

WISCONSIN DEPARTMENT OF NATURAL RESOURCES

# BALSAM LAKE

## 2023 CREEL SURVEY REPORT

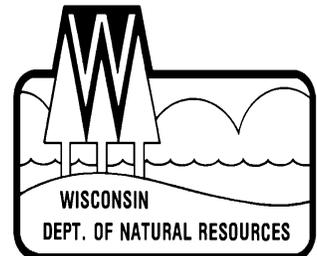
### POLK COUNTY



Treaty Fisheries Publication



Compiled by  
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Fisheries Technician



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Fish Graphics: Virgil Beck, Stevens Point, WI

## 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. 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.

The other key component of the fishery that we often need to measure is angler harvest to assess its impact on the fishery.

On many lakes in the Ceded Territory of northern Wisconsin, the harvest of fish is divided between sport anglers and the six Ojibwe 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.

It would be highly impractical and very costly to conduct a complete census of every angler who fishes on a lake. Therefore, 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, or 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 the open season for gamefish from the first Saturday in May through the first Sunday

in March. Creel surveys are generally not conducted in 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 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 information at the end of a fishing trip 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. 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.

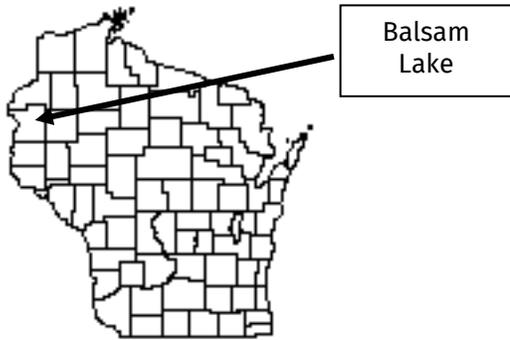
You may have encountered a DNR creel survey clerk on a recent fishing trip. We appreciate your cooperation during an interview. The survey only takes a few minutes of your time, and it gives the DNR valuable information needed for management of the fishery.

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 the lake, discussion of results of the survey, and detailed summaries of fishing effort, catch and harvest.

## GENERAL LAKE INFORMATION



### LOCATION

Balsam Lake is located in Polk County near the town of Balsam Lake.

### PHYSICAL CHARACTERISTICS

Balsam Lake is a 2,054-acre drainage lake with a maximum depth of 37 feet. Littoral substrate consists primarily of gravel, with lesser amounts of muck, sand and rock. Balsam Lake contains soft, slightly acidic, clear water of moderate transparency.

### SEASONS SURVEYED

The open-water creel survey ran from May 6 through Oct. 31, 2023.

### WEATHER

Ice-out on Balsam Lake was around April 23, 2023.

### FISHING REGULATIONS

The following seasons, daily bag limits, and length limits were in place during the surveyed season:

SPECIES	SEASON	BAG LIMIT	MIN. SIZE
Largemouth Bass	5/ 6-3/ 3	5	none
Smallmouth Bass	5/ 6-3/ 3	5	none
Largemouth and Smallmouth Bass Catch and release only all other times of year			
Musky	5/ 27-12/ 31	1	40"
Northern Pike	5/ 6-3/ 3	2	26"
Walleye	5/ 6-3/ 3	3	18"
Panfish	year round	25	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, if available. Information about species with fishing seasons extending beyond the season surveyed should be considered minimum estimates. Each species page has up to five graphs depicting the following:

- ESTIMATED FISHING EFFORT**  
 The estimated number of hours during each month that anglers spent fishing for a species.
- ESTIMATED CATCH AND HARVEST**  
 The estimated number of fish of the indicated species caught or harvested by all anglers, regardless of targeted species.
- ESTIMATED 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 length of a species of fish harvested that month. 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.

## GENERAL ANGLER INFORMATION

Anglers spent 43,230 hours, or 21 hours per acre, fishing Balsam Lake during the 2023 season (Table 1). That was less than the Polk County average of 32 hours per acre, and less than the fishing effort documented during the 2017-18 creel survey (23.6 hours per acre). July was the most heavily fished month (12,384 hours), and fishing effort was lightest in October (1,185 hours). The creel clerks were able to conduct 361 interviews throughout the survey.

## RESULTS BY SPECIES

### WALLEYE (Table 2, Figure 1)

Walleye received 6 percent of the fishing effort during the season. Anglers spent 4,343 hours targeting Walleye. The greatest fishing effort for Walleye was in July (1,394 hours). October had the least amount of Walleye fishing effort (157 hours).

Total catch of Walleye was 592 fish, with a harvest of 48. Highest catch (266 fish) occurred in May, and highest harvest (18 fish) occurred in May and June. Anglers fished an average of 12.4 hours to catch and 370.4 hours to harvest a Walleye during the survey. The mean length of harvested Walleye was 20.5 inches, and the largest measured was a 22-inch fish.

### NORTHERN PIKE (Table 2, Figure 2)

Fishing effort directed at Northern Pike was 5,102 hours during the season. Northern Pike fishing effort was greatest in July (1,718 hours). Total catch of Northern Pike was 3,403 fish, with a harvest of 52. Anglers fished an average of 4.4 hours to catch a Northern Pike during the survey. The mean length of harvested Northern Pike was 25.5 inches, and

the largest measured was a 28-inch fish.

### MUSKELLUNGE (Table 2, Figure 3)

Anglers spent 117 hours targeting Muskellunge during the season. Muskellunge fishing effort was greatest in August (117 hours). There was no documented catch or harvest during the survey.

### SMALLMOUTH BASS (Table 2, Figure 4)

Fishing effort targeted at Smallmouth Bass was 5,310 hours during the season. Smallmouth Bass fishing effort was greatest in July (3,370 hours). Total catch of Smallmouth Bass was 899 fish, with 18 harvested. Highest catch (659 fish) occurred in July. Anglers fished an average of 6.5 hours to catch a Smallmouth Bass during the survey.

### LARGEMOUTH BASS (Table 2, Figure 5)

Fishing effort directed at Largemouth Bass was 27,827 hours during the season. Largemouth Bass fishing effort was greatest in July (8,593 hours). Total catch of Largemouth Bass was 46,701 fish, with a harvest of 2,465. Highest catch (15,637 fish) occurred in July. Anglers fished an average of 0.7 hours to catch a Largemouth Bass during the survey.

### PANFISH (Table 2, Figures 6-10)

**YELLOW PERCH** received 953 hours of directed fishing effort. Total catch of Yellow Perch was 625 fish, with 174 harvested. The mean length of harvested fish was 8.9 inches.

**BLUEGILL** received 15,674 hours of directed fishing effort. Total catch of Bluegill was 57,073 fish, with 20,988 harvested. The mean length of harvested fish was 8.1 inches.

**BLACK CRAPPIE** received 10,331 hours of directed fishing effort. Anglers caught 9,449 Black Crappie and harvested 3,108. The mean length of harvested fish was 9.6 inches.

**PUMPKINSEED** received 2,394 hours of directed fishing effort. Anglers caught 806 Pumpkinseed and harvested 277. The mean length of harvested fish was 7.9 inches.

**ROCK BASS** received no directed fishing effort. Anglers caught 814 Rock Bass and harvested 21. The mean length of harvested fish was 8.5 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 our cooperators, Bob Carruth and Therese Skarda, who generously allowed the DNR to keep a boat on their property during this survey.

Completion of this survey was possible because of the efforts of the following treaty fisheries staff: Angelena Sikora, Gene Hatzenbeler, Todd Brecka, Misty Rood, Matthew Kufahl and Bill Sobaski. Creel clerk during the survey period was Gina Winther.

This creel report was reviewed by Angelena Sikora and Gene Hatzenbeler.

Additional copies of this report, and those covering other local lakes, can be obtained online at:

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

**Table 1. Sportfishing effort summary, Balsam Lake, 2023 season; compared to 2017 creel results, Polk County averages, and Ceded Territory averages.**

Month	Number of Angler Party Interviews	Total Angler Hours	Total Angler Hours/Acre	2017 Total Angler Hours/Acre	Polk County Average Hours/Acre	Ceded Territory Average Hours/Acre
May	46	7,492	3.6	4.5	6.4	4.8
June	79	11,932	5.8	6.3	8.1	6.2
July	96	12,384	6.0	6.0	7.7	6.6
August	66	6,145	3.0	3.3	5.6	5.2
September	51	4,092	2.0	2.8	3.2	3.2
October	23	1,185	0.6	0.7	0.9	1.4
Summer Total	361	43,230	21.0	23.6	32.0	27.4
Grand Total	361	43,230	21.0	23.6	42.2	32.0

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 Balsam 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 Balsam Lake to other lakes.

**2017 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 Balsam 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 Balsam Lake to other lakes in northern Wisconsin.

**Table 2. Comparison of creel survey synopses, Balsam Lake, 2023 and 2017 fishing seasons.**

**CREEL YEAR: 2023**

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	4,343	6.0%	592	12.4	48	370.4	20.5
Northern Pike	5,102	7.1%	3,403	4.4	52	250.0	25.5
Muskellunge	117	0.2%	0	*	0	*	**
Smallmouth Bass	5,310	7.4%	899	6.5	18	294.1	14.0
Largemouth Bass	27,827	38.6%	46,701	0.7	2,465	12.7	13.7
Yellow Perch	953	1.3%	625	4.3	174	8.5	8.9
Bluegill	15,674	21.8%	57,073	0.3	20,988	0.7	8.1
Black Crappie	10,331	14.3%	9,449	1.2	3,108	3.3	9.6
Pumpkinseed	2,394	3.3%	806	4.0	277	11.1	7.9
Rock Bass	0	0.0%	814	*	21	*	8.5
Brown Bullhead	0	0.0%	20	*	0	*	**
Warmouth	0	0.0%	85	*	0	*	**

∞

**CREEL YEAR: 2017**

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	1,465	2.0%	261	7.8	24	*	**
Northern Pike	4,105	5.7%	1,831	5.2	99	126.0	28.9
Smallmouth Bass	1,409	1.9%	1,253	1.3	27	53.2	**
Largemouth Bass	23,264	32.1%	49,727	0.6	3,185	10.8	12.7
Yellow Perch	3,045	4.2%	1,773	5.0	710	15.5	9.4
Bluegill	22,333	30.8%	65,570	0.4	26,480	1.1	8.2
Black Crappie	12,196	16.8%	21,115	0.6	10,082	1.5	9.8
Pumpkinseed	3,147	4.3%	989	3.9	751	7.4	7.7
Rock Bass	0	0.0%	3,048	*	64	*	7.9
Green Sunfish	1,597	2.2%	530	5.2	409	6.9	7.6

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

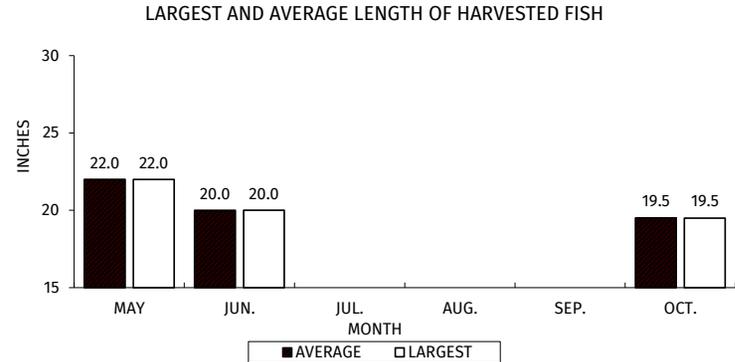
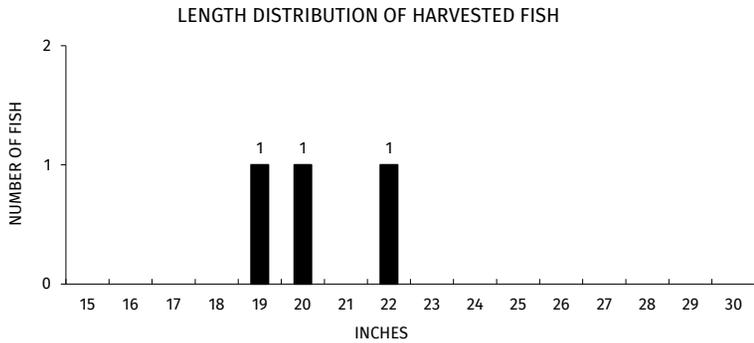
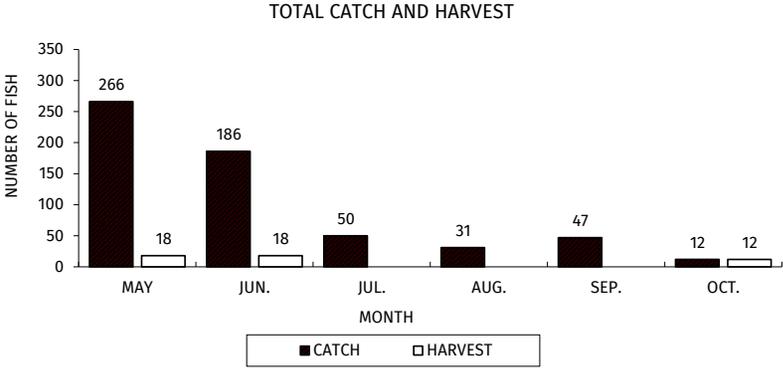
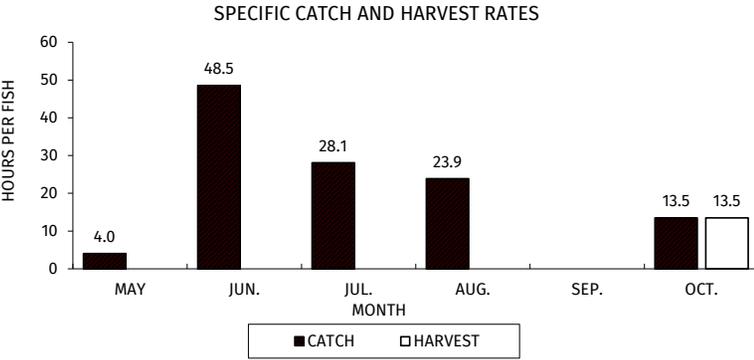
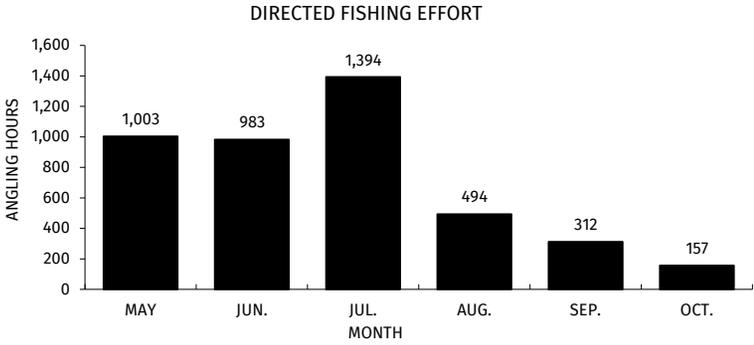
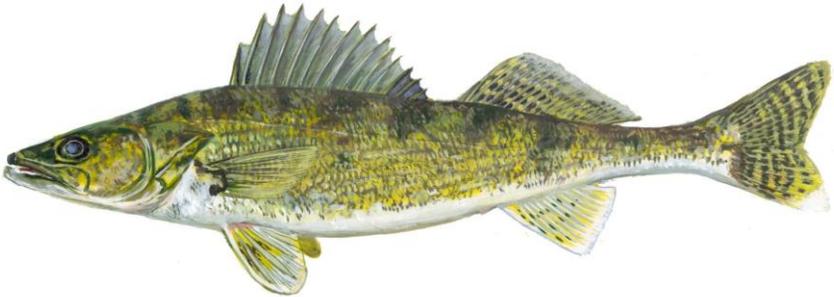


Figure 1. Walleye sportfishing effort, catch, harvest, and length distribution, Balsam Lake, during 2023.

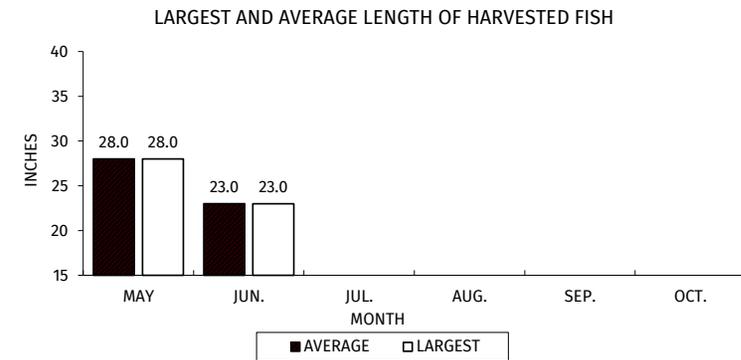
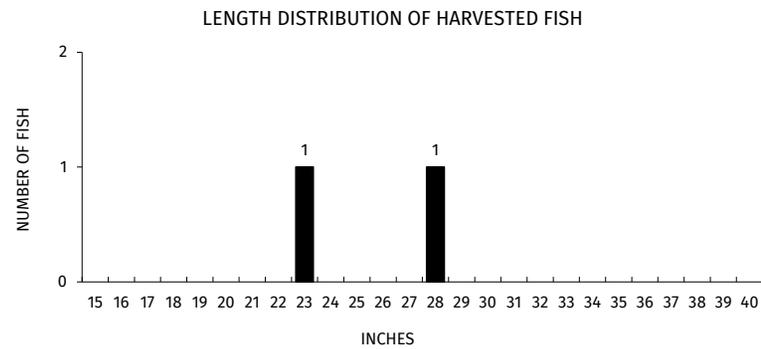
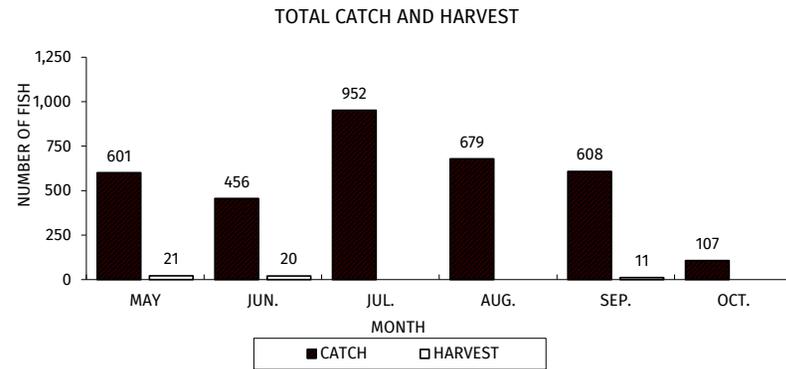
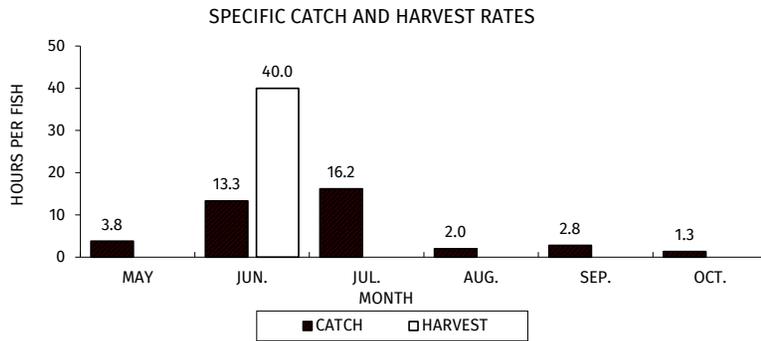
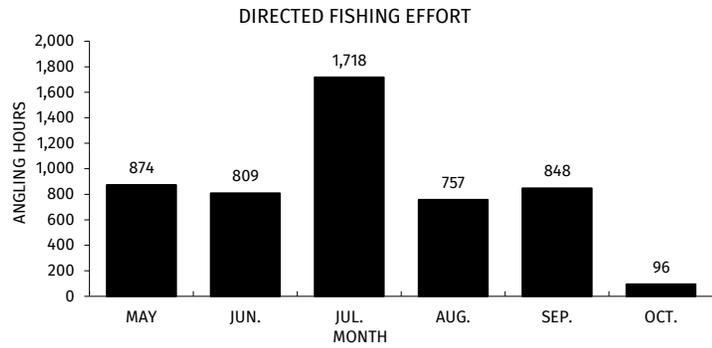
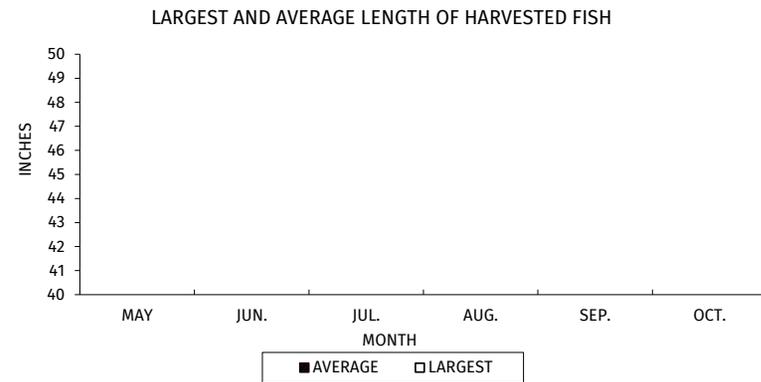
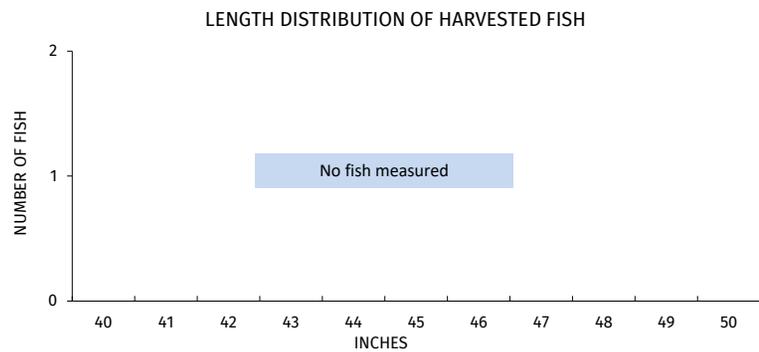
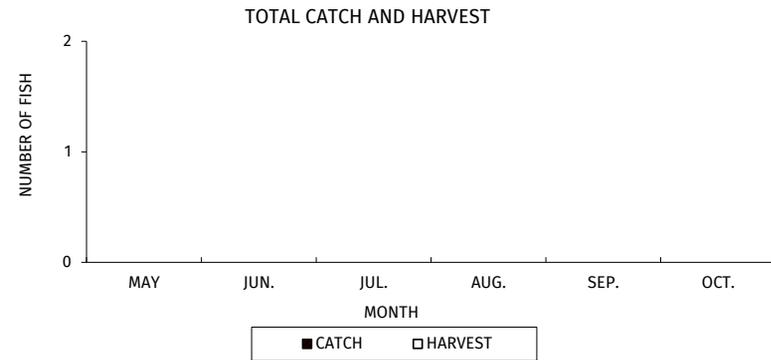
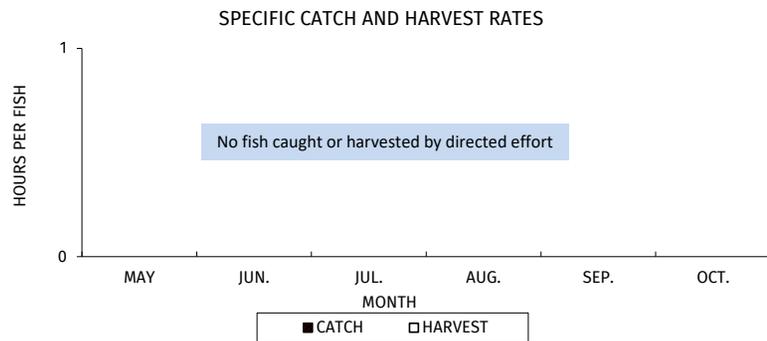
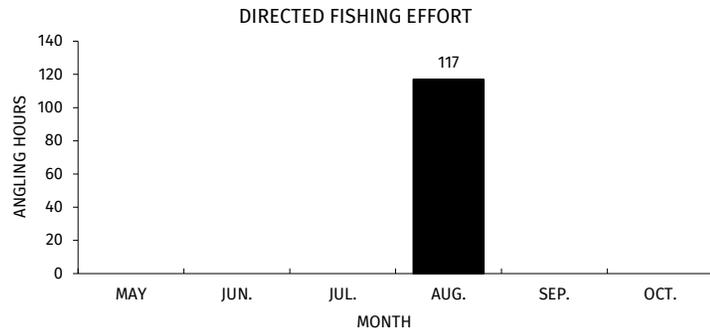


Figure 2. Northern Pike sportfishing effort, catch, harvest, and length distribution, Balsam Lake, during 2023.

# MUSKELLUNGE



**Figure 3. Muskellunge sportfishing effort, catch, harvest, and length distribution, Balsam Lake, during 2023.**

# SMALLMOUTH BASS

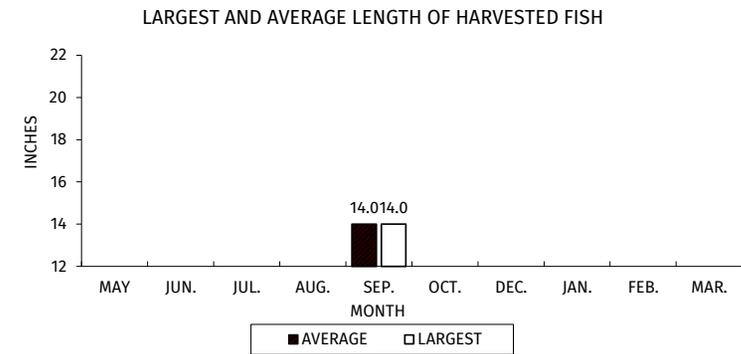
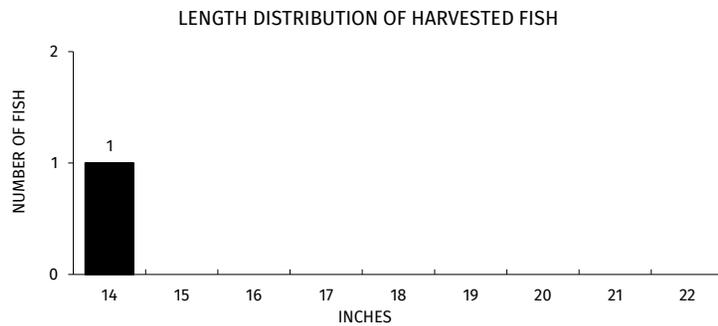
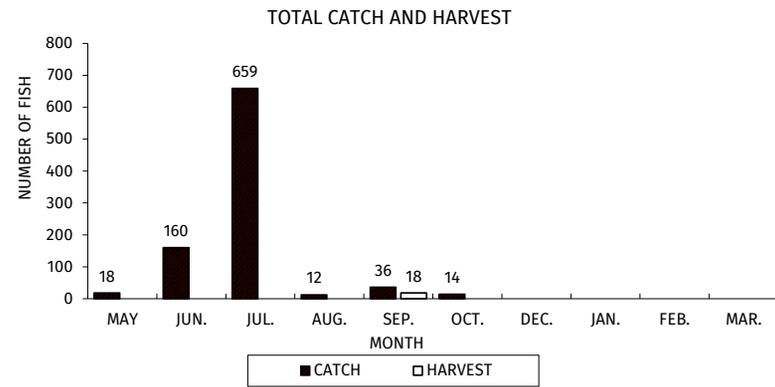
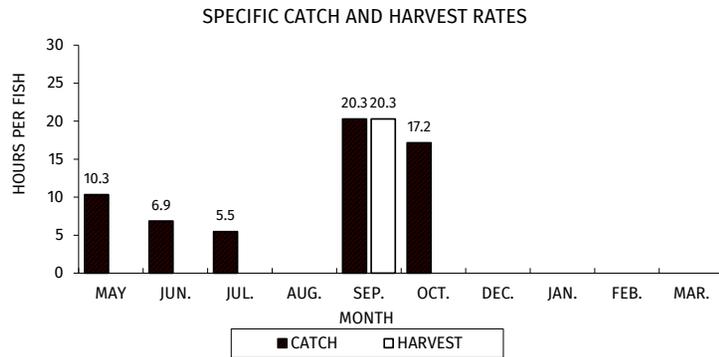
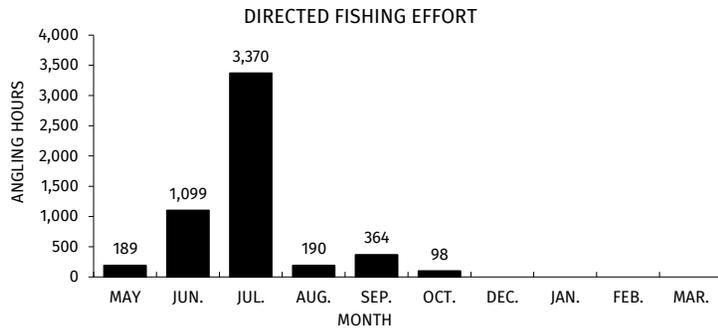


Figure 4. Smallmouth Bass sportfishing effort, catch, harvest, and length distribution, Balsam Lake, during 2023.

# LARGEMOUTH BASS

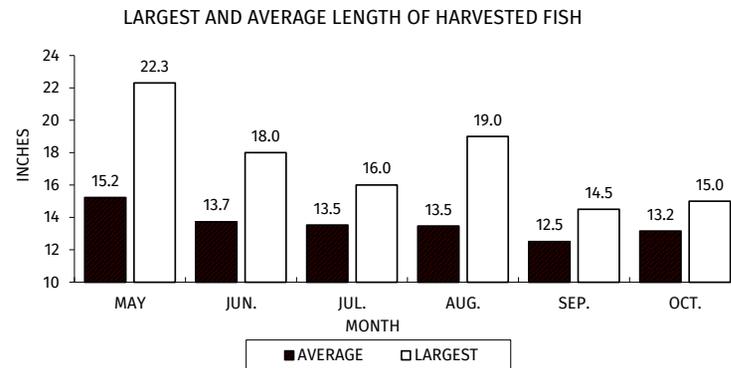
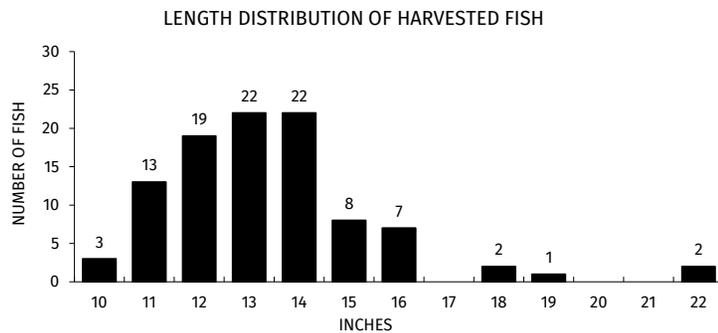
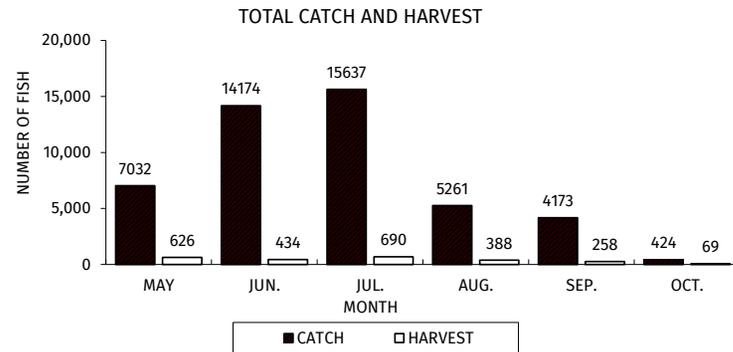
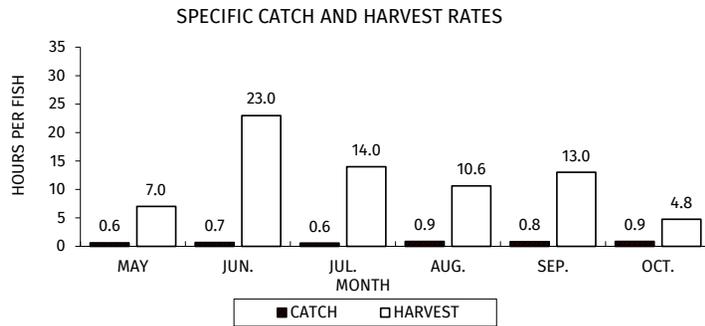
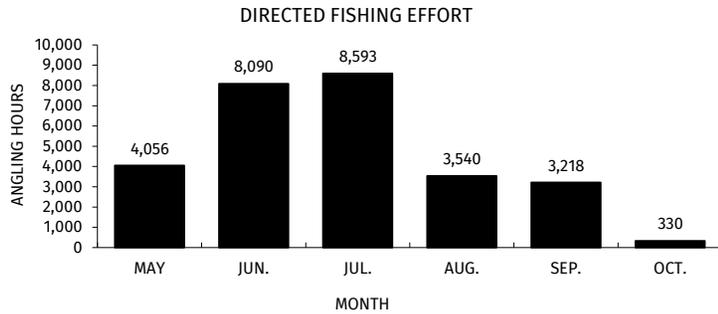


Figure 5. Largemouth Bass sportfishing effort, catch, harvest, and length distribution, Balsam Lake, during 2023.

# YELLOW PERCH

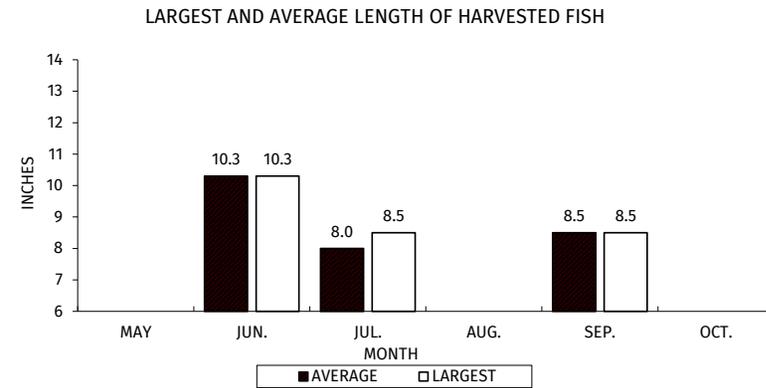
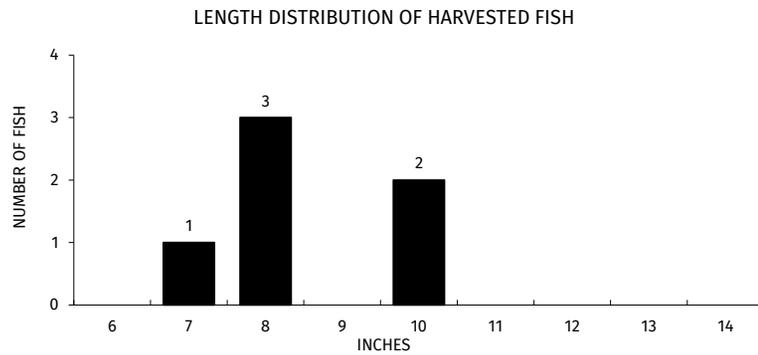
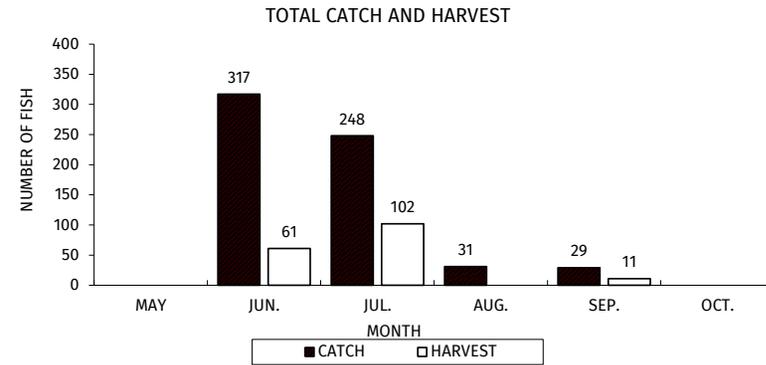
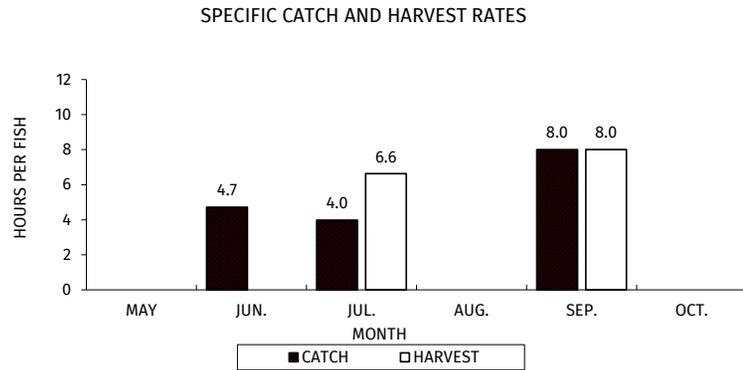
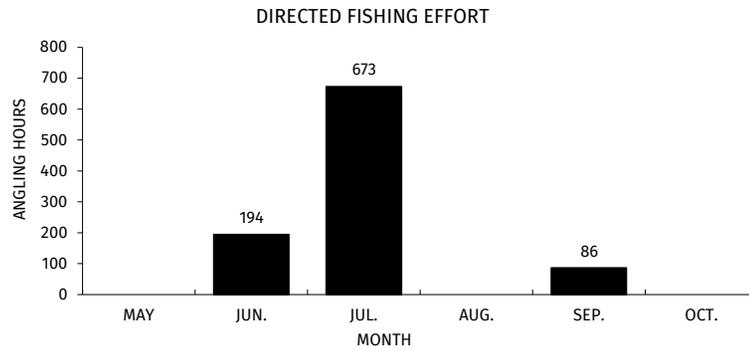


Figure 6. Yellow Perch sportfishing effort, catch, harvest, and length distribution, Balsam Lake, during 2023.

# BLUEGILL

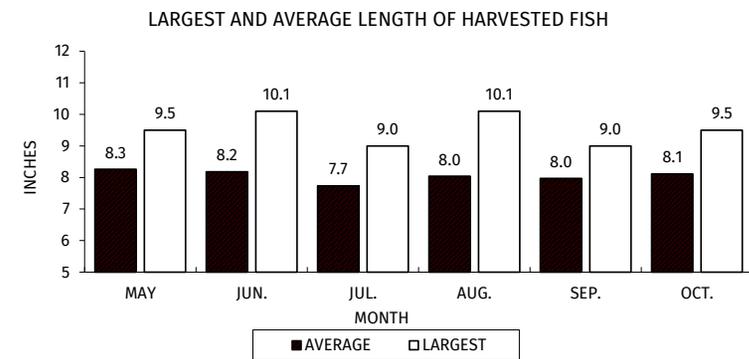
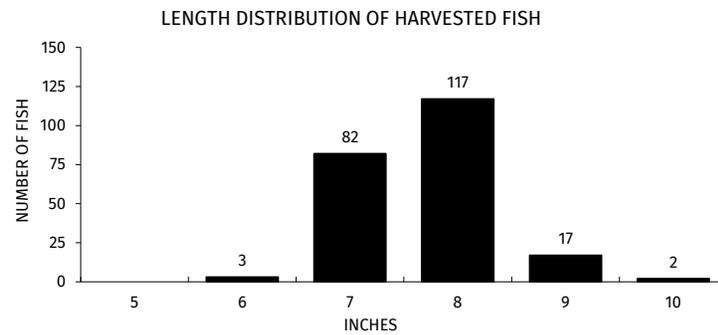
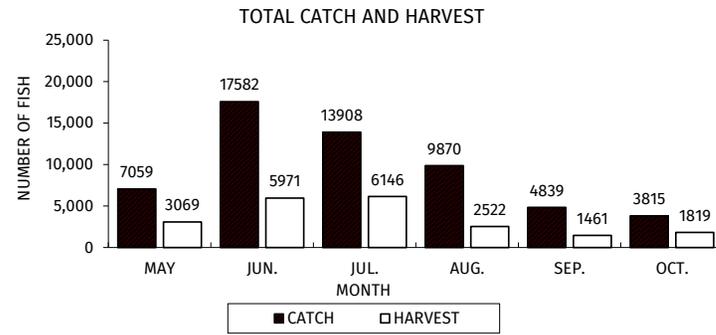
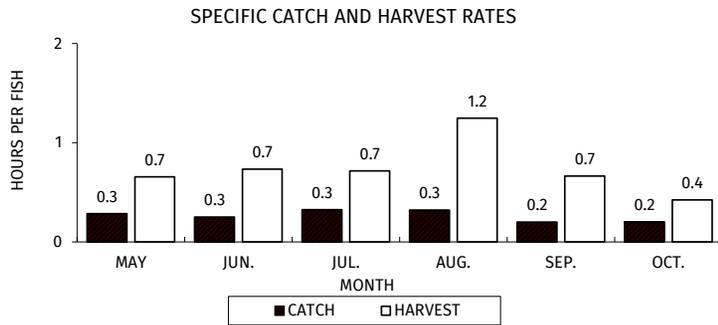
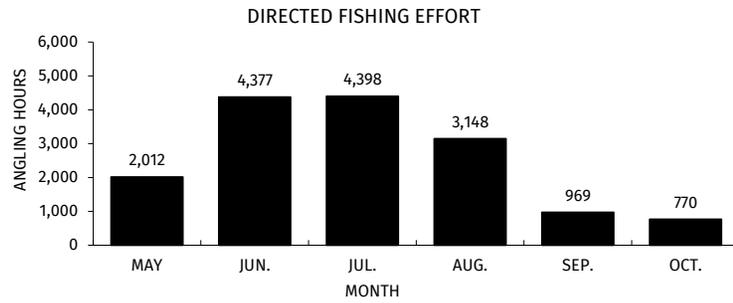


Figure 7. Bluegill sportfishing effort, catch, harvest, and length distribution, Balsam Lake, during 2023.

# BLACK CRAPPIE

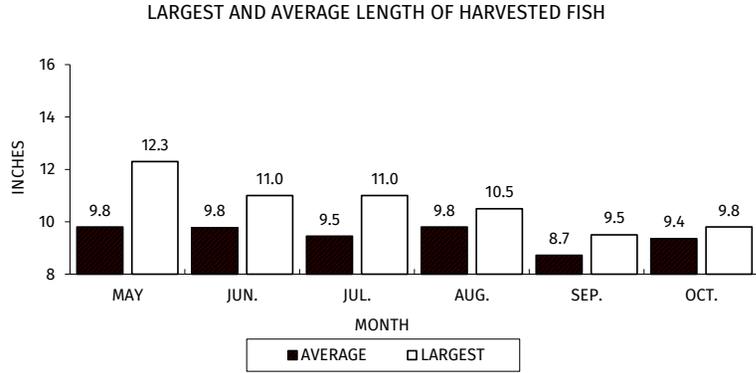
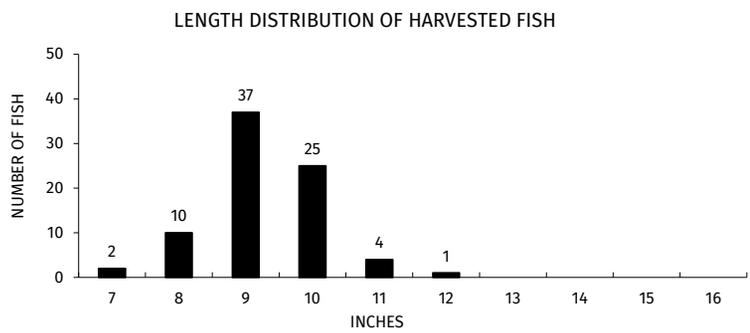
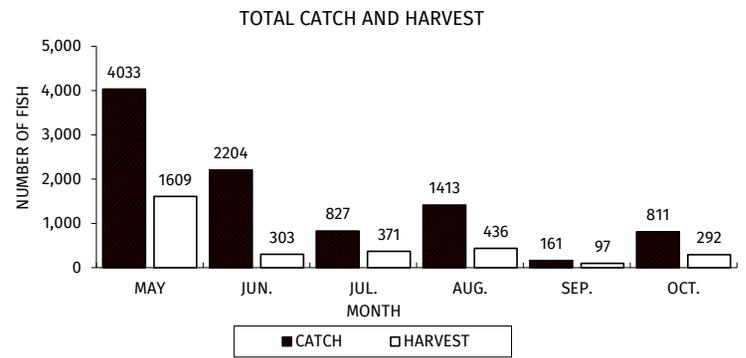
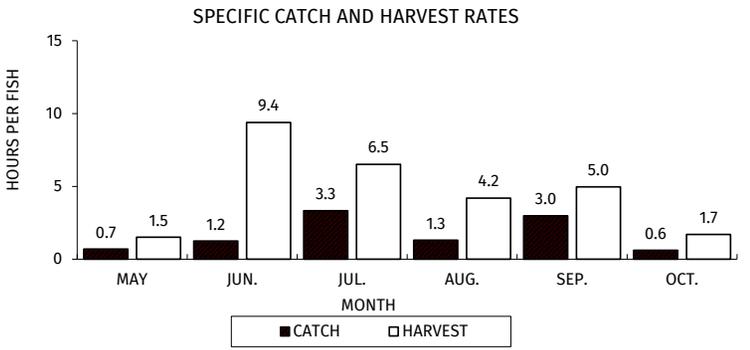
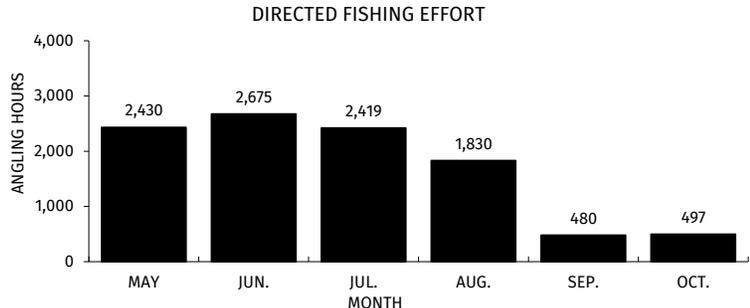
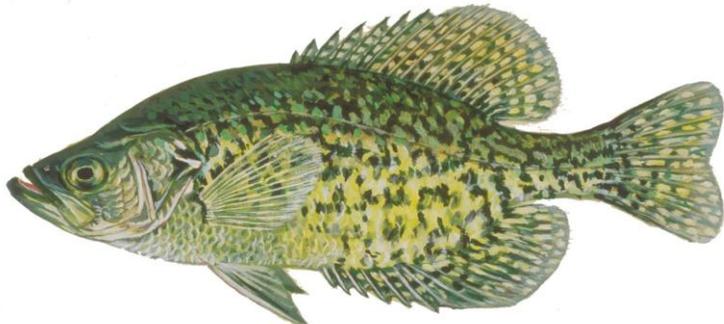


Figure 8. Black Crappie sportfishing effort, catch, harvest, and length distribution, Balsam Lake, during 2023.

# PUMPKINSEED

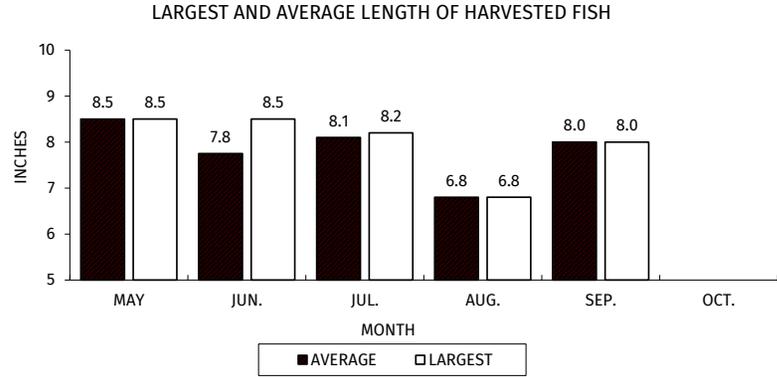
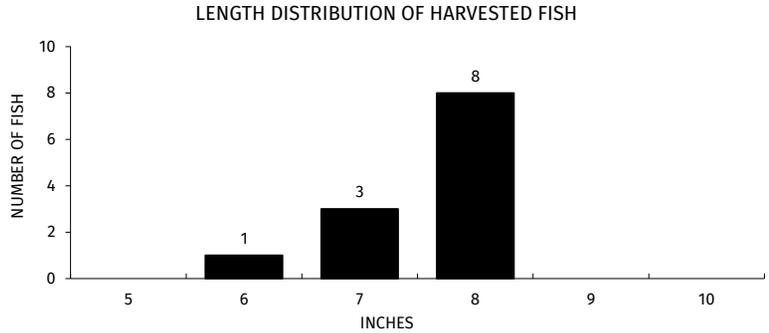
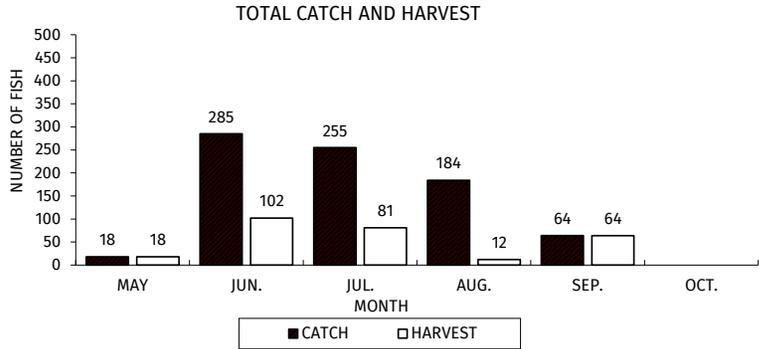
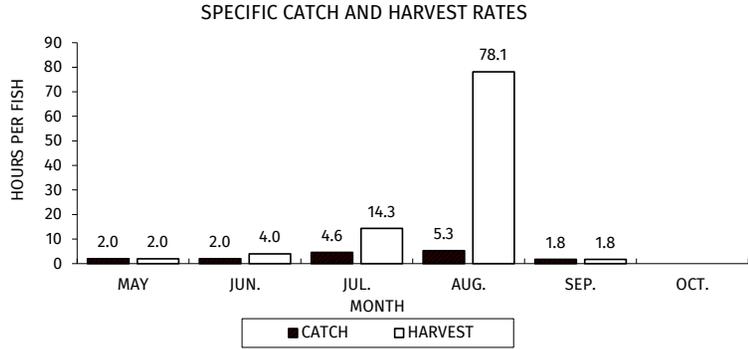
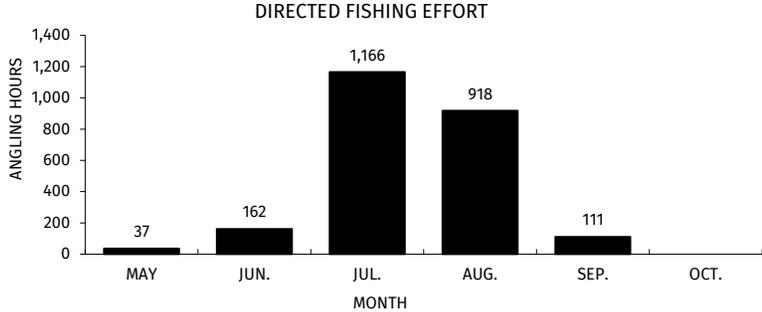


Figure 9. Pumpkinseed sportfishing effort, catch, harvest, and length distribution, Balsam Lake, during 2023.

# ROCK BASS

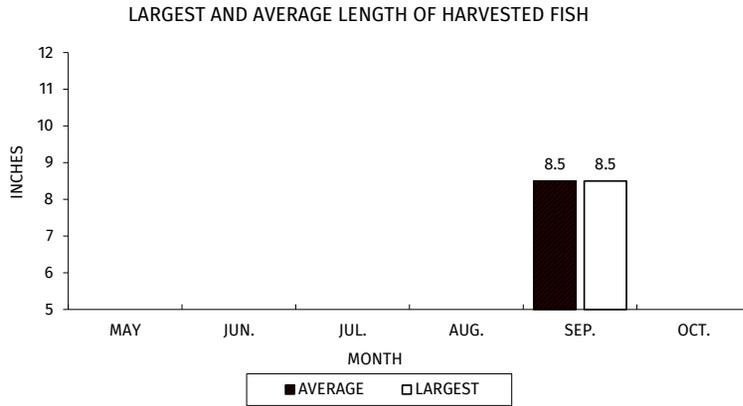
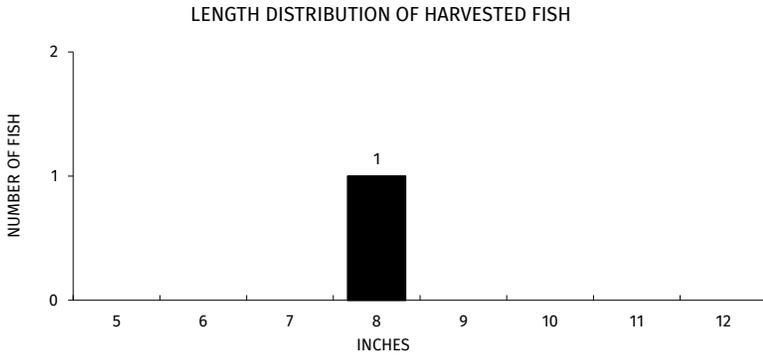
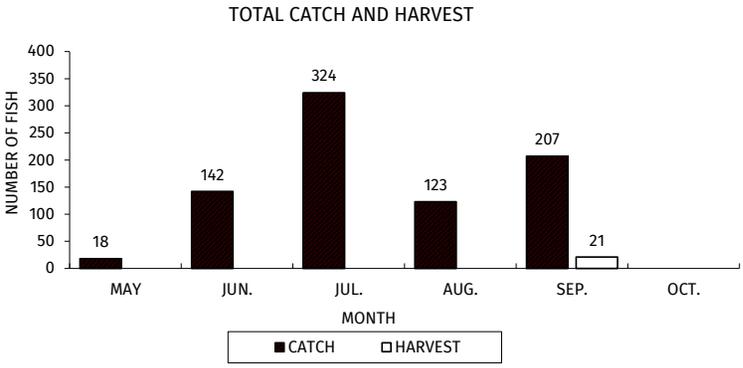
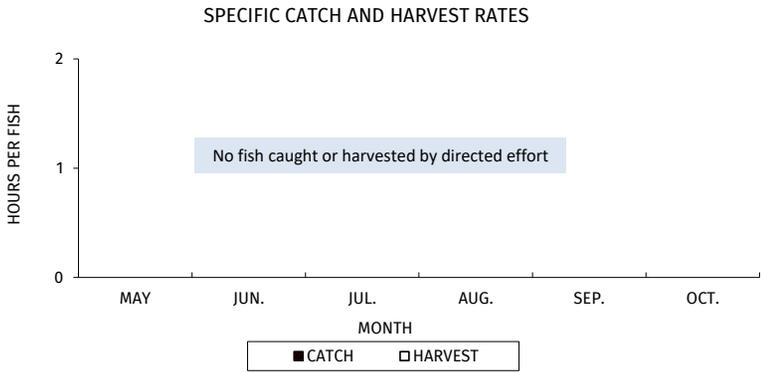
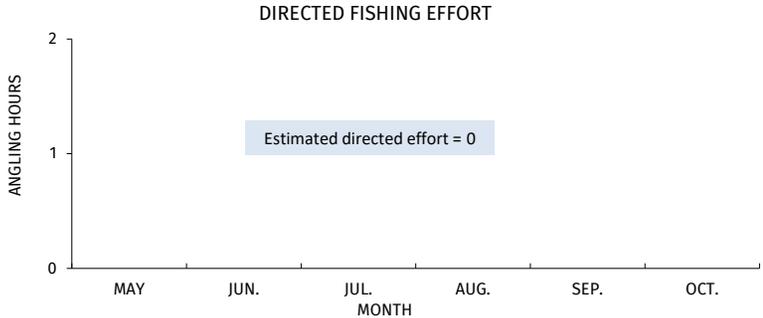


Figure 10. Rock Bass sportfishing effort, catch, harvest, and length distribution, Balsam Lake, during 2023.