

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

**TUG LAKE**

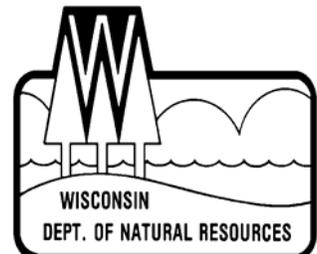
**LINCOLN COUNTY**

**2007-08**



**Treaty Fisheries Publication**

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Woodruff, Wisconsin**



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**Cover Art:** Steve Hilt, Minocqua, WI

**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.

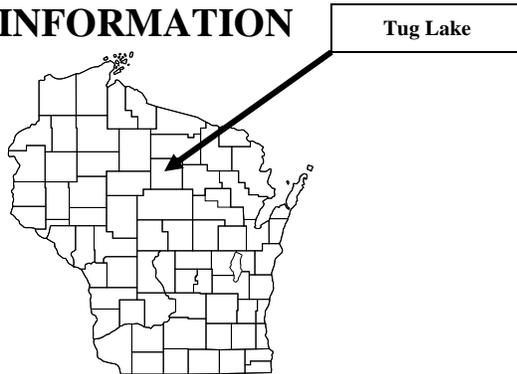
You may have encountered a DNR creel survey clerk on a recent fishing trip. We appreciate your cooperation during an interview. The survey only takes a moment of your time and it gives the Department valuable information needed for management of the fishery.

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 Tug Lake; discussion of results of the survey; and detailed summaries, by species of fishing effort, catch and harvest.

## GENERAL LAKE INFORMATION



### Location

Tug Lake is located in central Lincoln County approximately 8 miles north of the town of Merrill.

### Physical Characteristics

Tug Lake is a 150-acre Drainage Lake of low fertility, light brown water and a maximum depth of 21 feet. Littoral substrate consists primarily of sand and muck with smaller amounts of gravel and rubble.

### Seasons Surveyed

The period referred to in this report as the 2007-08 fishing season ran from May 5, 2007 through March 2, 2008. The open water creel survey ran from May 5 through October 31, 2007 and the ice fishing creel survey ran from December 1, 2007 through March 2, 2008.

### Weather

Ice-out on Tug Lake was around April 16. Spring, summer and fall weather was normal. Fishable-ice formed on Tug Lake in December.

### Sportfishing Regulations

The following seasons, daily bag limits, and length limits were in place on Tug Lake during the 2007-fishing season:

Species	Season	Bag Limit	Min. Size
Largemouth Bass & Smallmouth Bass	5/05-6/15	Catch & Release	
	6/16-3/02	1	14"
Northern Pike	5/05-3/02	5	none
Walleye	5/05-3/02	1	28"
Panfish	year round	25	none
Rock Bass	year round	none	none

## 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 2 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.

### General Angler Information

Anglers spent 6,418 hours or 42.5 hours per acre fishing Tug Lake during the 2007 season (Table 1). That was more than the statewide average of 33.6 hours per acre. January was the most heavily fished month (9.2 hours per acre). Fishing effort was lightest in October (0.9 hours per acre).

## SPECIES INFORMATION

### Walleye (Table 2, Figure 1)

Fishing effort targeted at walleye was 4,560 hours. Walleye fishing effort was greatest in December (1,165 hours). October had the

least amount of walleye fishing effort (122 hours).

Catch was 1,057 fish with a harvest of 210 fish. Highest catch (248 fish) occurred in July and harvest (62 fish) occurred in July. Anglers fished 4.3 hours to catch a walleye and 20.0 hours to harvest during 2007.

The mean length of harvested walleye was 15.9 inches and the largest walleye measured was a 18.5-inch fish harvested in December.

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

There were 343 hours of directed effort for northern pike on Tug Lake during the 2007 season.

Catch was 284 fish with a harvest of 12 fish. Highest catch (71 fish) occurred in August. Anglers fished 5.3 hours to catch a northern pike during the 2007 season.

### Muskellunge (Table 2, Figure 3)

There were only 130 hours directed effort for muskellunge on Tug Lake during the 2007 season.

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

There were 445 hours of directed effort for smallmouth bass on Tug Lake during the 2007 season.

Catch was 334 fish with a harvest of 2 fish. Highest catch (87 fish) occurred in July. Anglers fished 3.3 hours to catch a smallmouth bass during the 2007 season.

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

There were 250 hours directed effort for Largemouth Bass on Tug Lake during the 2007 season.

Catch was 200 fish with a harvest of 0 fish. Highest catch (79 fish) occurred in July.

Anglers fished 5.3 hours to catch a Largemouth Bass during the 2007 season.

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

Panfish accounted for 40% of the total directed effort or 3,943 hours during the 2007 season.

**Bluegill** (Table 2, Figure 6)

Bluegill was the second most sought after panfish species with 36% of the directed effort. Bluegill fishing effort was greatest in May (309 hours). October had the least amount of bluegill effort (0 hours).

Catch was 2,867 fish with a harvest of 644 fish. Highest catch (703 fish) occurred in May. Anglers fished 36 minutes to catch a bluegill and 2.3 hours to harvest during the 2007 season.

The mean length of harvested bluegill was 8.1 inches and the largest bluegill measured was a 9.7 inch fish harvested in July.

**Black Crappie** (Table 2, Figure 7)

Black crappie was the most sought after panfish species with 20.6% or 1,995 hours of the total directed effort. Black crappie effort peaked in January (705 hours). June, August and September had no black crappie effort.

The total estimated catch of black crappie was 300 with an estimated harvest of 257 fish.

The mean length of harvested black crappie was 10.6 inches and the largest measured was 14.5 inches caught in October.

Yellow perch, pumpkinseed and rock bass were also caught, but in lower numbers.

## 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 Kiepeke, Tim Tobias, Jason Halverson and Jeff Blonski. Dave Stahmer and Bill Bener were the creel clerks on Tug 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.

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, Tug Lake, 2007-08 season.**

Month	Total Angler Hours	Total Angler Hours/Acre	Lincoln County Average Hours/Acre	Statewide Average Hours/Acre
May	525	3.5	5.9	5.8
June	598	4.0	6.3	6.1
July	900	6.0	7.4	6.4
August	501	3.3	5.0	5.4
September	272	1.8	1.8	3.8
October	140	0.9	0.4	1.6
December	1276	8.5	0.7	1.7
January	1382	9.2	2.7	1.5
February	732	4.8	1.4	1.3
March	92	0.6	0.0	**
*Summer Total	2936	19.4	26.8	29.1
*Winter Total	3482	23.1	4.8	4.5
Grand Total	6418	42.5	31.6	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 Tug 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 Tug 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 Tug Lake to other lakes statewide.

**Table 2. Comparison of creel survey synopses, Tug Lake, 2007-08 fishing seasons.**

CREEL YEAR: 2007-08

<b>SPECIES</b>	<b>DIRECTED EFFORT (Hours)</b>	<b>PERCENT OF TOTAL</b>	<b>TOTAL CATCH</b>	<b>SPECIFIC CATCH RATE (Hrs/Fish) *</b>	<b>TOTAL HARVEST</b>	<b>SPECIFIC HARVEST RATE (Hrs/Fish) **</b>	<b>MEAN LENGTH OF HARVESTED FISH</b>
Walleye	4560	47.15%	1057	4.3	210	20.0	15.9
Northern Pike	343	3.55%	284	5.3	12	33.3	20.2
Muskellunge	130	1.34%	0		0		
Smallmouth Bass	445	4.60%	334	3.3	2		17.3
Largemouth Bass	250	2.59%	200	5.3	0		
Yellow Perch	399	4.13%	128	7.1	24	50.0	9.2
Bluegill	1417	14.65%	2867	0.6	644	2.3	8.1
Pumpkinseed	132	1.36%	117	1.3	42	3.2	7.1
Rock Bass	0	0.00%	12		0		
Black Crappie	1995	20.63%	300	6.7	257	7.7	10.6
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.

# WALLEYE

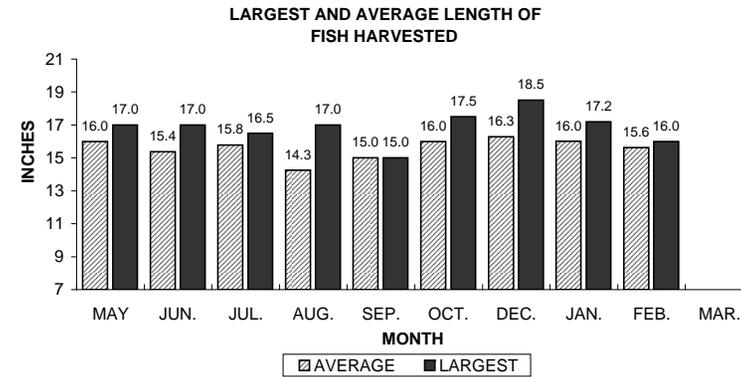
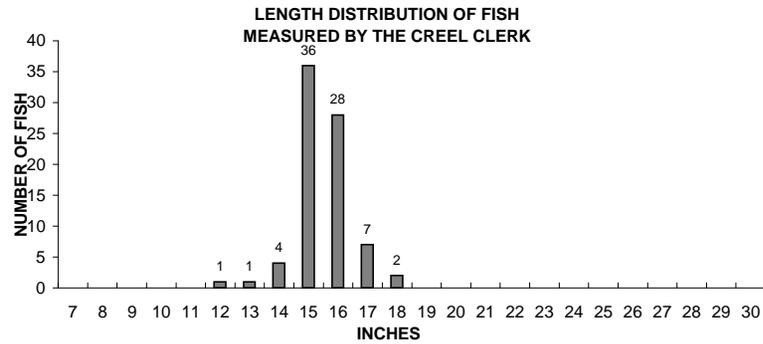
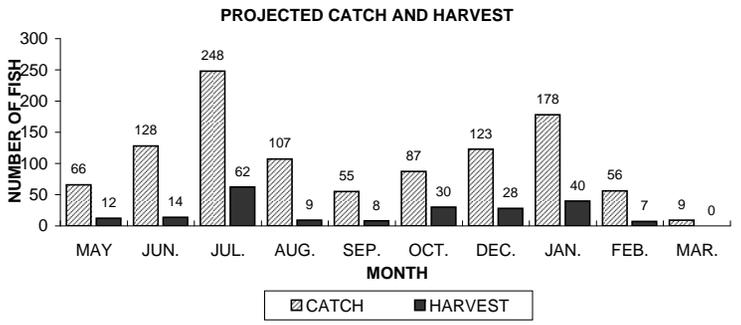
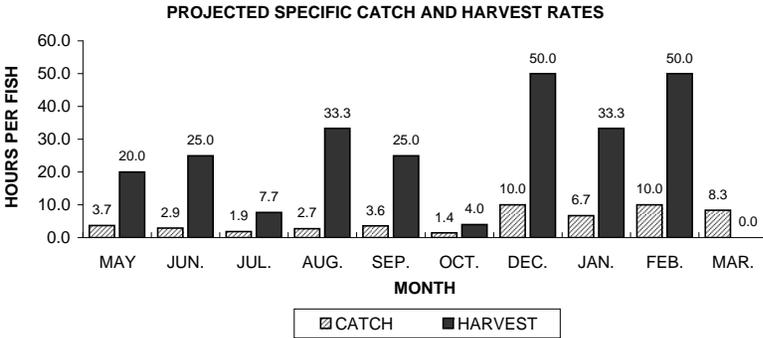
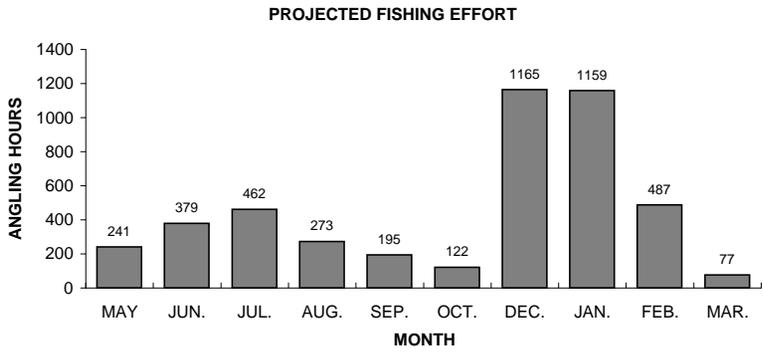
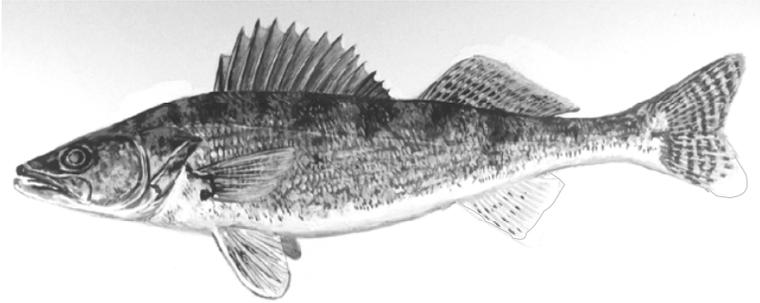


Figure 1. Walleye sportfishing effort, catch, harvest, and length distribution, Tug Lake, during 2007-08.

# NORTHERN PIKE

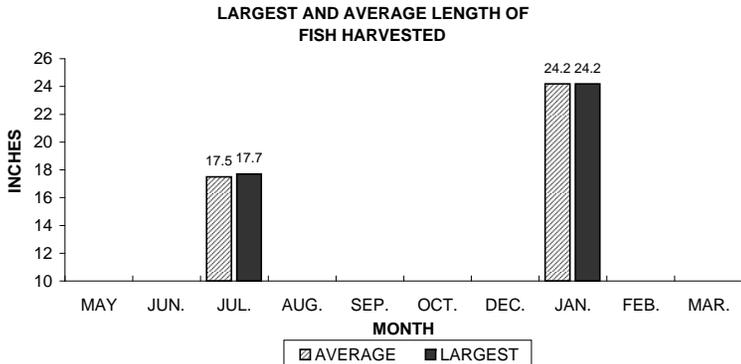
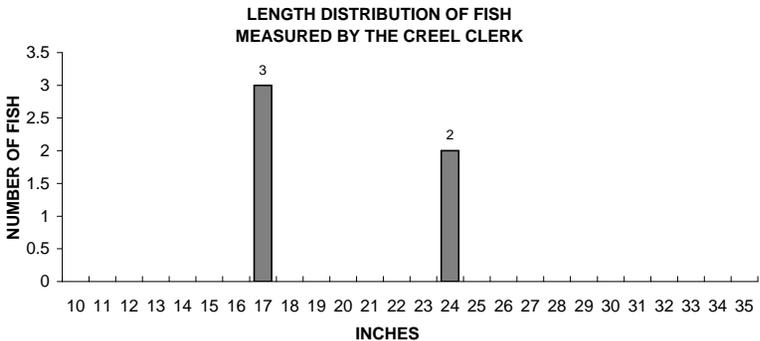
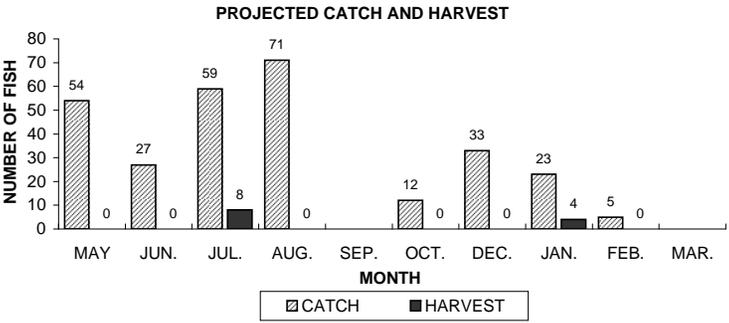
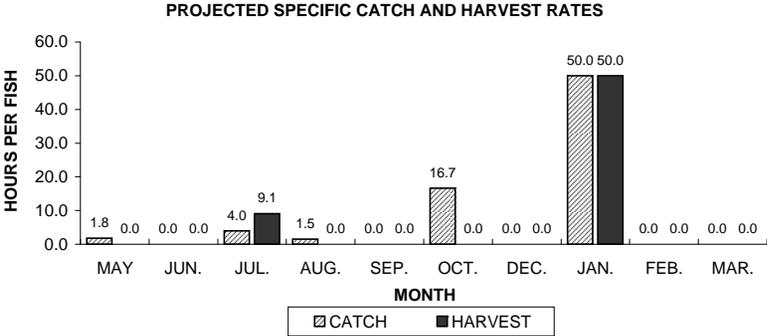
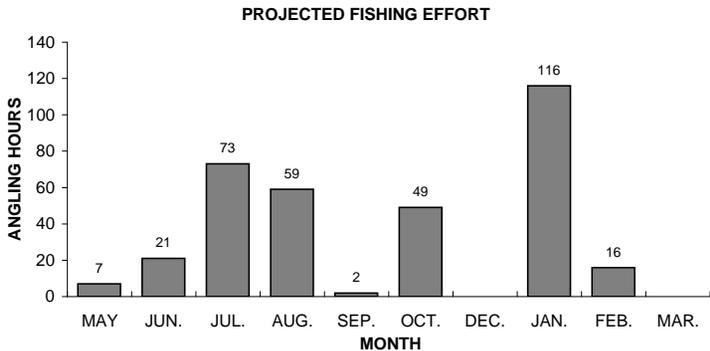
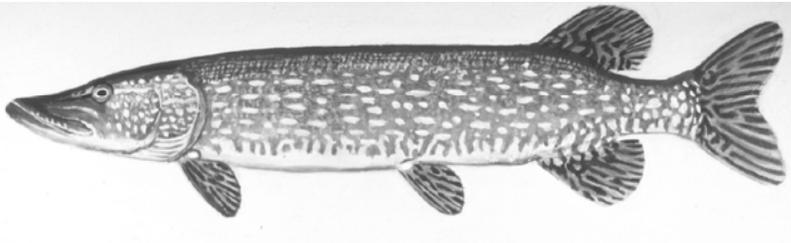


Figure 2. Northern pike sportfishing effort, catch, harvest, and length distribution, Tug Lake, during 2007-08.

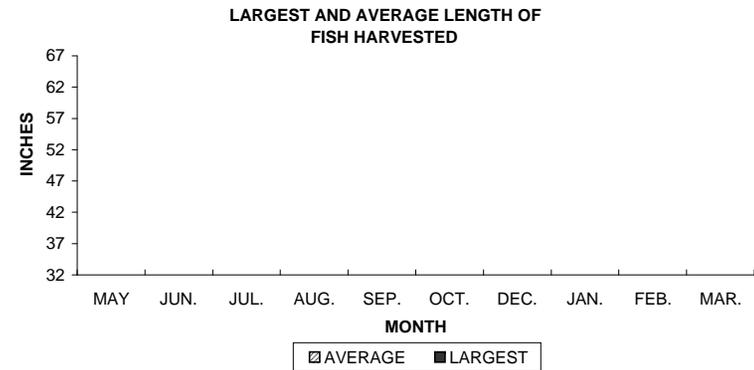
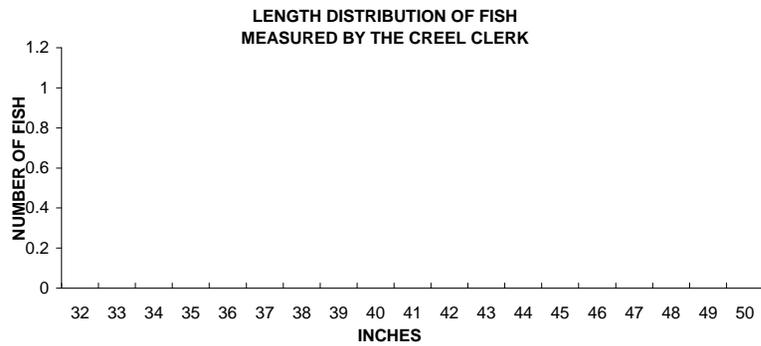
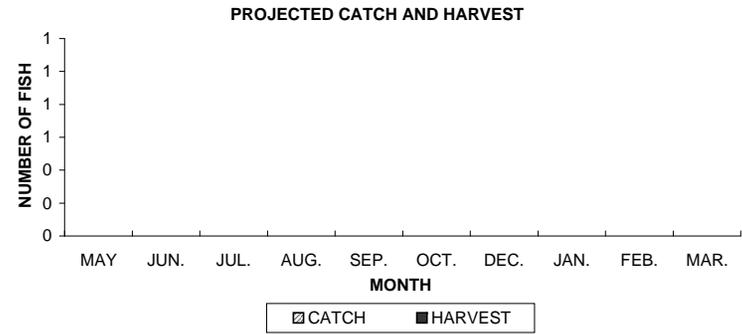
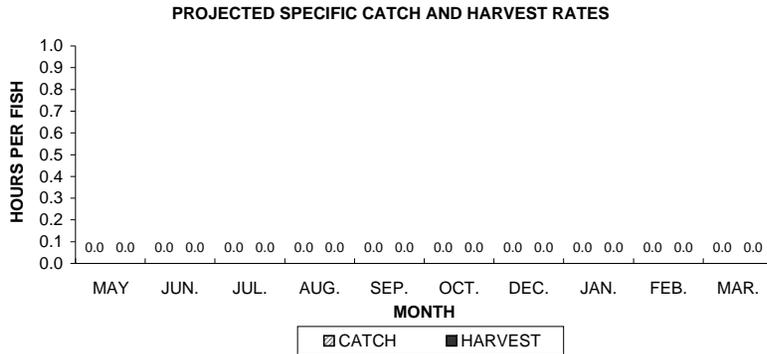
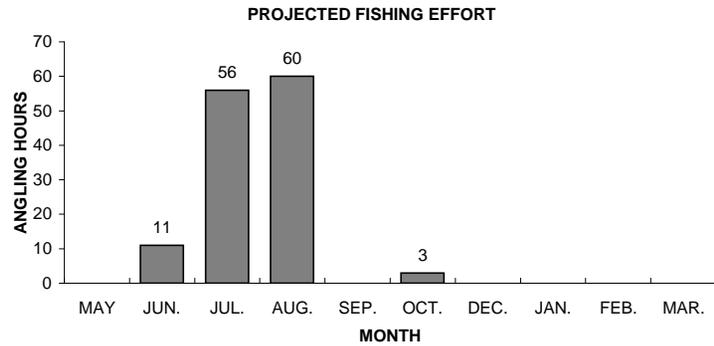


Figure 3. Muskellunge sportfishing effort, catch, harvest, and length distribution, Tug Lake, during 2007-08.

# SMALLMOUTH BASS

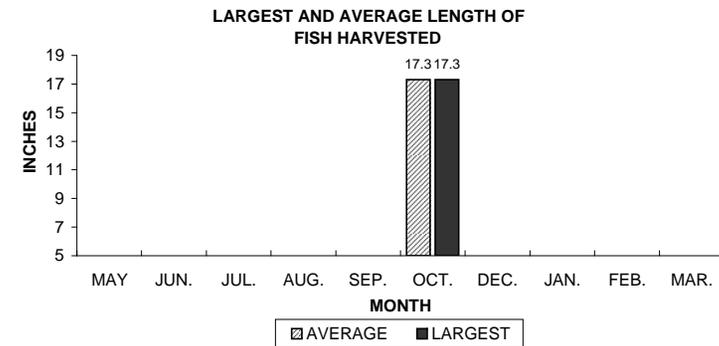
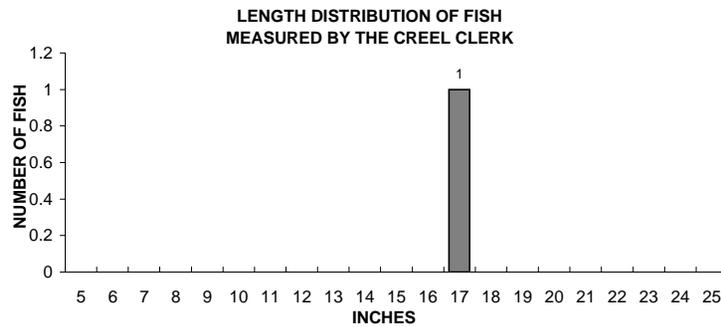
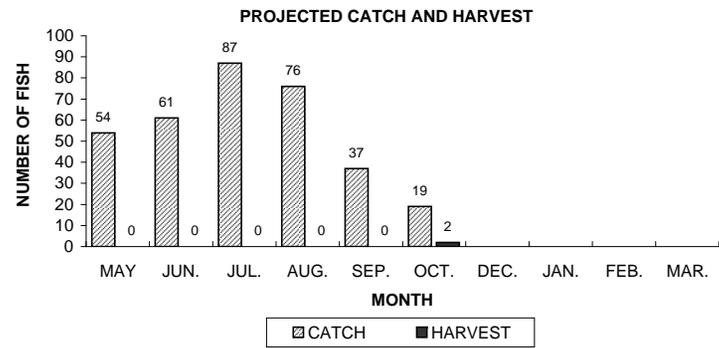
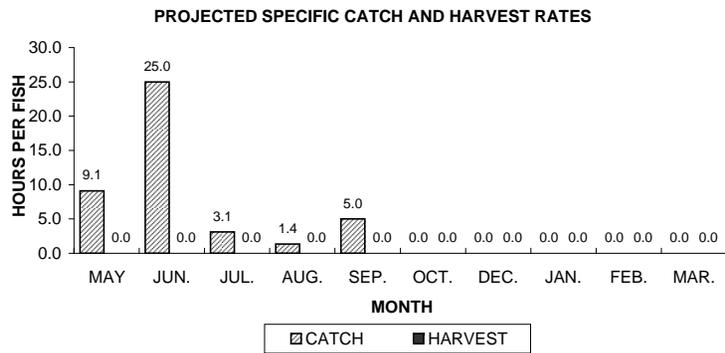
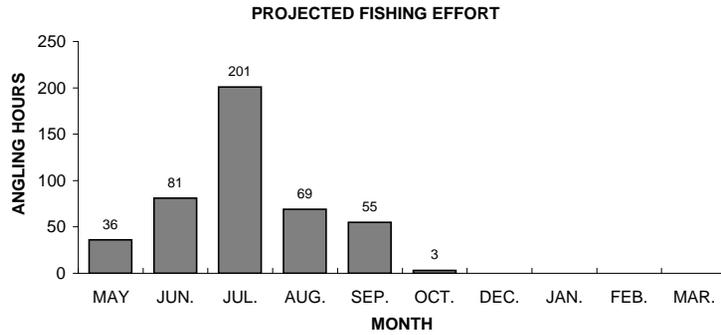
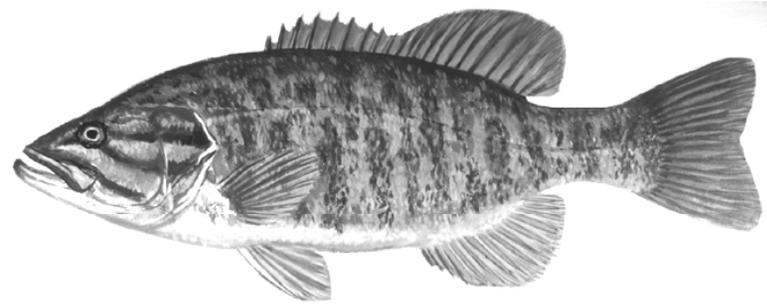


Figure 4. Smallmouth bass sportfishing effort, catch, harvest, and length distribution, Tug Lake, during 2007-08.

# LARGEMOUTH BASS

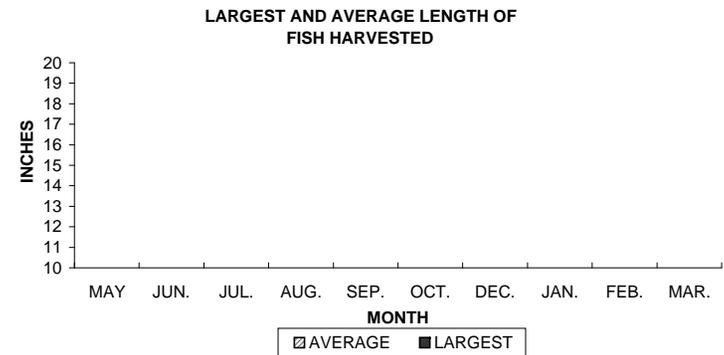
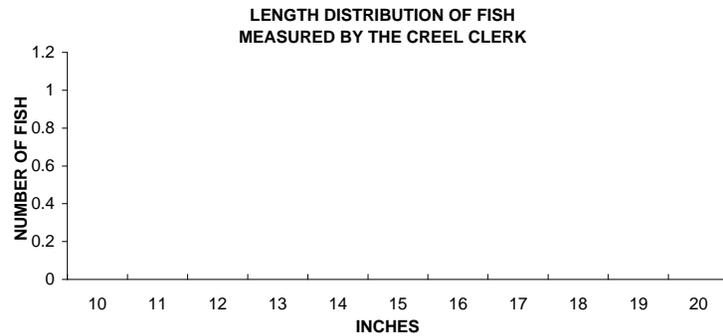
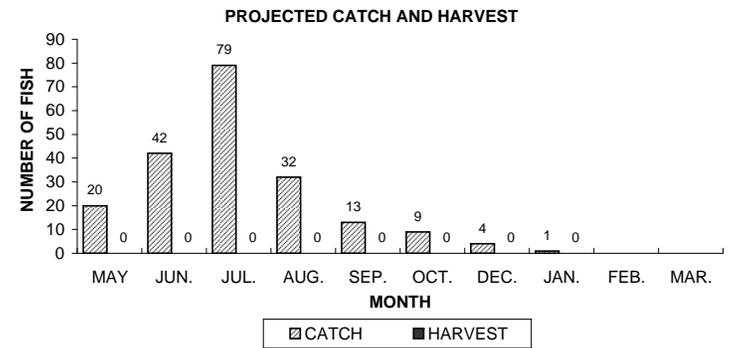
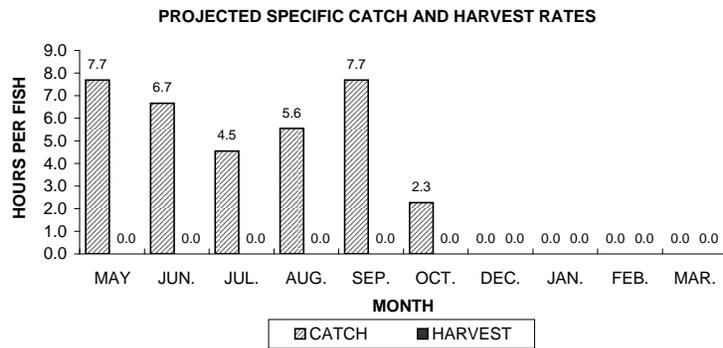
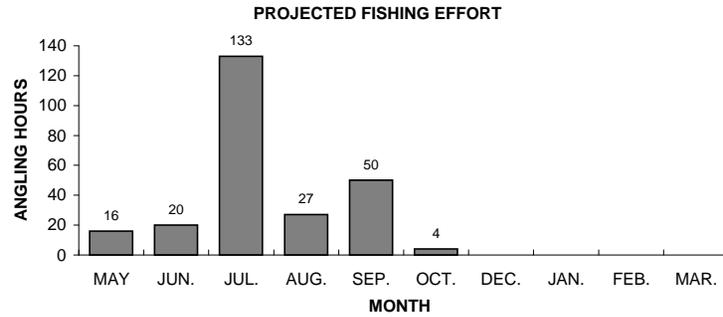
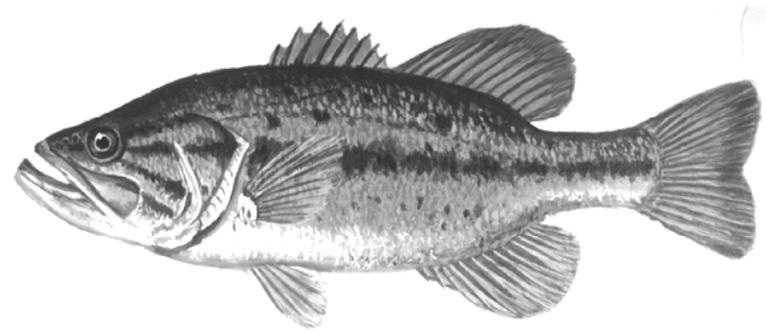


Figure 5. Largemouth bass sportfishing effort, catch, harvest, and length distribution, Tug Lake, during 2007-08.

# YELLOW PERCH

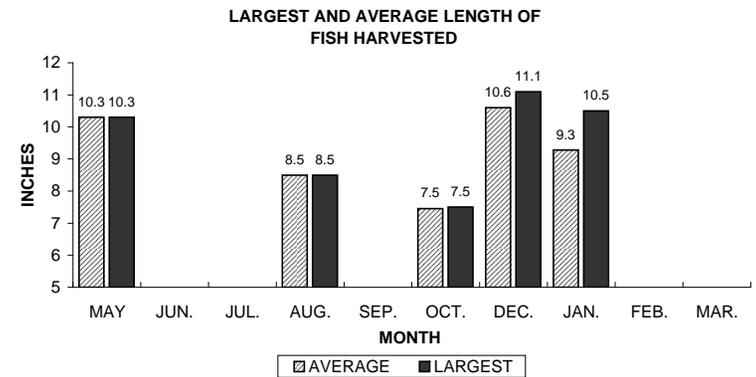
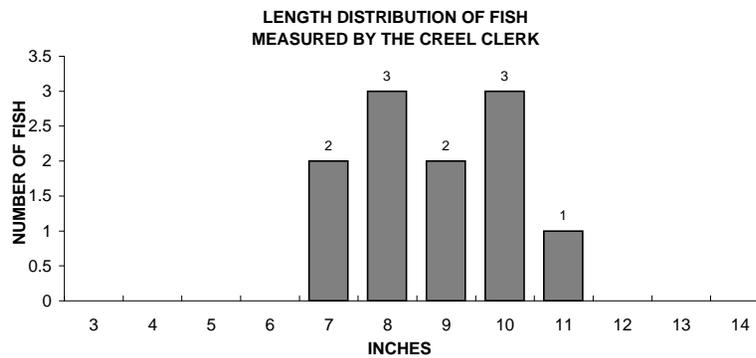
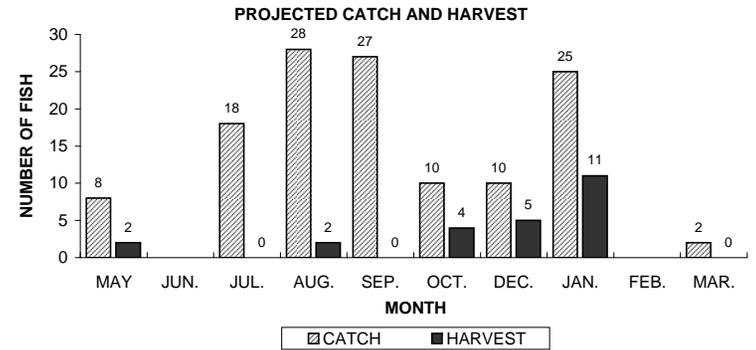
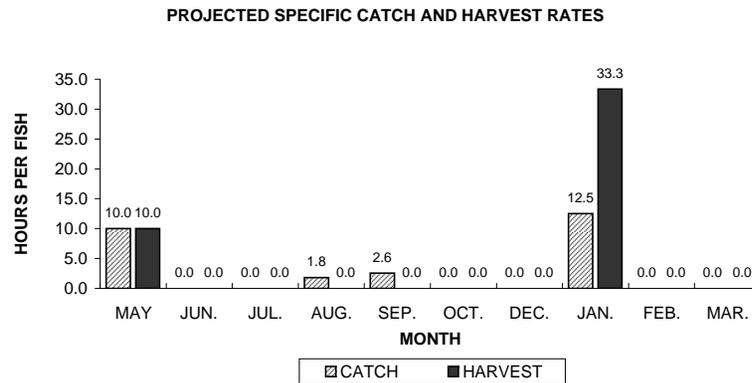
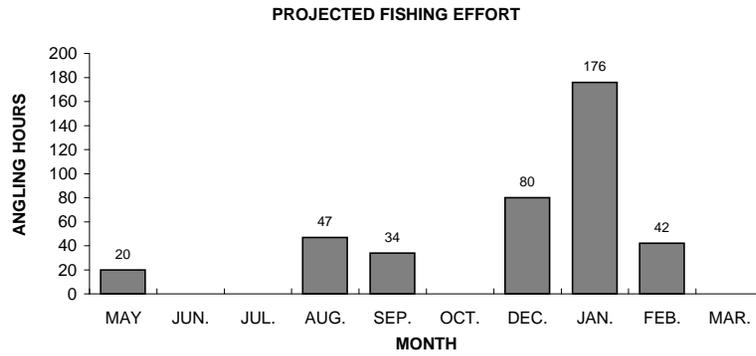
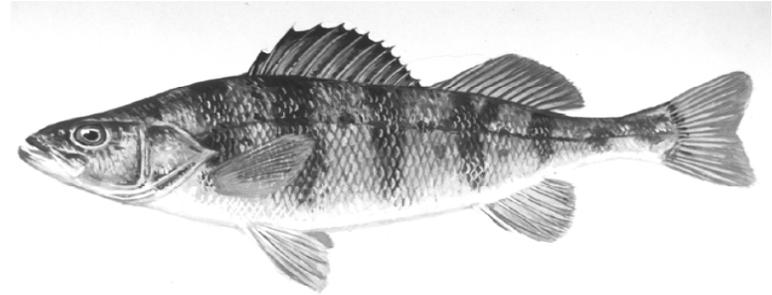


Figure 6. Yellow perch sportfishing effort, catch, harvest, and length distribution, Tug Lake, during 2007-08.

# BLUEGILL

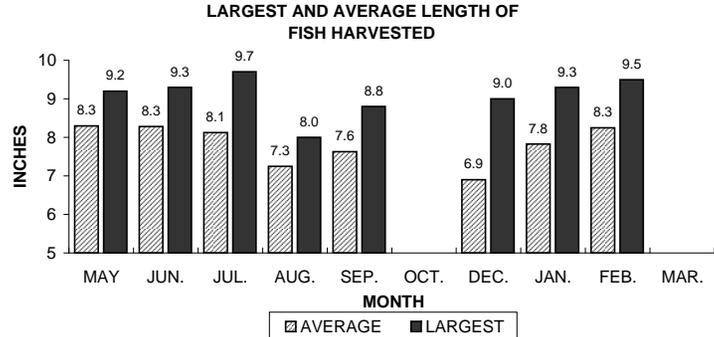
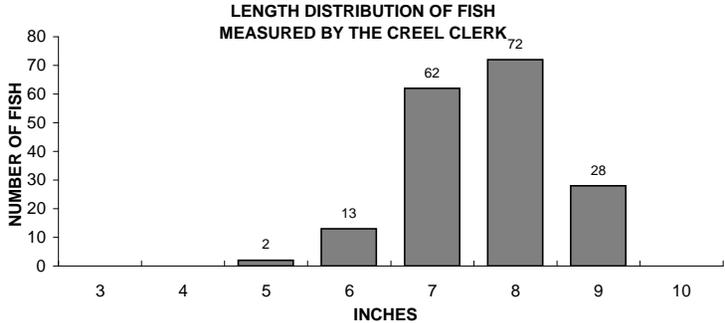
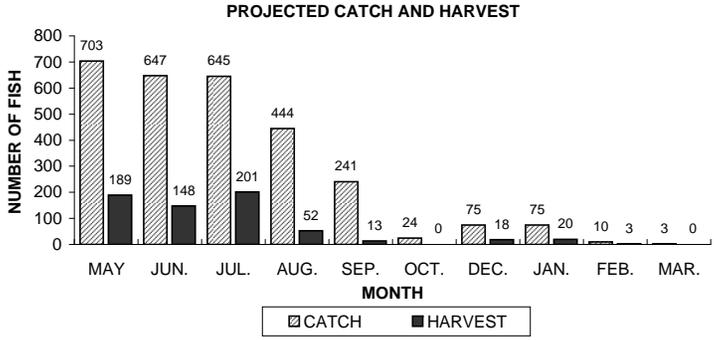
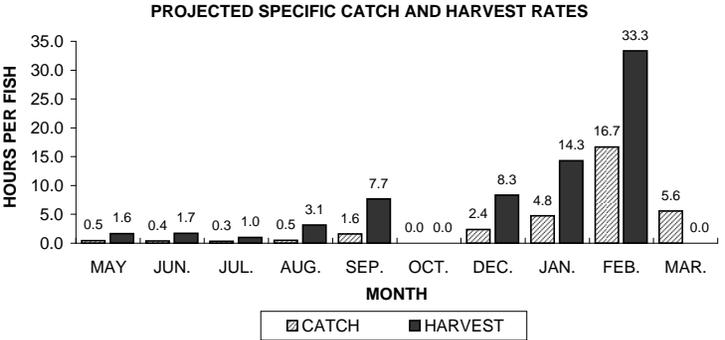
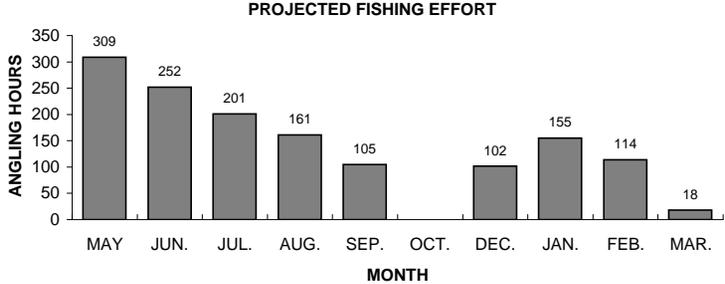
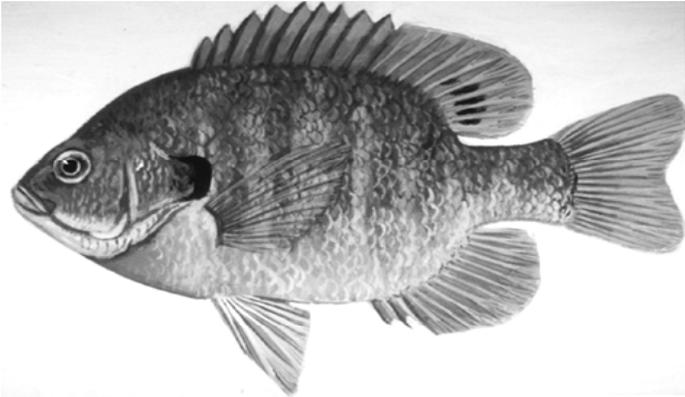


Figure 7. Bluegill sportfishing effort, catch, harvest, and length distribution, Tug Lake, during 2007-08.

# PUMPKINSEED

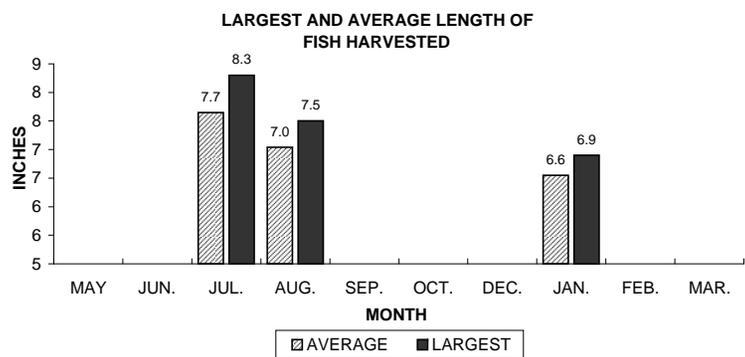
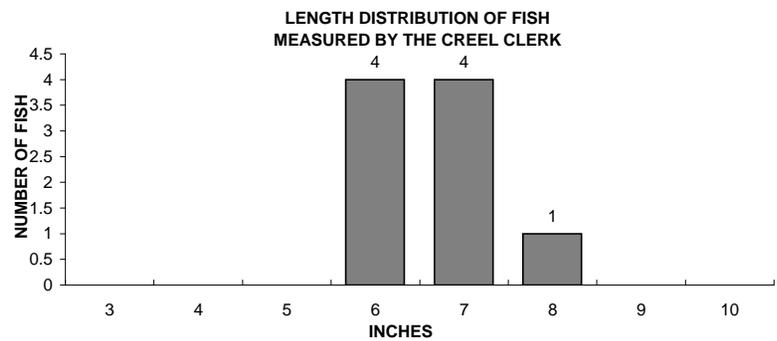
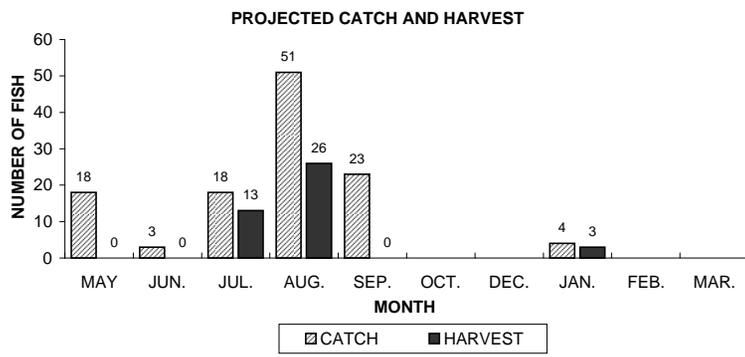
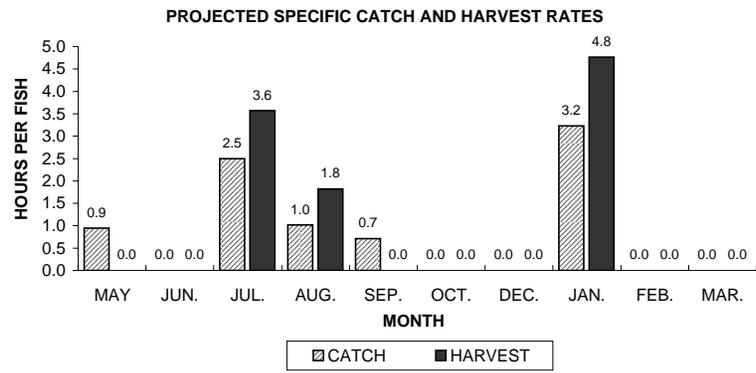
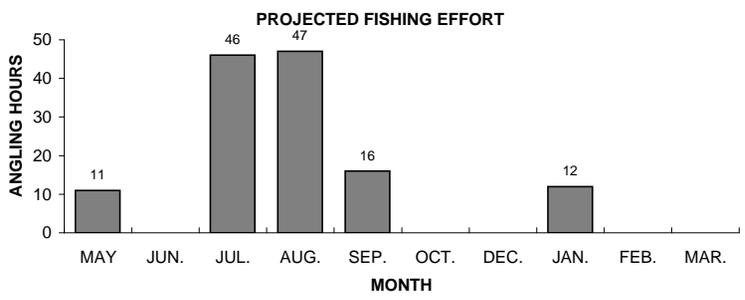
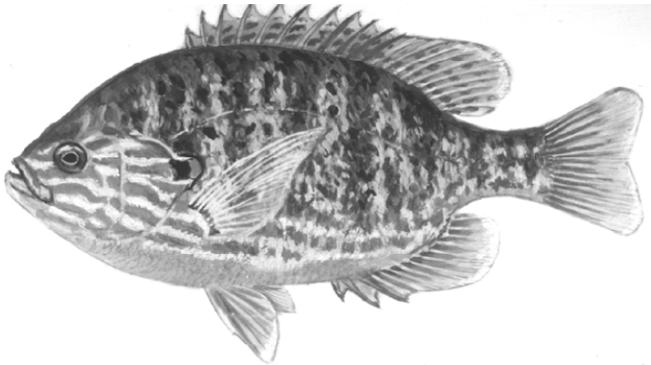


Figure 8. Pumpkinseed sportfishing effort, catch, harvest, and length distribution, Tug Lake, during 2007-08.

# ROCK BASS

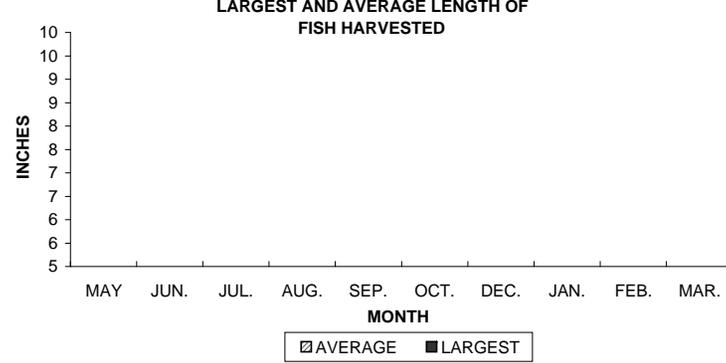
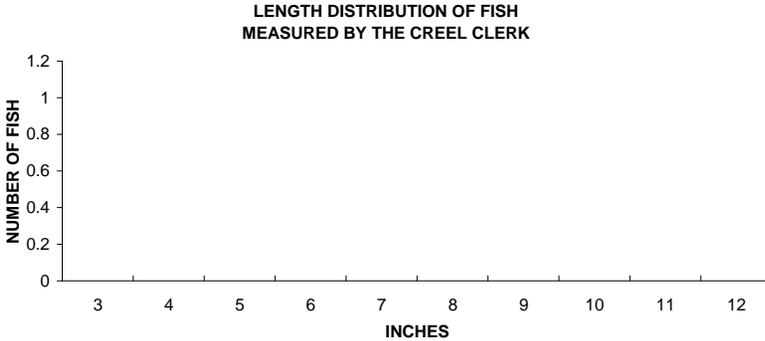
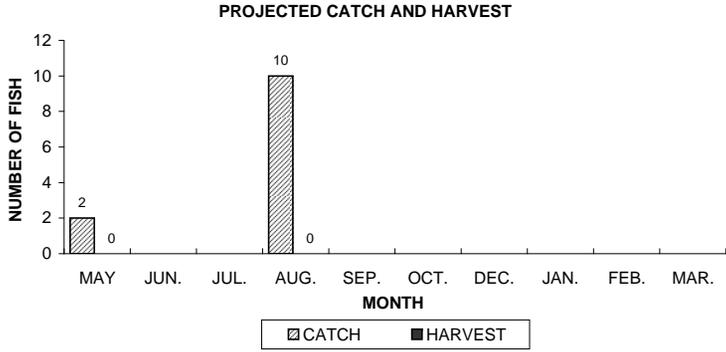
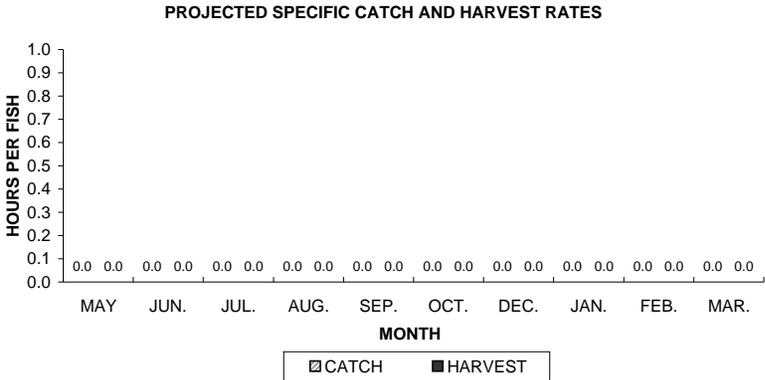
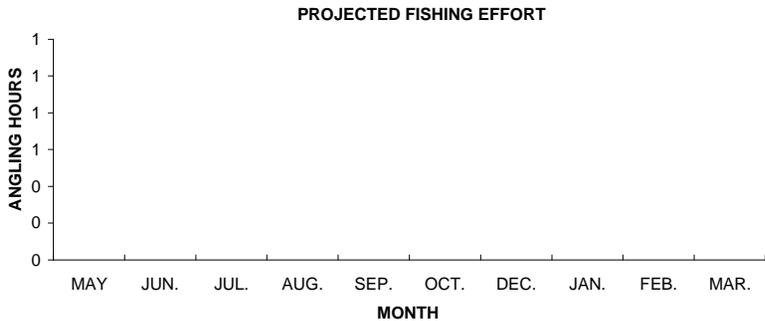
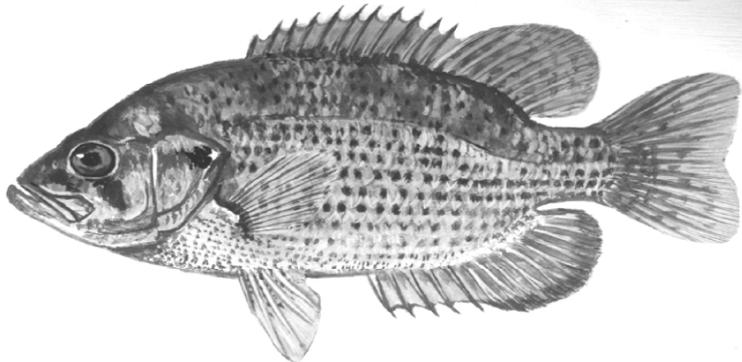


Figure 9. Rock bass sportfishing effort, catch, harvest, and length distribution, Tug Lake, during 2007-08.

# BLACK CRAPPIE

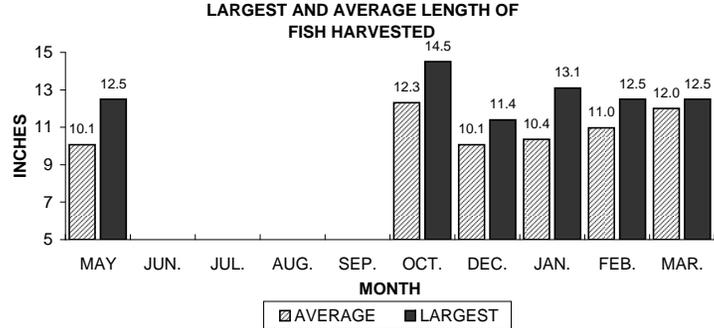
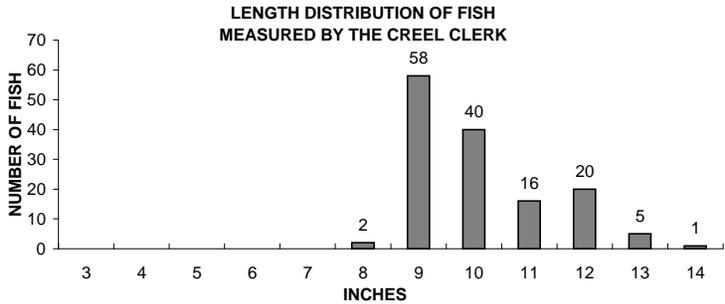
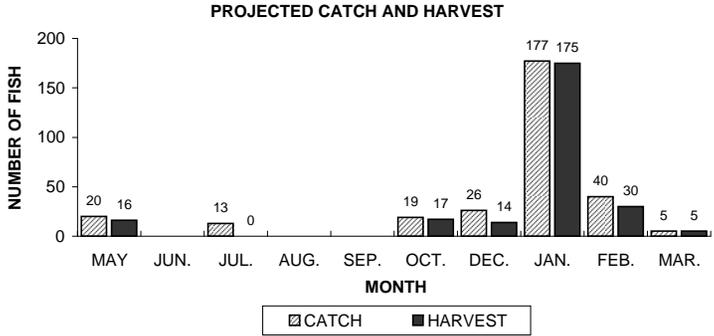
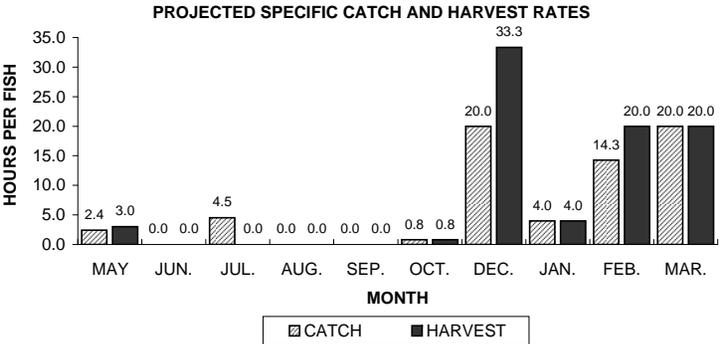
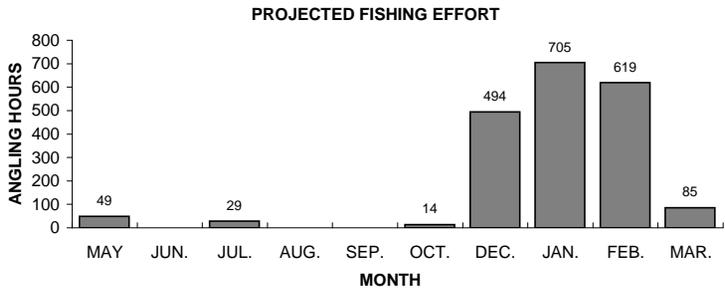
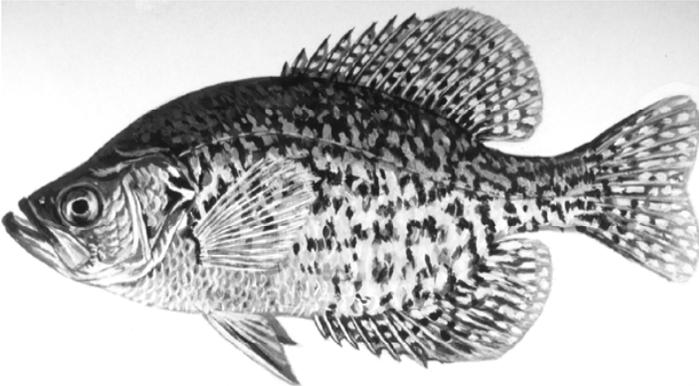


Figure 10. Black crappie sportfishing effort, catch, harvest, and length distribution, Tug Lake, during 2007-08.