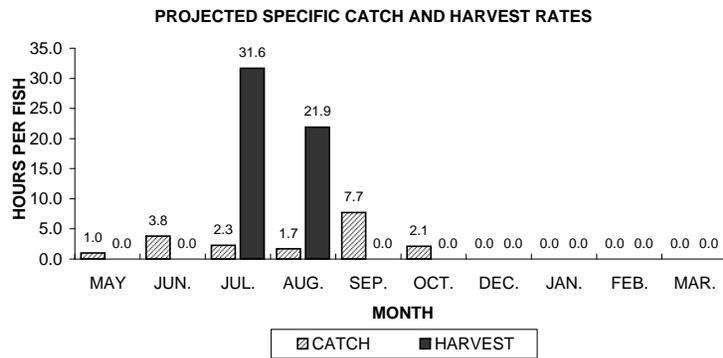
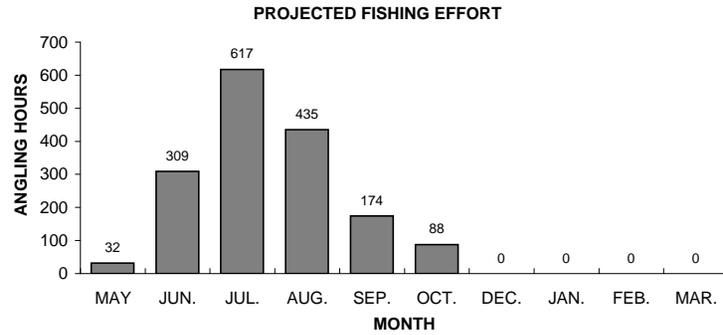
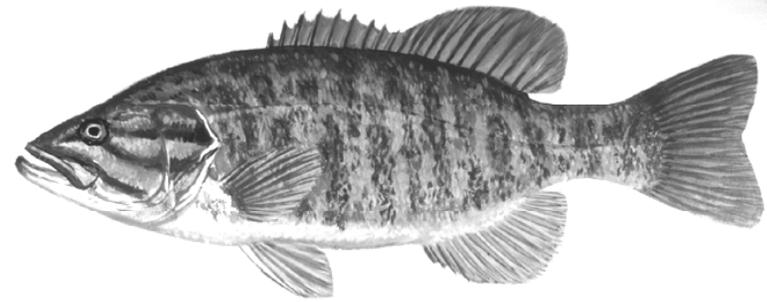


Figure 4. Smallmouth bass sportfishing effort, catch, harvest, and length distribution, Little Arbor Vitae Lake, during 2007-08.

LARGEMOUTH BASS

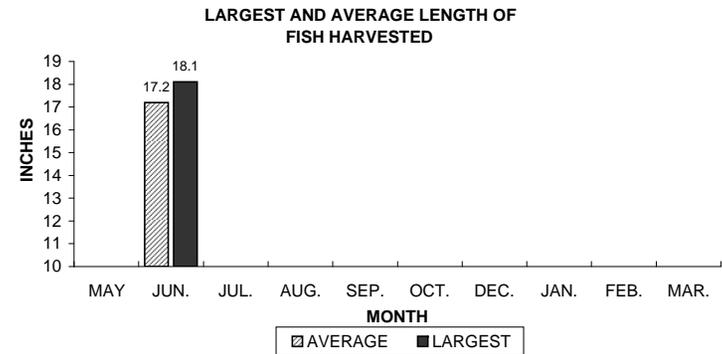
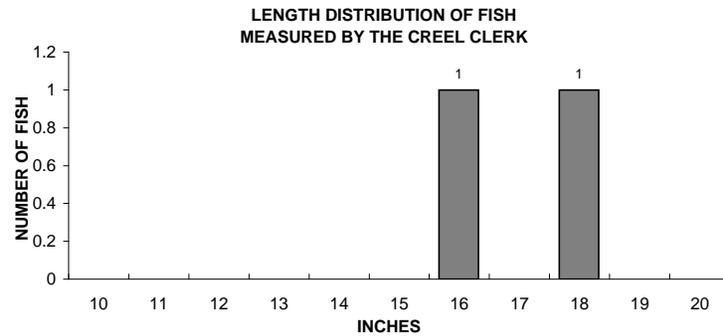
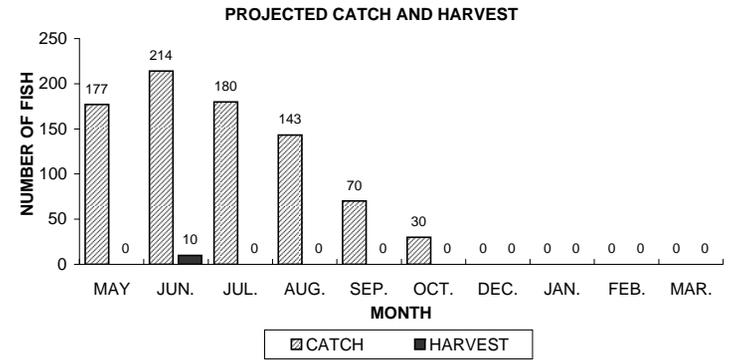
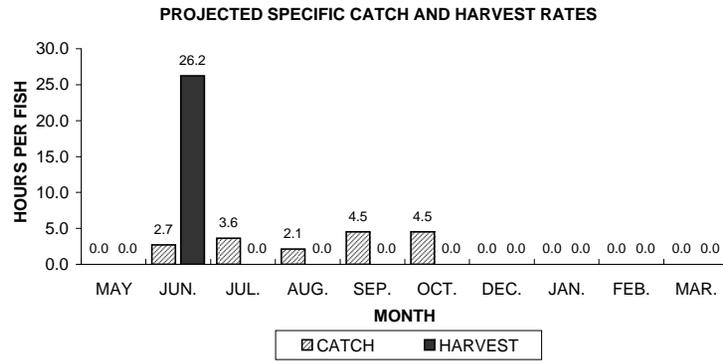
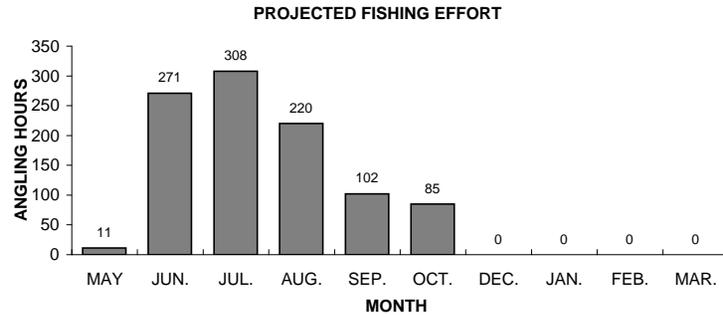
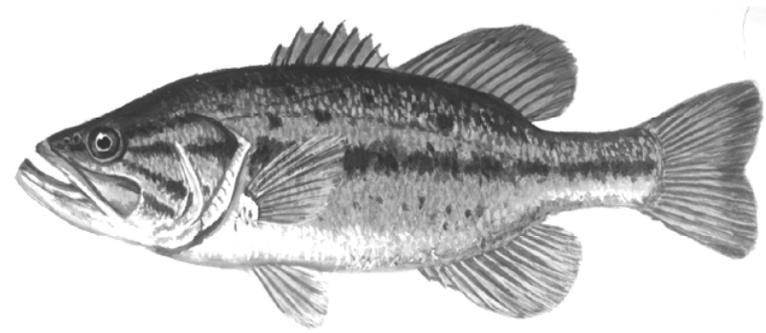


Figure 5. Largemouth bass sportfishing effort, catch, harvest, and length distribution, Little Arbor Vitae Lake, during 2007-08.

YELLOW PERCH

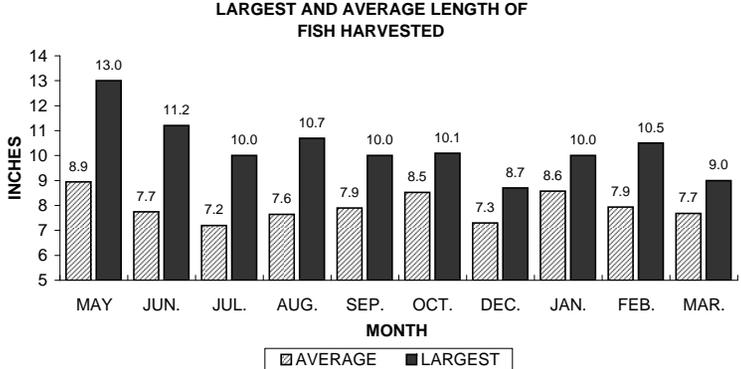
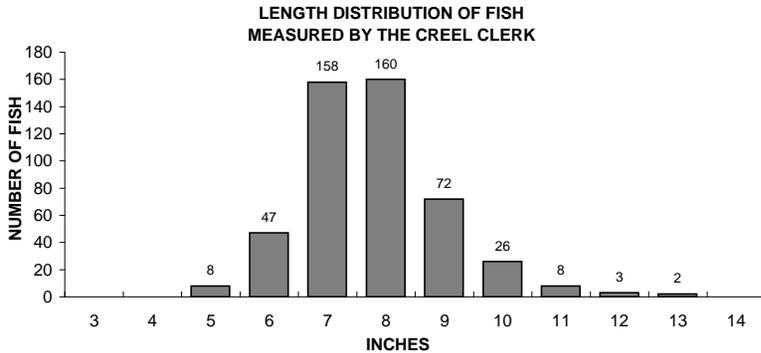
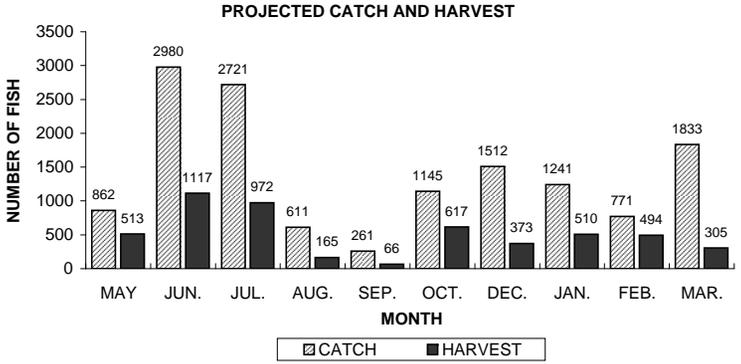
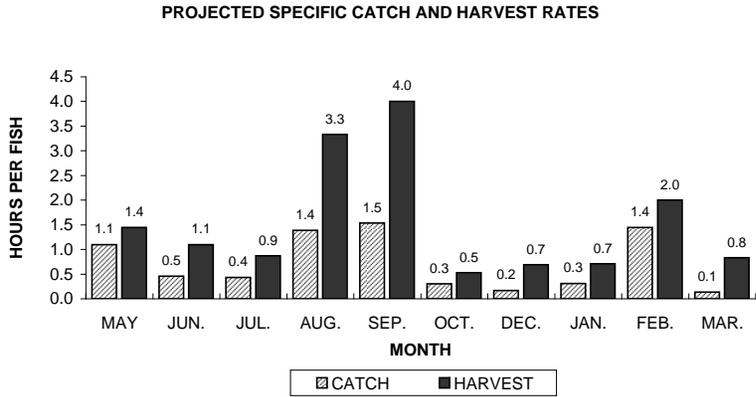
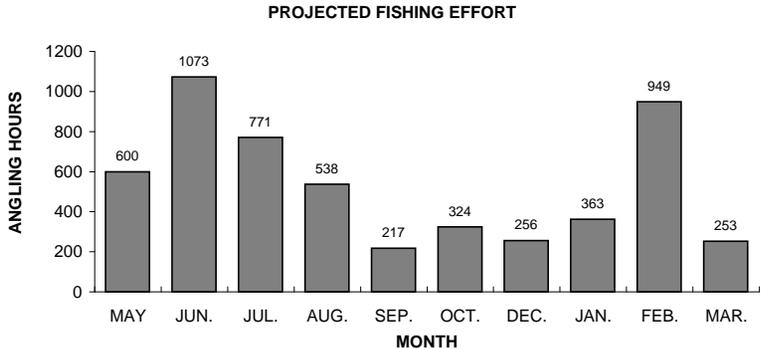
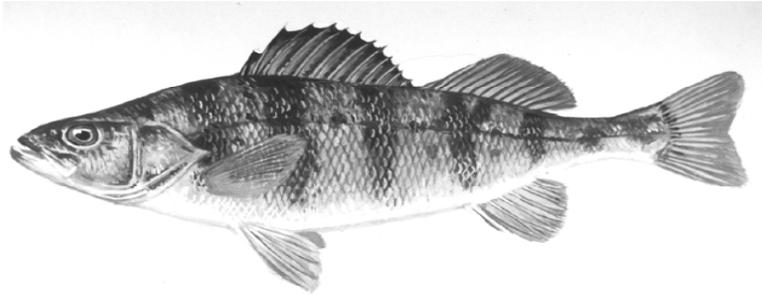


Figure 6. Yellow perch sportfishing effort, catch, harvest, and length distribution, Little Arbor Vitae Lake, during 2007-08.

BLUEGILL

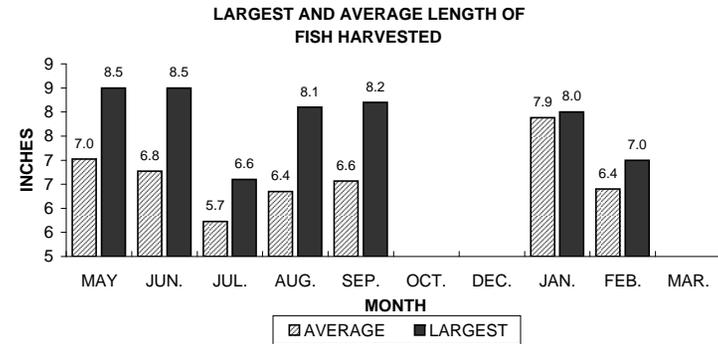
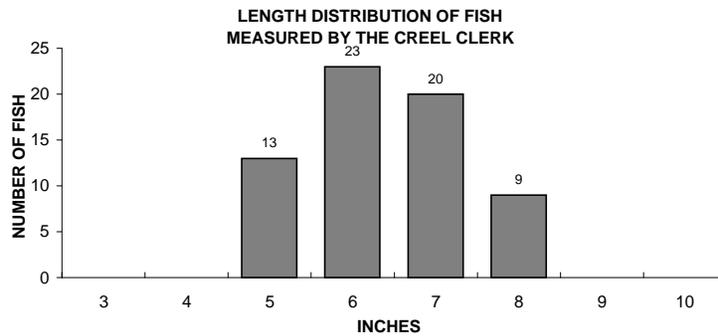
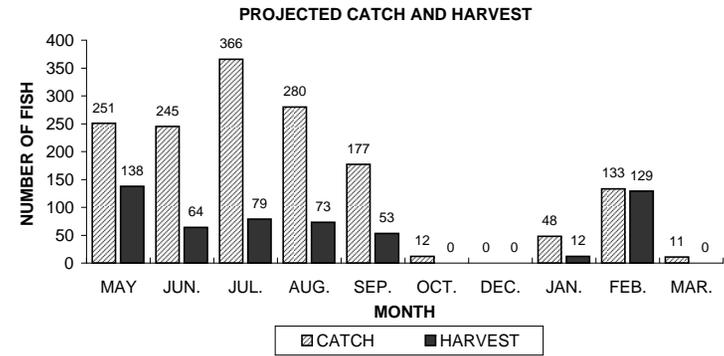
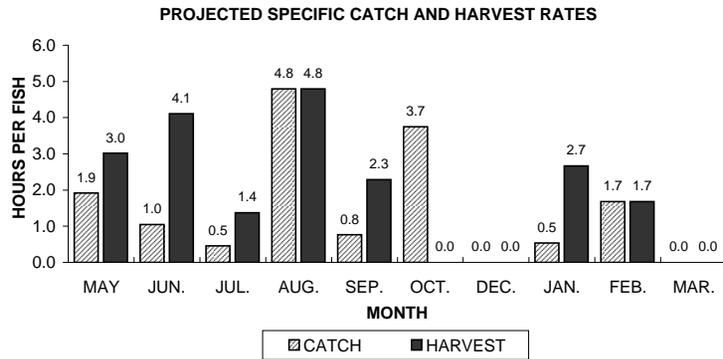
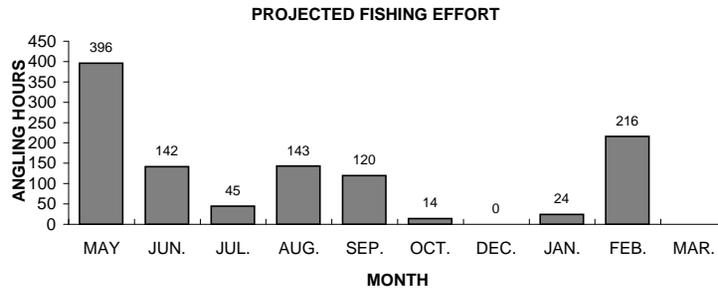
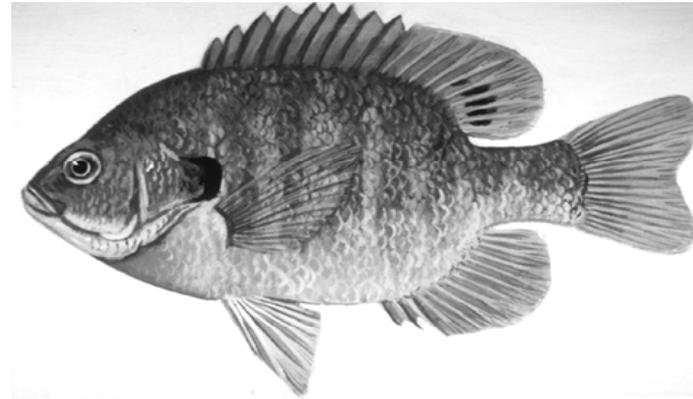


Figure 7. Bluegill sportfishing effort, catch, harvest, and length distribution, Little Arbor Vitae Lake, during 2007-08.

PUMPKINSEED

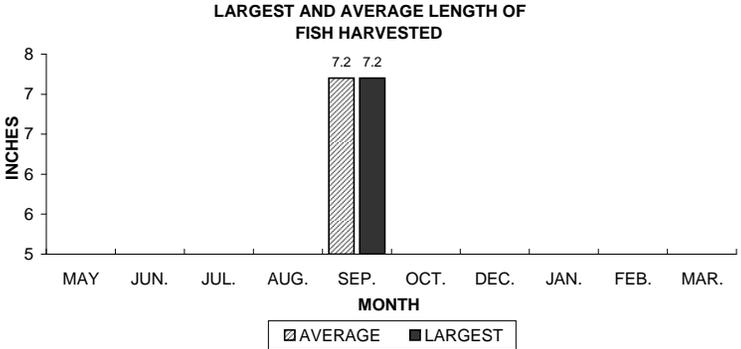
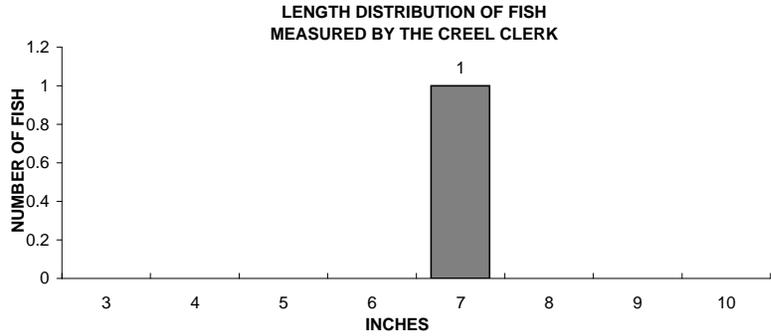
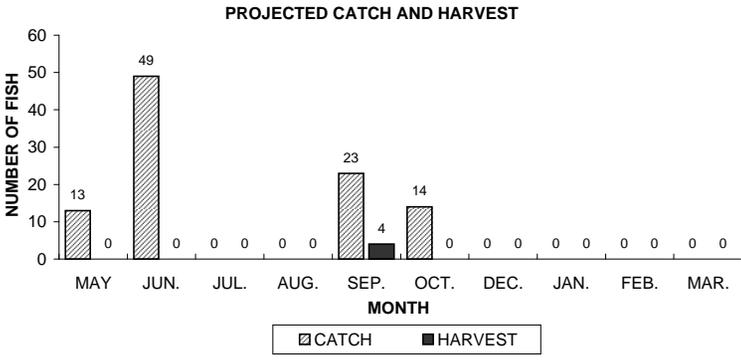
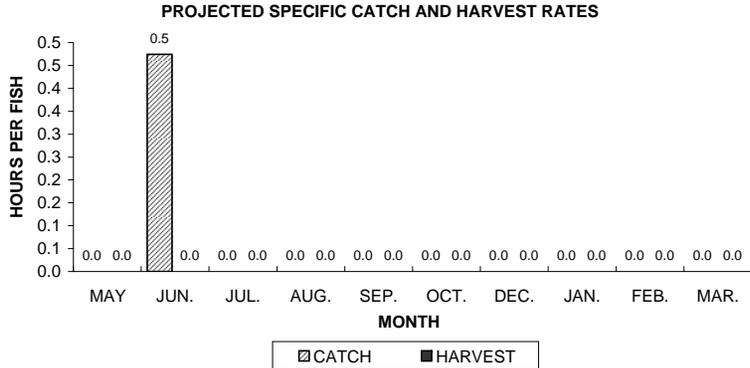
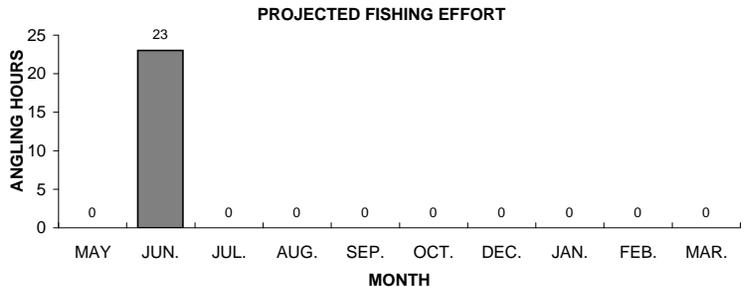
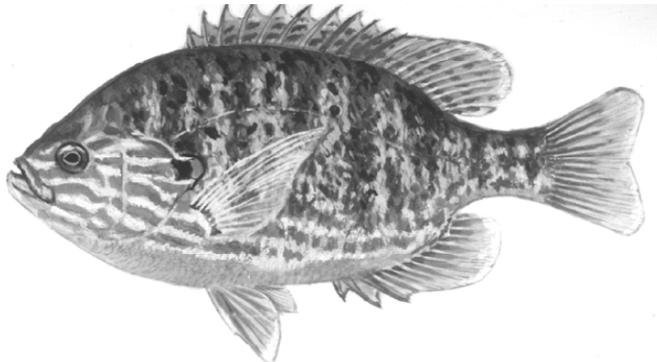


Figure 8. Pumpkinseed sportfishing effort, catch, harvest, and length distribution, Little Arbor Vitae Lake, during 2007-08.

ROCK BASS

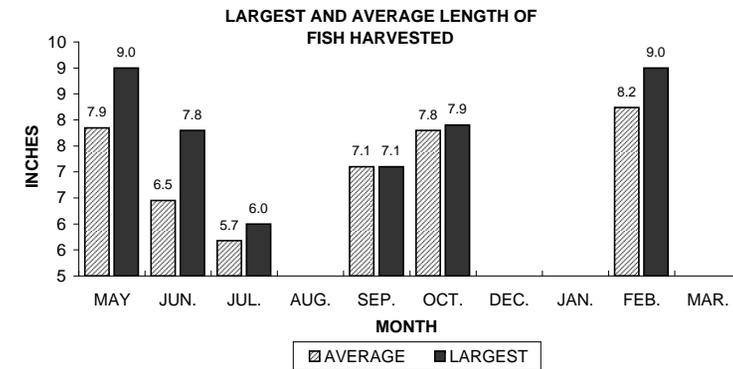
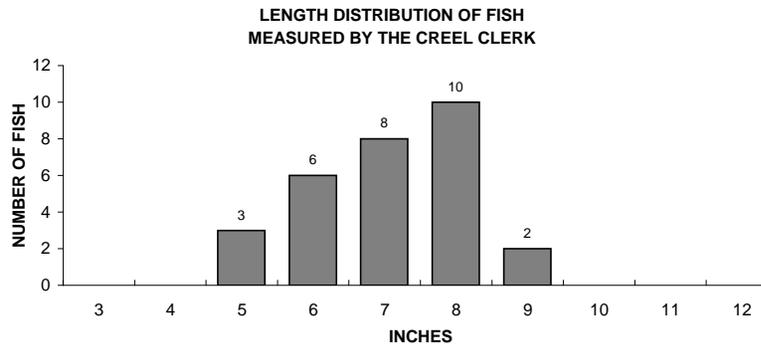
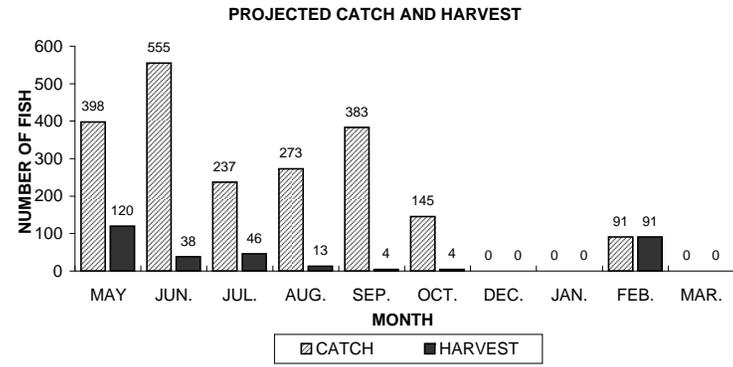
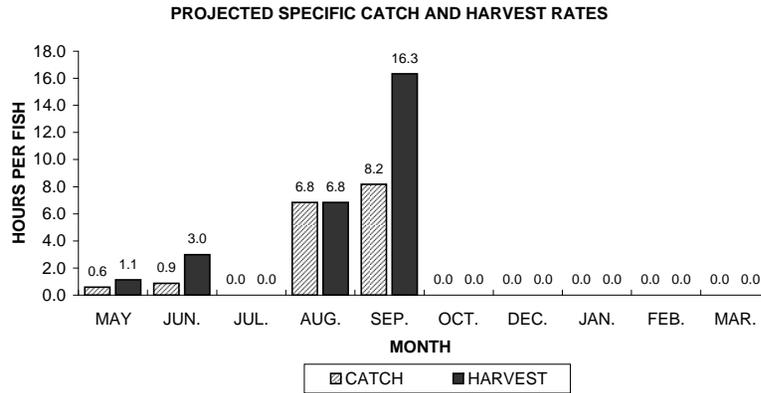
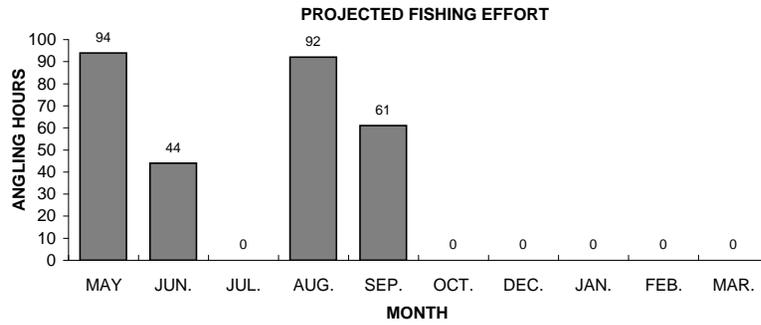
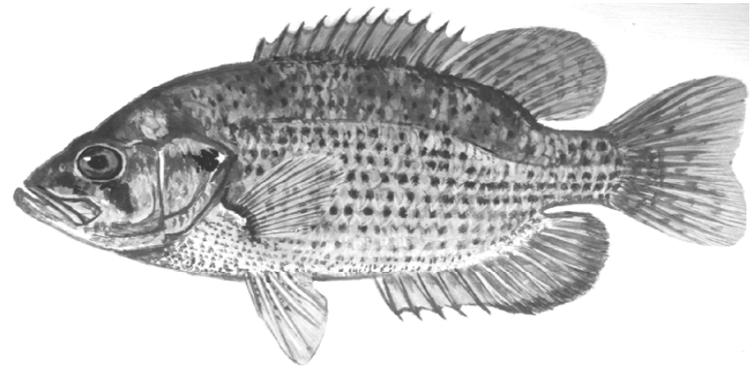


Figure 9. Rock bass sportfishing effort, catch, harvest, and length distribution, Little Arbor Vitae Lake, during 2007-08.

BLACK CRAPPIE

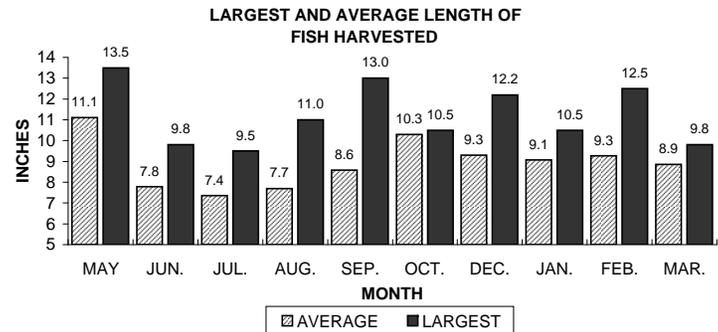
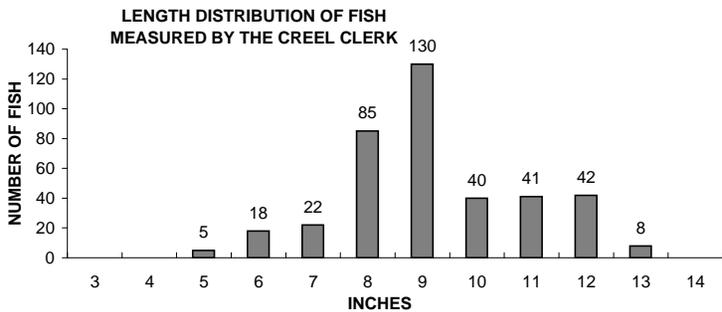
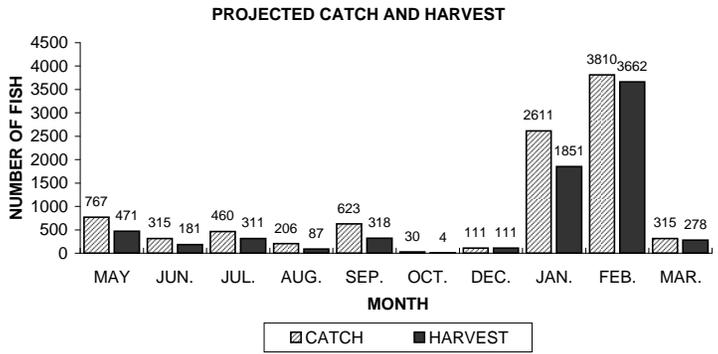
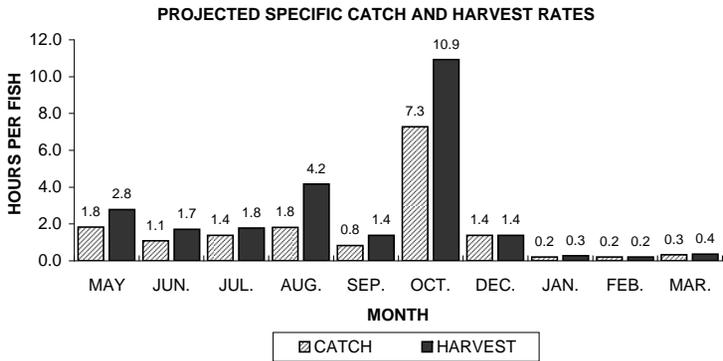
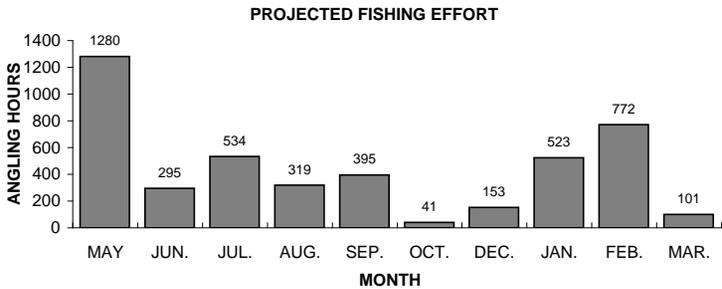
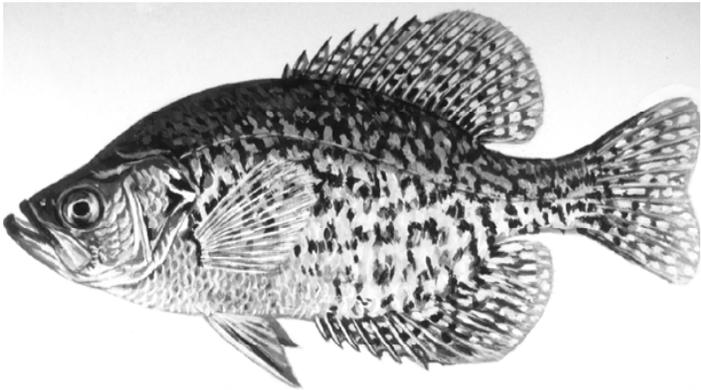


Figure 10. Black crappie sportfishing effort, catch, harvest, and length distribution, Little Arbor Vitae Lake, during 2007-08.