

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

BIG LAKE

2021 – 2022 CREEL SURVEY REPORT

VILAS COUNTY



Treaty Fisheries Publication



Created by
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INTRODUCTION

Fish populations can fluctuate due to a variety of factors including natural forces like climate, reproductive success, predation and competition. Human activities such as fish harvest, stocking, habitat change and invasive species introduction can also have significant impacts. The Wisconsin Department of Natural Resources (DNR) fisheries crews regularly conduct fishery surveys on lakes and reservoirs to gather the information needed to monitor changes, identify concerns, evaluate past management actions and to prescribe fishery management strategies. Netting and electrofishing surveys are used to gather data on the status of fish populations and communities, measuring such parameters as species composition, population size, reproductive success, size and age distribution and growth rates. Harvest is another key component of fisheries that we need to measure.

On many lakes in the Ceded Territory of northern Wisconsin, harvest of fish is divided between sport anglers and the six Ojibwe bands who harvest fish under rights reserved by federal treaties. The tribes harvest fish primarily using spearing, a highly efficient method, during a relatively short time in the spring. Every fish in the spear harvest is counted and reported, creating a complete census of the harvest.

We also measure the sport angler harvest to assess its impact on the fishery. It would be highly impractical and very costly to conduct a complete census of every angler who fishes on a lake, so we conduct creel surveys instead.

A creel survey is an assessment tool used to sample the fishing activities of anglers on a body of water to make estimates of harvest and other fishery parameters. Creel survey clerks work on randomly-selected days and shifts, forty hours per week. The survey is conducted during daylight hours throughout the open season for gamefish from the first Saturday in May through the first Sunday in

March. Creel surveys are not conducted in November when fishing effort is low and ice conditions are often unsafe.

Creel survey clerks travel their lakes using a boat or snowmobile to count the number of anglers at predetermined times and to interview anglers who have completed their fishing trip. Data are collected on what species they fished for, catch, harvest, lengths of fish harvested, marks (fin clips 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 estimate catch and harvest of each species, catch and harvest rates and fishing effort by month, as well as for the year in total. Keep in mind that these are estimates based on the best information available and not a complete accounting of effort, catch and harvest. Accurate estimates require that we sample a sufficient and representative portion of the angling activity on a lake. The accuracy of creel survey results depends on good cooperation and truthful responses by anglers when a creel clerk interviews them.

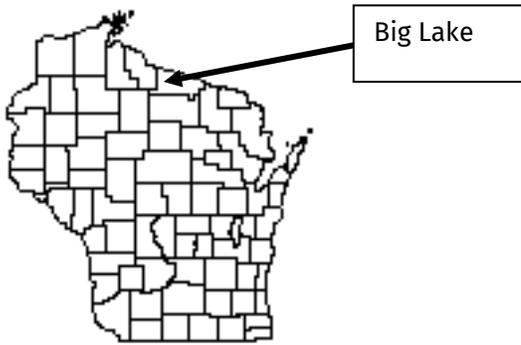
You may have encountered a DNR creel survey clerk on a recent fishing trip. We appreciate your cooperation during an interview. The survey only takes a few minutes of your time and it gives the DNR valuable information needed for management of the fishery.

This report provides estimates of:

1. Overall fishing effort (pressure)
2. Fishing effort directed at each species
3. Numbers of fish caught and harvested
4. Catch and harvest rates

Also included are a physical description of Big Lake, discussion of results of the survey and detailed summaries by species of fishing effort, catch and harvest.

GENERAL LAKE INFORMATION



LOCATION

Big Lake is located in Vilas County near the town of Boulder Junction.

PHYSICAL CHARACTERISTICS

Big Lake is a 835-acre drainage lake with a maximum depth of 61 feet. Littoral substrate consists primarily of sand, gravel and lesser amounts of muck. Big Lake contains medium-hard, neutral, clear water of high transparency.

SEASONS SURVEYED

The period referred to in this report as the 2021-22 fishing season ran from May 1, 2021 through March 6, 2022. The open-water creel survey ran from May 1 through Oct. 31, 2021 and the ice fishing creel survey ran from Dec. 1, 2021 through March 6, 2022.

WEATHER

Ice-out on Big Lake was around mid-April 2021. Fishable ice formed on Big Lake in early December 2021.

FISHING REGULATIONS

The following seasons, daily bag limits and length limits were in place on Big Lake during the 2021-22 fishing season:

SPECIES	SEASON	BAG LIMIT	MIN. SIZE
Largemouth Bass	5/ 01-3/ 06	Catch&Release	
Smallmouth Bass	5/ 01-3/ 06	Catch&Release	
Musky	5/ 29-12/ 31	1	40"
	On open water		
Northern Pike	5/ 01-3/ 06	5	None
Walleye	5/ 01-3/ 06	3	None
	Only one fish can be over 14"		
Panfish	Open all year	25	None
Rock Bass	Open all year	None	None

SPECIES CATCH AND HARVEST INFORMATION

Summaries of angling effort, catch and harvest information for each species are in Table 2 and Figures 1-10, along with a comparison of these statistics with the previous creel survey in Table 2. Information about species with fishing seasons extending beyond March 6 should be considered minimum estimates. Each species page has up to five graphs depicting the following:

- DIRECTED FISHING EFFORT**
The estimated number of hours during each month that anglers spent fishing for a species.
- TOTAL CATCH AND HARVEST**
The estimated number of fish of the indicated species caught or harvested by all anglers, regardless of targeted species.
- SPECIFIC CATCH AND HARVEST RATES**
The estimated 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.
- LENGTH DISTRIBUTION OF HARVESTED FISH**
All fish of a species that were measured by the clerk during the entire creel survey season.
- LARGEST AND AVERAGE LENGTH OF HARVESTED FISH**
The largest and average (mean) length of a species of fish harvested. Only fish measured by the creel survey clerk are reported.

CREEL SURVEY RESULTS AND DISCUSSION

SURVEY LOGISTICS

We encountered no unusual problems conducting the survey or calculating the projections contained in the report. This was the second time the DNR conducted a creel

survey on Big Lake. The last creel survey took place in 1995-96.

GENERAL ANGLER INFORMATION

Anglers spent 17,136 hours, or 20.5 hours per acre, fishing Big Lake during the 2021-22 season (Table 1). That was less than the Vilas County average of 33.8 hours per acre and less than the fishing effort documented during the 1995-96 creel survey (29.8 hours per acre). June was the most heavily fished month (4,011 hours), and fishing effort was lightest in February (63 hours). The creel clerks were able to conduct 658 interviews throughout the survey.

RESULTS BY SPECIES

WALLEYE (Table 2, Figure 1)

Walleye received the most fishing effort of any gamefish species during the season. Anglers spent 5,591 hours targeting Walleye. The greatest fishing effort for Walleye was in July (932 hours). February had the least amount of Walleye fishing effort (63 hours). The total catch of Walleye was 1,938 fish, with a harvest of 900. Both the highest catch (782 fish) and the highest harvest (269 fish) occurred in October. Anglers fished an estimated 3.0 hours to catch and 6.4 hours to harvest a Walleye during the survey. The mean length of harvested Walleye was 14.4 inches and the largest measured was a 22.8-inch fish.

NORTHERN PIKE (Table 2, Figure 2)

Fishing effort directed at Northern Pike was 411 hours during the season. Northern Pike fishing effort was greatest in September (76 hours). The total catch of Northern Pike was 79 fish, with a harvest of 15. Anglers fished an estimated 67.6 hours to catch a Northern Pike during the survey. The mean length of harvested Northern Pike was 24.9 inches and the largest measured was a 27.2-inch fish.

MUSKELLUNGE (Table 2, Figure 3)

Anglers spent 4,874 hours targeting Muskellunge during the season. Muskellunge fishing effort was greatest in July (1,243 hours). The total catch of Muskellunge was 221 fish and the highest catch (60 fish)

occurred in July. Anglers fished an estimated 31.4 hours to catch a Muskellunge and there was no documented harvest during the survey.

SMALLMOUTH BASS (Table 2, Figure 4)

Fishing effort targeted at Smallmouth Bass was 5,493 hours during the season. Smallmouth Bass fishing effort was greatest in June (1,760 hours). The total catch of Smallmouth Bass was 5,502 fish, with no fish harvested. The highest catch (2,102 fish) occurred in June. Anglers fished an estimated 1.2 hours to catch a Smallmouth Bass during the survey.

LARGEMOUTH BASS (Table 2, Figure 5)

Fishing effort directed at Largemouth Bass was 1,936 hours during the season. Largemouth Bass fishing effort was greatest in June (718 hours). Total catch of Largemouth Bass was 1,311 fish, with a harvest of 0 fish. The highest catch (420 fish) occurred in June. Anglers fished an estimated 2.9 hours to catch a Largemouth Bass during the survey.

PANFISH (Table 2, Figures 6-10)

YELLOW PERCH received 585 hours of directed fishing effort. The total catch of Yellow Perch was 1,980 fish, with 105 harvested. The mean length of Yellow Perch harvested was 7.5 inches.

BLUEGILL received 1,487 hours of directed fishing effort. The total catch of Bluegill was 3,788 fish, with 651 harvested. The mean length of Bluegill harvested was 7.1 inches.

BLACK CRAPPIE was the most sought after panfish species during the survey. Black Crappie received 1,769 hours of directed fishing effort. Anglers caught 2,138 Black Crappie and harvested 1,331. The mean length of Black Crappie harvested was 10.7 inches.

PUMPKINSEED received 59 hours of directed fishing effort. Anglers caught 236 Pumpkinseed and harvested 30. The mean length of Pumpkinseed harvested was 6.5 inches.

ROCK BASS received 0 hours of fishing effort. However, anglers incidentally caught 622 Rock

Bass and harvested 96. The mean length of Rock Bass harvested was 6.6 inches.

ACKNOWLEDGMENTS

The DNR would like to 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.

We also thank the Northern Highland American Legion State Forest who generously allowed the DNR to keep a boat and snowmobile on their property during this survey.

Completion of this survey was possible because of the efforts of the following fisheries management and treaty fisheries staff: John Kubisiak, Lawrence Eslinger, Joelle Underwood, Jason Halverson, Eric Brown, Bob Consolo and Evan Priebe. Creel clerks on Big Lake during the survey period were Matt Lorenzoni and Mike Rynski.

This creel report was reviewed by John Kubisiak, Lawrence Eslinger and Eric Weglietner of the DNR.

Additional copies of this report and those covering other local lakes can be obtained from the DNR Woodruff Service Center or online at:

<http://dnr.wisconsin.gov/topic/Fishing/north/trtycrlsrvys.html>

Table 1. Sportfishing effort summary, Big Lake, 2021-22 season; compared to 1995-96 creel results, Vilas County averages, and Ceded Territory averages.

Month	Number of Angler Party Interviews	Total Angler Hours	Total Angler Hours/Acre	1995-96 Total Angler Hours/Acre	Vilas County Average Hours/Acre	Ceded Territory Average Hours/Acre
May	96	2,475	3.0	4.5	5.2	4.8
June	129	4,011	4.8	6.4	6.7	6.2
July	118	3,643	4.4	6.8	7.1	6.6
August	91	2,476	3.0	4.8	6.2	5.2
September	120	2,327	2.8	3.4	4.1	3.2
October	90	1,770	2.1	3.4	1.9	1.4
December	5	191	0.2	0.2	0.6	1.1
January	6	181	0.2	0.1	0.9	1.7
February	3	63	0.1	0.2	1.0	1.6
March	0	0	0.0	0.0	0.2	0.2
Summer Total	644	16,702	20.0	29.4	31.3	27.3
Winter Total	14	434	0.5	0.5	2.7	4.6
Grand Total	658	17,136	20.5	29.8	33.8	31.5

Note: Summer is May-October; Winter is December-March

Number of Angler Party Interviews is the number of groups of anglers interviewed by the creel clerk. A party is considered the members of a group who fish together in the same boat, ice shanty or from shore. The clerk fills out one interview form for each group of anglers. The number of individual anglers actually contacted by the clerk is usually much greater than the number of groups listed in this table since most groups consist of more than one angler.

Total Angler Hours is the estimated total number of hours that anglers spent fishing on Big 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 in order to compare effort on Big Lake to other lakes.

1995-96 Total Angler Hours/Acre is the total angler hours divided by the area of the lake in acres. This is from the previous creel survey that took place on Big Lake.

County Average Hours/Acre is the average angler effort in hours per acre for county lakes that have been surveyed since 1990. This value is useful for fishing pressure comparisons with other waters.

Ceded Territory Average Hours/Acre is the average angler effort in hours per acre for inland lakes in the Ceded Territory that have been surveyed since 1990. This value can be used to compare Big Lake to other lakes in northern Wisconsin.

Table 2. Comparison of creel survey synopses, Big Lake, 2021-22 and 1995-96 fishing seasons.

CREEL YEAR: 2021-22

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	5,591	25.2%	1,938	3.0	900	6.4	14.4
Northern Pike	411	1.9%	79	67.6	15	67.6	24.9
Muskellunge	4,874	22.0%	221	31.4	0	*	**
Smallmouth Bass	5,493	24.7%	5,502	1.2	0	*	**
Largemouth Bass	1,936	8.7%	1,311	2.9	0	*	**
Yellow Perch	585	2.6%	1,980	1.5	105	*	7.5
Bluegill	1,487	6.7%	3,788	0.6	651	3.3	7.1
Black Crappie	1,769	8.0%	2,138	0.9	1,331	1.4	10.7
Pumpkinseed	59	0.3%	236	1.4	30	4.3	6.5
Rock Bass	0	0.0%	622	*	96	*	6.6

CREEL YEAR: 1995-96

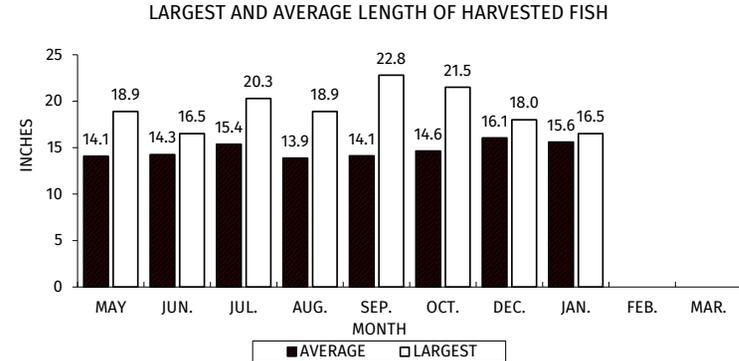
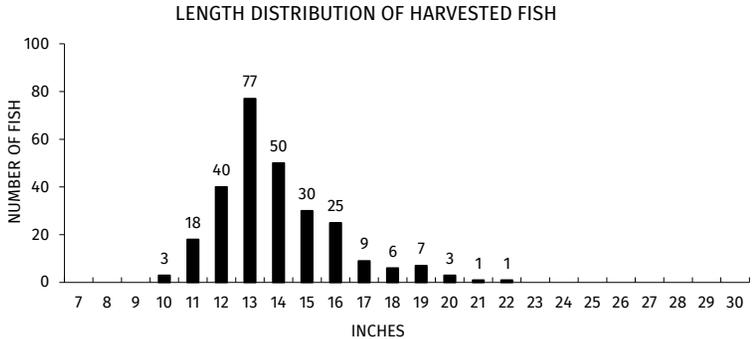
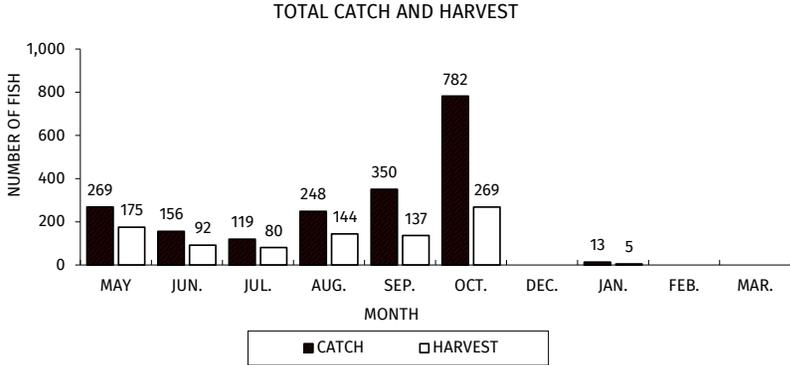
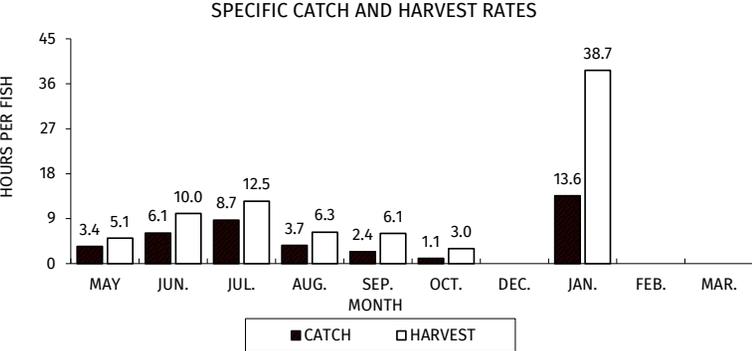
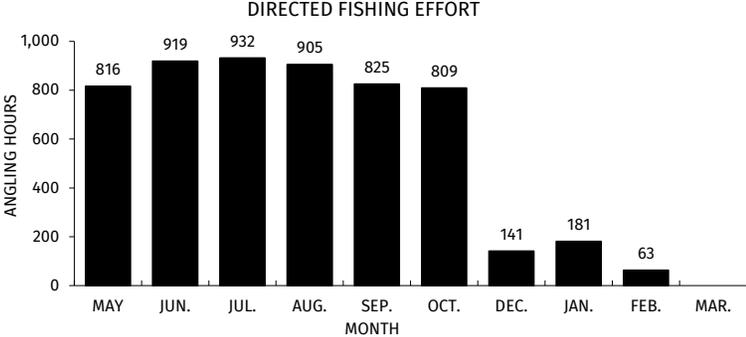
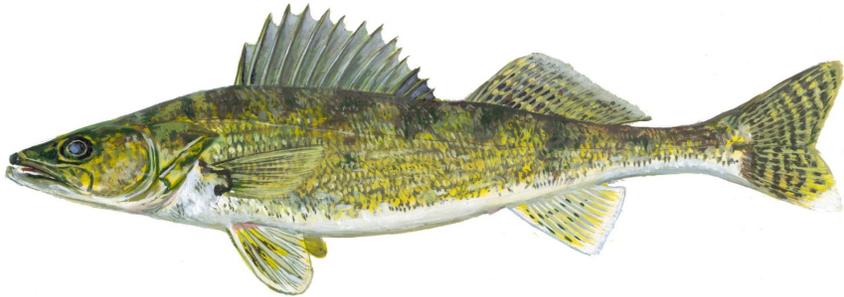
SPECIES	DIRECTED EFFORT (Hours)	PERCENT OF TOTAL	TOTAL CATCH	SPECIFIC CATCH RATE (Hrs/Fish)	TOTAL HARVEST	SPECIFIC HARVEST RATE (Hrs/Fish)	MEAN LENGTH OF HARVESTED FISH
Walleye	8,931	28.1%	3,041	3.0	498	18.1	16.4
Northern Pike	395	1.2%	155	76.9	51	*	24.0
Muskellunge	13,463	42.3%	494	29.8	11	1,250.0	37.5
Smallmouth Bass	1,321	4.2%	229	9.5	34	65.8	14.7
Largemouth Bass	863	2.7%	80	16.6	20	79.4	14.5
Yellow Perch	2,815	8.9%	6,015	0.9	1,030	4.1	8.1
Bluegill	2,017	6.3%	3,496	0.7	1,276	2.0	7.0
Black Crappie	1,627	5.1%	307	5.8	232	7.0	11.0
Pumpkinseed	103	0.3%	264	0.5	33	5.0	5.8
Rock Bass	262	0.8%	357	1.9	86	10.9	7.0

Note: If a species is not shown in a table, no data was collected by the creel clerks for that species.

* Indicates that no fish of this species were caught or harvested (depending on the column) by anglers who specifically targeted this species.

** Indicates that no fish were measured by the creel clerks for this species.

WALLEYE



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Figure 1. Walleye fishing effort, catch, harvest, and length distribution, Big Lake, during 2021-22.

NORTHERN PIKE

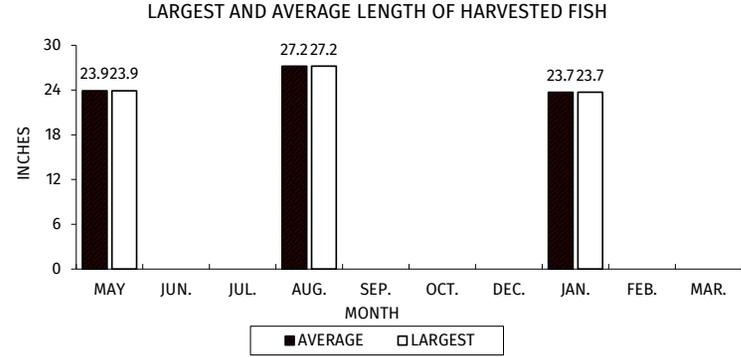
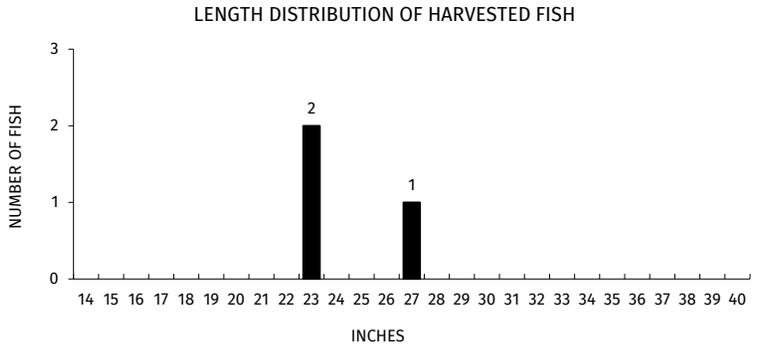
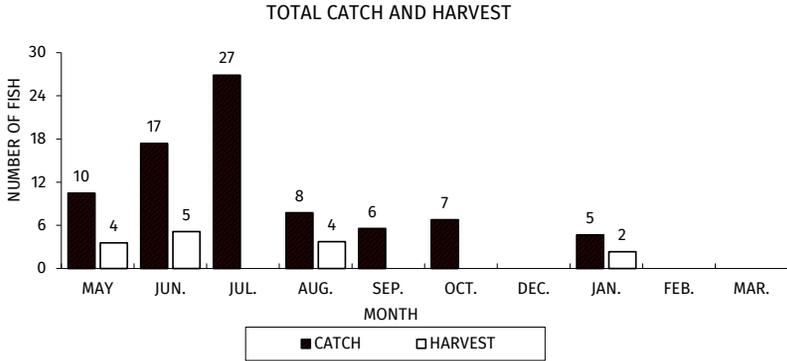
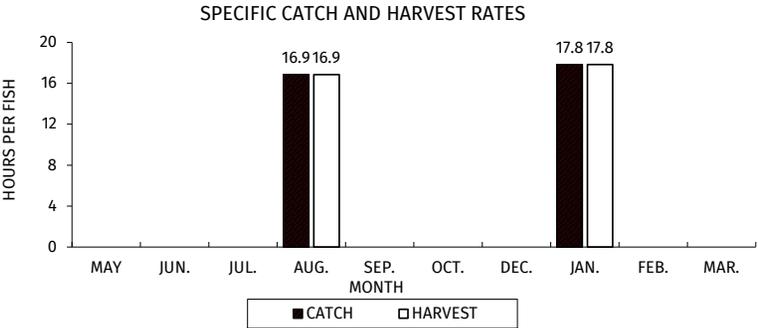
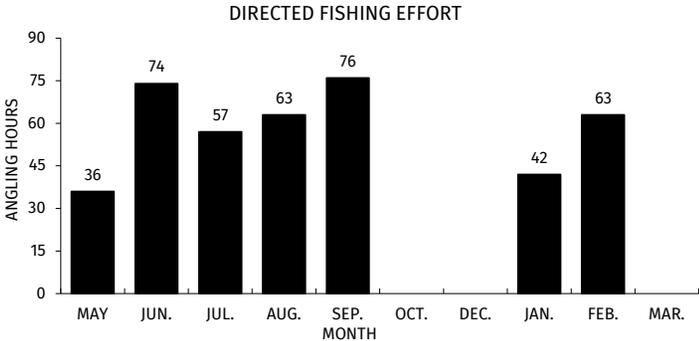
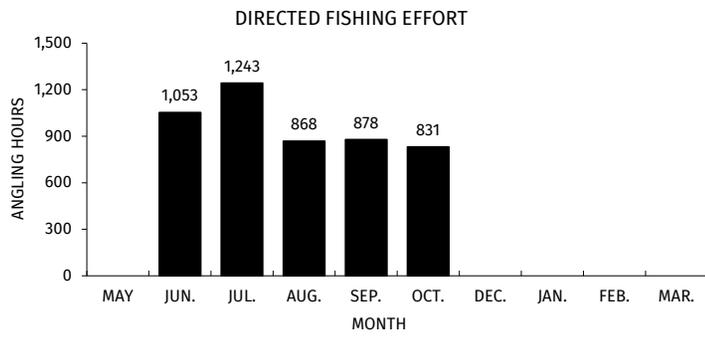


Figure 2. Northern Pike fishing effort, catch, harvest, and length distribution, Big Lake, during 2021-22.



MUSKELLUNGE

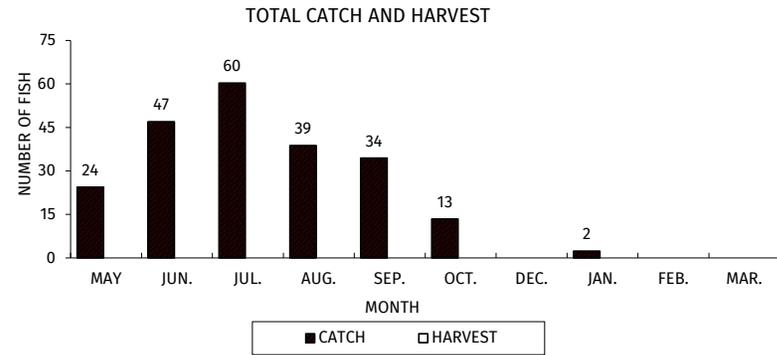
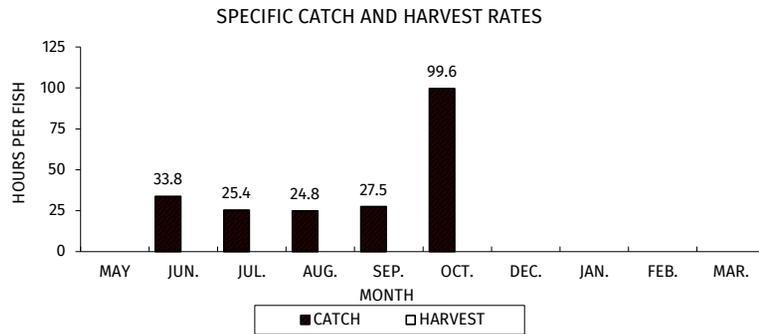


Figure 3. Muskellunge fishing effort, catch and harvest, Big Lake, during 2021-22.

SMALLMOUTH BASS

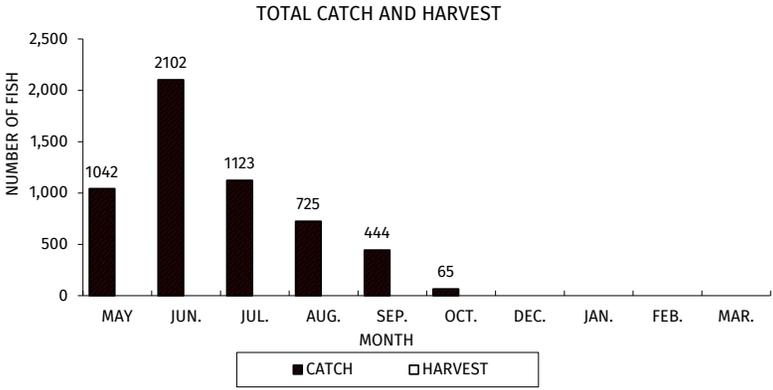
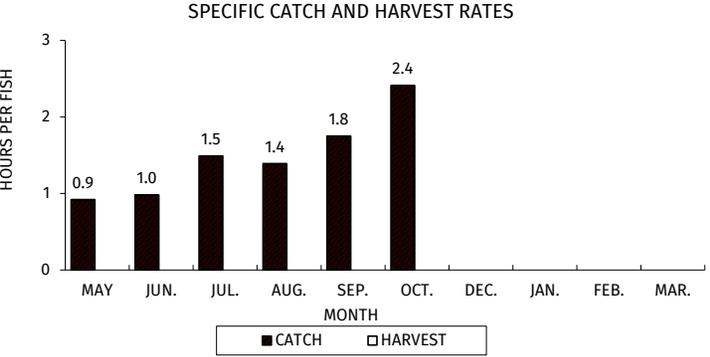
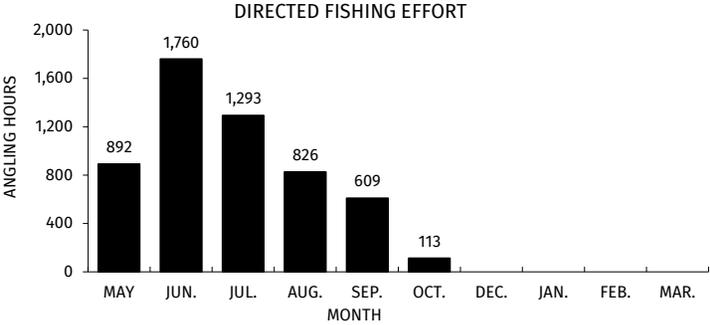


Figure 4. Smallmouth Bass fishing effort, catch and harvest, Big Lake, during 2021-22.

LARGEMOUTH BASS

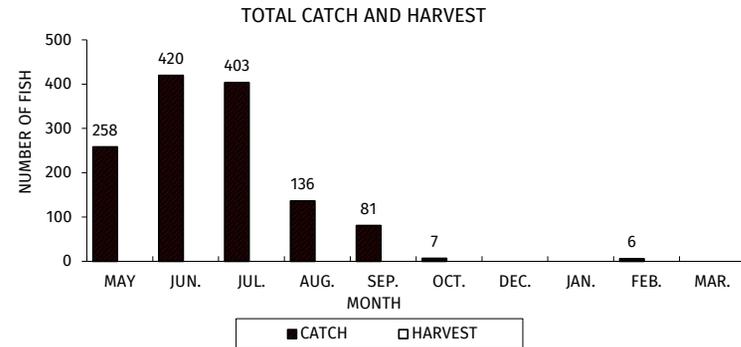
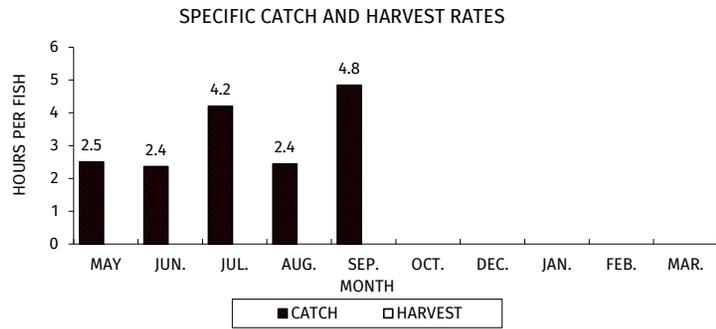


Figure 5. Largemouth Bass fishing effort, catch and harvest, Big Lake, during 2021-22.

YELLOW PERCH

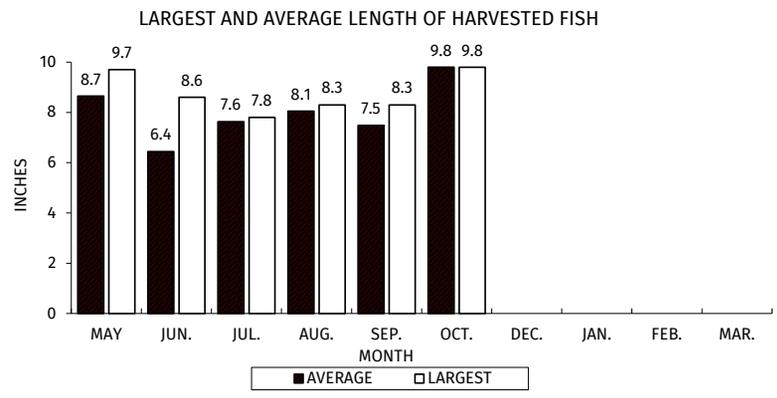
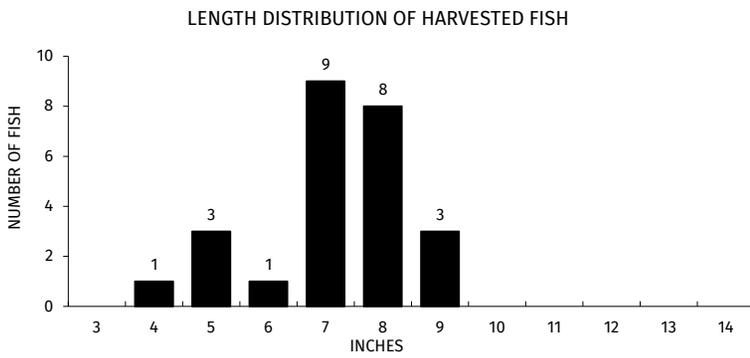
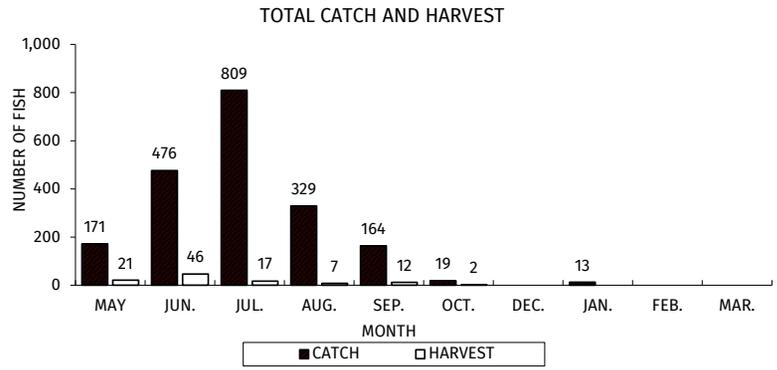
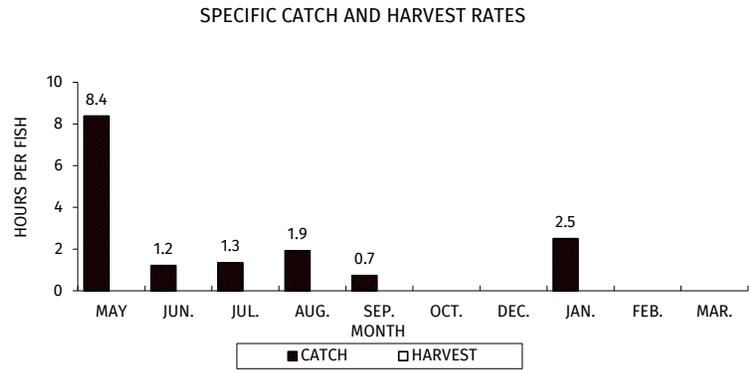
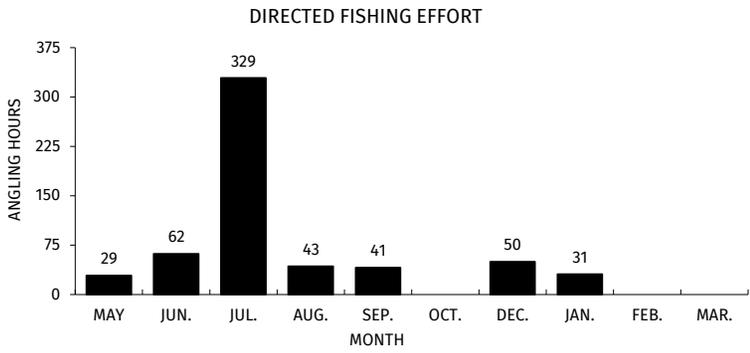


Figure 6. Yellow Perch fishing effort, catch, harvest, and length distribution, Big Lake, during 2021-22.

BLUEGILL

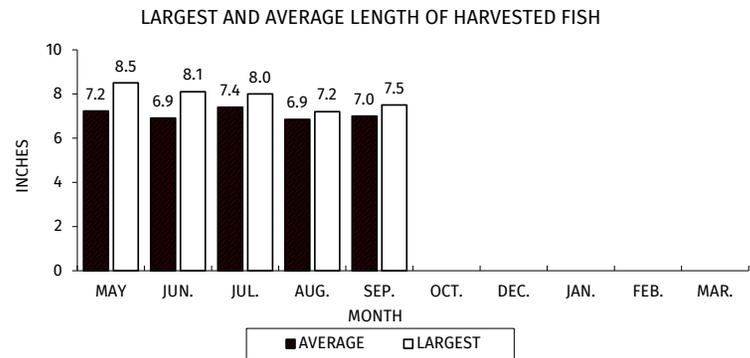
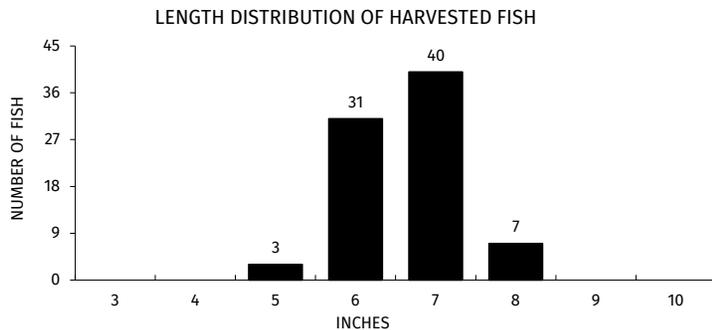
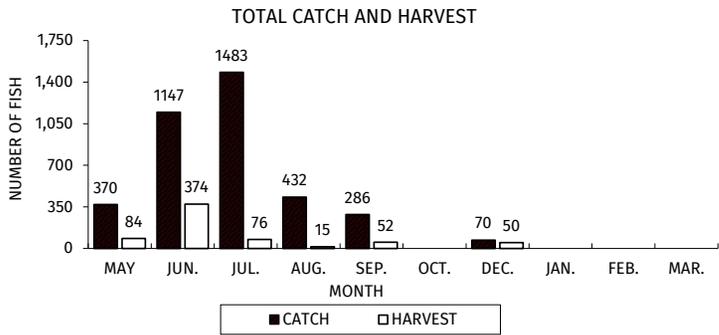
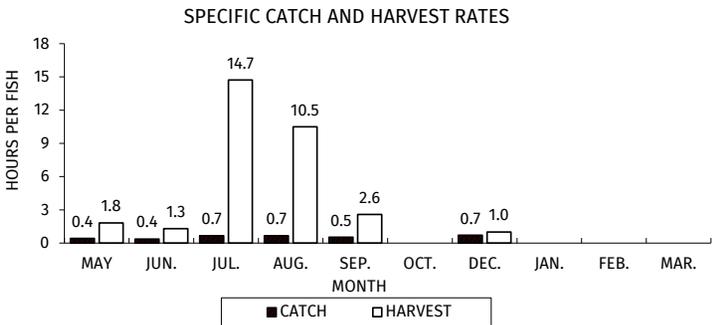
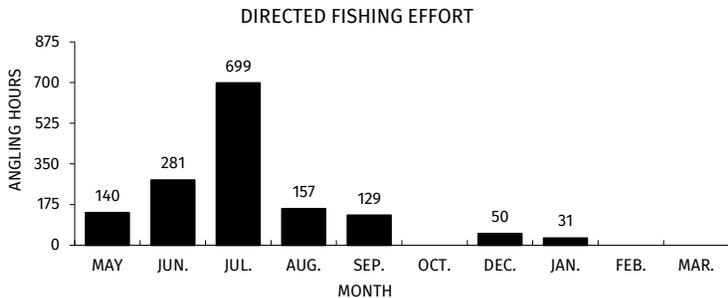


Figure 7. Bluegill fishing effort, catch, harvest, and length distribution, Big Lake, during 2021-22.

BLACK CRAPPIE

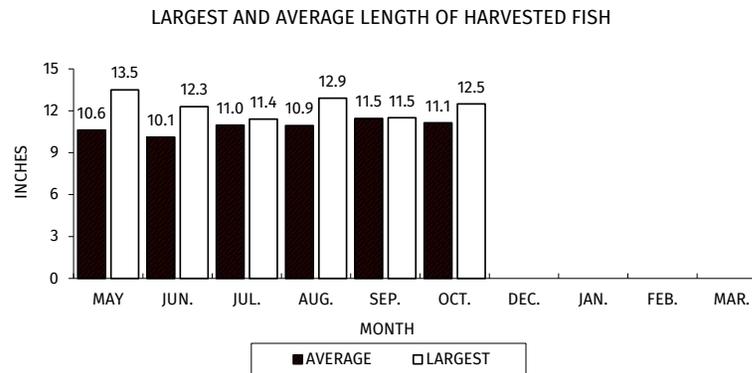
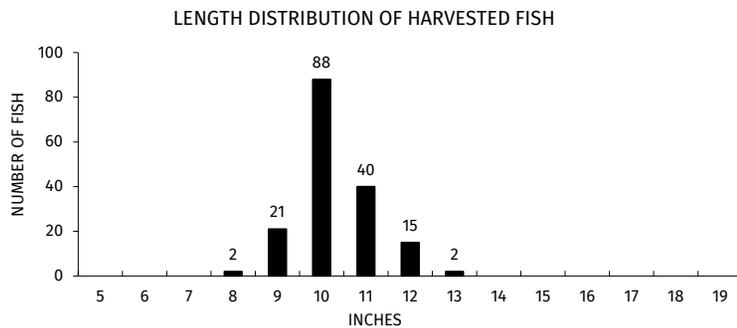
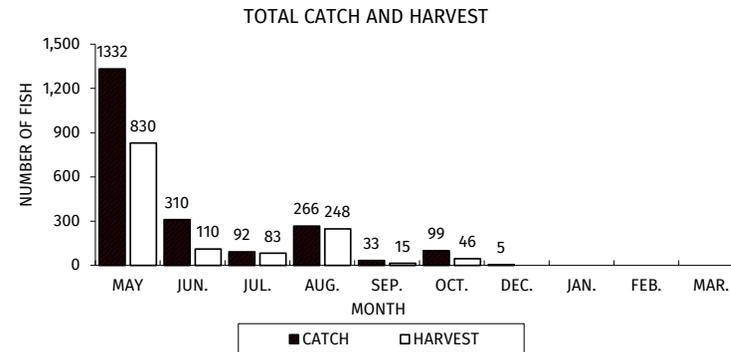
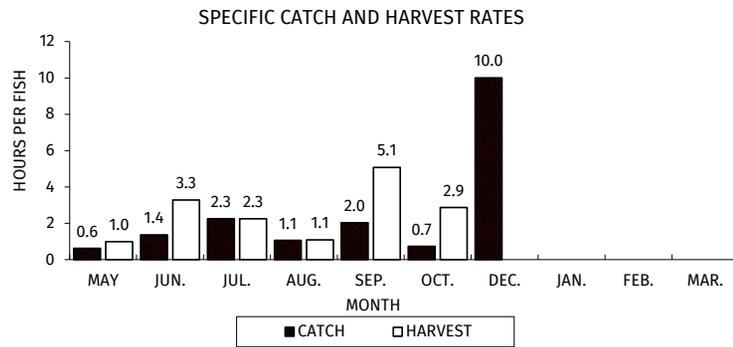
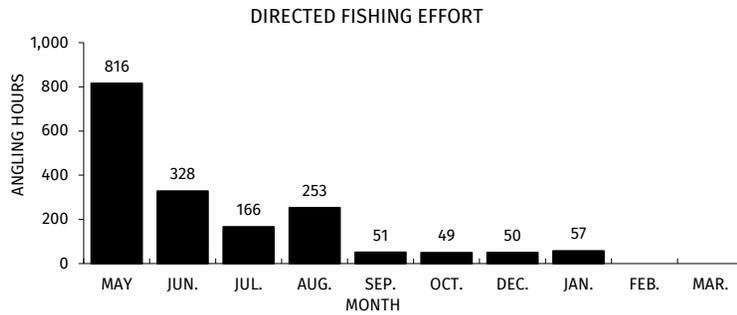
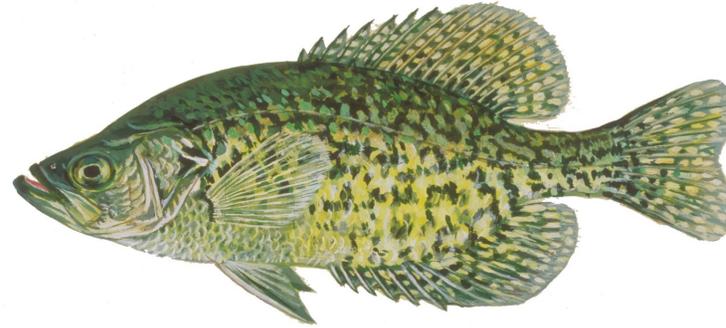


Figure 8. Black Crappie fishing effort, catch, harvest and length distribution, Big Lake, during 2021-22.

PUMPKINSEED

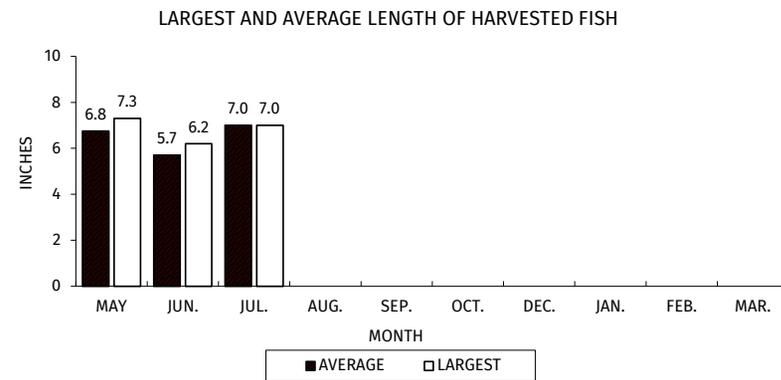
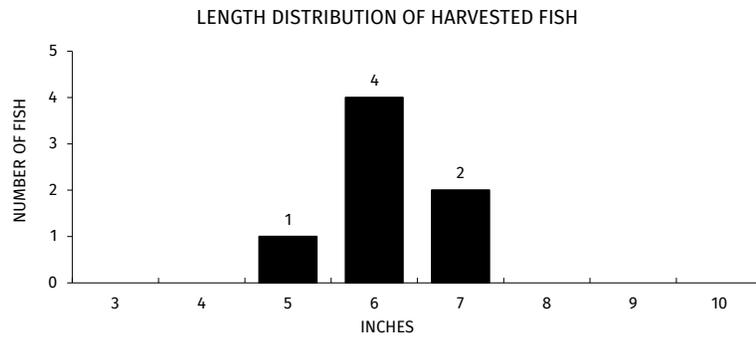
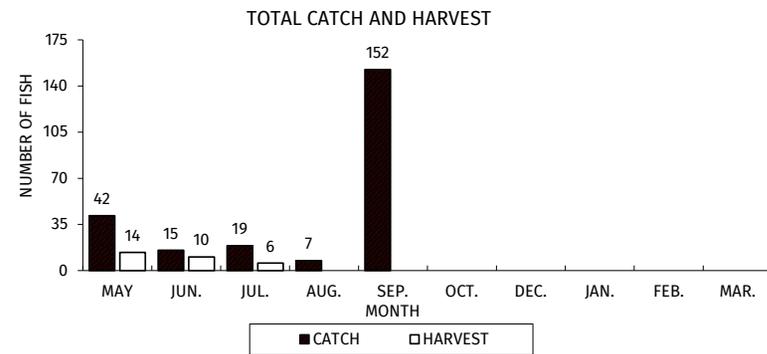
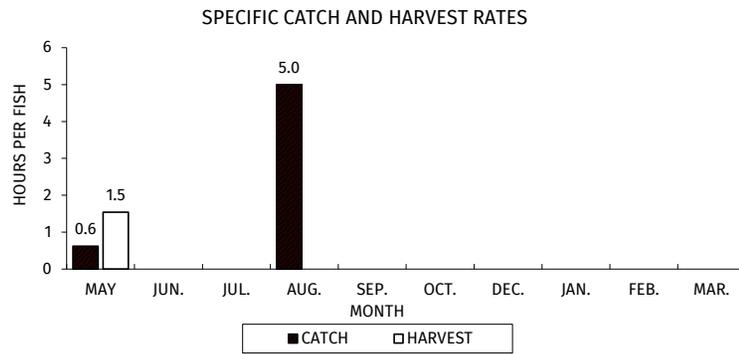
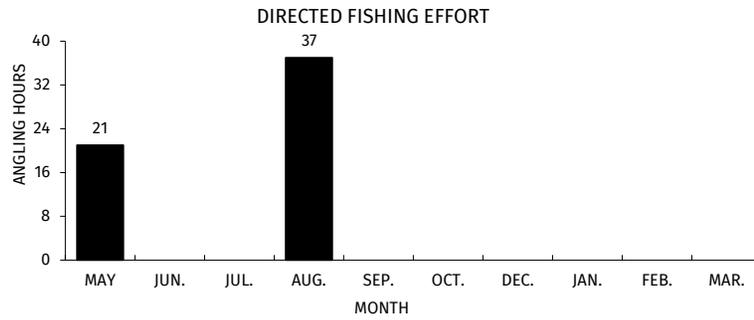
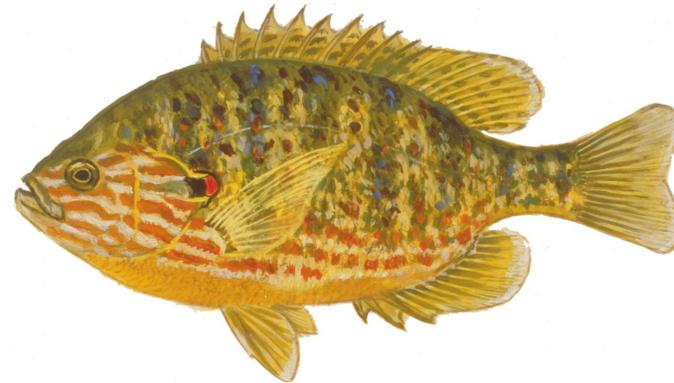


Figure 9. Pumpkinseed fishing effort, catch, harvest, and length distribution, Big Lake, during 2021-22.

ROCK BASS

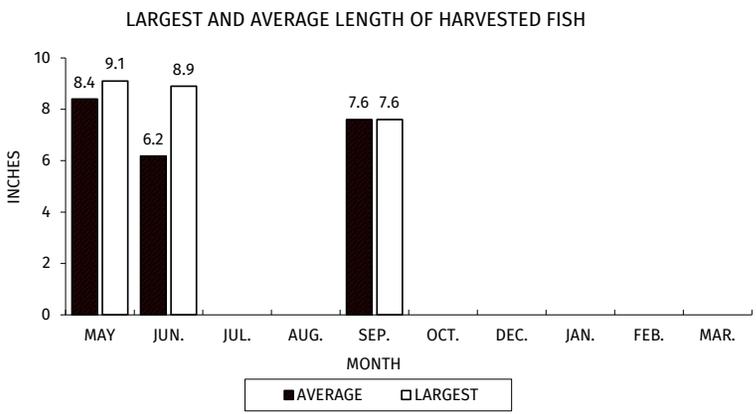
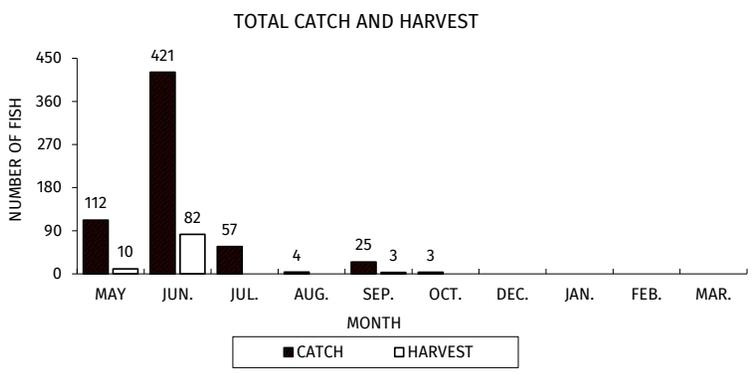


Figure 10. Rock Bass fishing catch, harvest and length distribution, Big Lake, during 2021-22.