# WISCONSIN DEPARTMENT OF NATURAL RESOURCES
# CREEL SURVEY REPORT

# BIG ARBOR VITAE LAKE

## VILAS COUNTY

# 2014-15

**Treaty Fisheries Publication**

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**Treaty Fisheries Technicians**

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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 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). 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 measure the sport harvest to assess its impact on the fishery. However, 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 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. Creel surveys are 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 is 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 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.

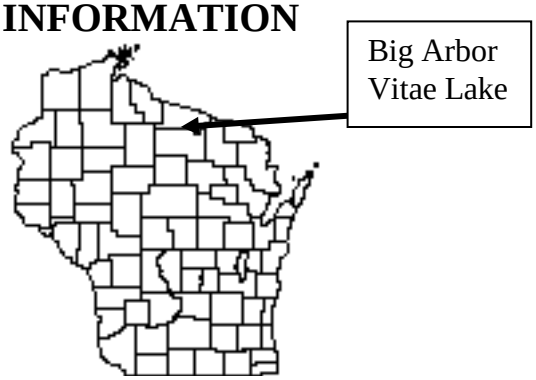
You may have encountered a DNR creel survey clerk on a recent fishing trip. We appreciate your cooperation during an interview. The survey only takes a moment of your time and it gives the Department valuable information needed for management of the fishery.

This report provides projections of:

1. Overall fishing effort (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 Big Arbor Vitae Lake; discussion of results of the survey; and detailed summaries, by species, of fishing effort, catch and harvest.

# GENERAL LAKE INFORMATION




**Location**

Big Arbor Vitae Lake is located in Vilas County in the Town of Arbor Vitae.

**Physical Characteristics**

Big Arbor Vitae Lake is a 1,090 acre drainage lake with a maximum depth of 41 feet. Littoral substrate consists primarily of sand, gravel and muck. Big Arbor Vitae Lake has very fertile, alkaline, clear water of moderate transparency.

**Seasons Surveyed**

The period referred to in this report as the 2014-15 fishing season ran from May 3, 2014 through March 1, 2015. The open water creel survey ran from May 3 through October 31, 2014, and the ice fishing creel survey ran from December 1, 2014 through March 3, 2015.

**Weather**

Ice-out on Big Arbor Vitae Lake was around May 11, 2014. Fishable ice formed on Big Arbor Vitae Lake in mid-December.

**Fishing Regulations**

The following seasons, daily bag limits, and length limits were in place on Big Arbor Vitae Lake during the 2014-15 fishing season:

| Species | Season | Bag Limit | Min. Size |
|---|---|---|---|
| Largemouth Bass | 5/3-3/1 | 5 | 14" |
| Smallmouth Bass | 5/3-6/20 | Catch & Release | |
| | 6/21-3/1 | 5 | 14" |
| Musky | 5/24-11/30 | 1 | 40" |
| Northern Pike | 5/3-3/1 | 5 | none |
| Walleye | 5/3-3/1 | 2* | |
| | No Minimum, 1>14" | | |
| Panfish | year round | 25 | none |
| Rock Bass | year round | none | none |

*Due to tribal declarations and harvest, walleye bag limits were initially set at 1 on Big Arbor Vitae Lake and then revised to 2 on June 10th.

# SPECIES CATCH AND HARVEST INFORMATION

Angling effort, catch, and harvest information is summarized for each species in Table 2 and Figures 1-10. Table 2 also includes a comparison of these statistics with the previous creel survey. Information presented about species whose fishing season extends beyond March 1 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. This was the seventh time the department conducted a creel survey on Big Arbor Vitae Lake. The last creel survey took place during the 2011-12 season.

**General Angler Information**

Anglers spent 44,008 hours or 40.4 hours per acre fishing Big Arbor Vitae Lake during the 2014-15 season (Table 1). That was more than the Vilas County average of 35.2 hours per acre. June was the most heavily fished month (9.3 hours per acre). Fishing effort was lightest in February (1.2 hours per acre) for those months when the entire month was creeled. Anglers also spent more time (54.2 hours per acre) fishing during the 2011-12 creel survey. The creel clerks were able to conduct 1,209 interviews throughout the survey.

**RESULTS BY SPECIES**

**Walleye** (Table 2, Figure 1)

Walleyes received the most fishing effort for gamefish during the 2014-15 season. Anglers spent 11,144 hours targeting walleyes. The greatest fishing effort for walleyes was in July (2,335 hours). February had the least amount of walleye fishing effort (181hours).

Total catch of walleyes was 1,389 fish with a harvest of 964 fish. Highest catch (418 fish) occurred in May and harvest (299 fish) occurred in July. Anglers fished 8.4 hours to catch and 12.0 hours to harvest a walleye during the 2014-15 season. The mean length of harvested walleyes was 17.4 inches and the largest walleye measured was a 26.6-inch fish.

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

Fishing effort directed at northern pike was 131 hours during the 2014-15 season. Northern pike fishing effort was greatest in February (41 hours). Total catch of northern pike was 32 fish with no documented harvest.

**Muskellunge** (Table 2, Figure 3)

Anglers spent 10,546 hours targeting muskellunge during the 2014-15 season. Muskellunge fishing effort was greatest in June (2,572 hours). Total catch of muskellunge was 179 fish. Highest catch (49 fish) occurred in September. Anglers fished 61.3 hours to catch a muskellunge and there was no documented harvest during the 2014-15 season.

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

Fishing effort targeted at smallmouth bass was 3,923 hours during the 2014-15 season. Smallmouth bass fishing effort was greatest in July (1,417 hours). Total catch of smallmouth bass was 2,106 fish, with 37 harvested, and the largest being 18.0 inches in length. Highest catch (839 fish) occurred

in June. Anglers fished 3.5 hours to catch a smallmouth bass during the 2014-15 season.

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

Fishing effort directed at largemouth bass was 8,163 hours during the 2014-15 season. Largemouth bass fishing effort was greatest in June (2,613 hours). Total catch of largemouth bass was 7,712 fish with a harvest of 705. Highest catch (2,669 fish) occurred in June. Anglers fished 1.4 hours to catch a largemouth bass during the 2014-15 season.

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

**Black crappies** were the most sought after panfish species during the survey. Fishing effort directed at black crappies was 18,825 hours. Anglers caught 26,342 black crappies and harvested 12,937 fish. The mean length of black crappies harvested was 9.9 inches.

**Yellow perch** were the second most sought after panfish species during the survey. Fishing effort directed at yellow perch was 16,689 hours. Total catch of yellow perch was 27,309 fish with 3,517 harvested. The mean length of yellow perch harvested was 8.5 inches.

**Bluegills** were the third most sought after panfish species during the survey. Fishing effort directed at bluegills was 15,329 hours. Total catch of bluegills was 35,727 fish with 6,702 harvested. The mean length of bluegills harvested was 7.1 inches.

**Pumpkinseeds, Rock Bass, Burbot and Golden Shiners** were also caught during the 2014-15 season.

## ACKNOWLEDGMENTS

Completion of this survey was possible because of the efforts of the following Fisheries Management and Treaty Fisheries staff: Lawrence Eslinger, Jeff Blonski, Joelle Underwood, Jason Halverson, Tim Tobias, Steve Gilbert, Jonathan Pyatskowit, and Dennis Scholl. John Davis and April Mikul were the creel clerks on Big Arbor Vitae 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.

The department thanks our cooperators, Woodland Beach Resort and Bob and Collie Rentmeester at Pine Arbor Resort, all of whom generously allowed the department to keep a boat and/or snowmobile on their property during this survey.

This creel report was reviewed by Steve Gilbert and Lawrence Eslinger of the Wisconsin Department of Natural Resources, Woodruff, Wisconsin.

Additional copies of this report and those covering other local lakes can be obtained from the Woodruff DNR or online at:
http://dnr.wi.gov/topic/Fishing/north/trtycrlsrvys.html

**Table 1. Sportfishing effort summary, Big Arbor Vitae Lake, 2014-15 season.**

| Month | Number of Angler Party Interviews | Total Angler Hours | Total Angler Hours/Acre | 2011-12 Total Angler Hours/Acre | Vilas County Average Hours/Acre | Ceded Territory Average Hours/Acre |
|---|---|---|---|---|---|---|
| May | 142 | 5669 | 5.2 | 7.4 | 5.4 | 5.0 |
| June | 208 | 10178 | 9.3 | 11.6 | 7.0 | 6.4 |
| July | 186 | 8120 | 7.4 | 10.6 | 7.5 | 6.8 |
| August | 121 | 4838 | 4.4 | 7.7 | 6.6 | 5.5 |
| September | 65 | 3184 | 2.9 | 5.9 | 4.3 | 3.3 |
| October | 79 | 1711 | 1.6 | 2.7 | 2.0 | 1.5 |
| December | 202 | 4466 | 4.1 | 2.6 | 0.6 | 1.1 |
| January | 153 | 4517 | 4.1 | 2.9 | 0.8 | 1.6 |
| February | 49 | 1325 | 1.2 | 2.7 | 0.9 | 1.6 |
| March | 4 | 0 | 0.0 | 0.1 | 0.1 | 0.2 |
| *Summer Total | 801 | 33700 | 30.9 | 45.9 | 32.8 | 28.5 |
| *Winter Total | 408 | 10308 | 9.5 | 8.3 | 2.4 | 4.5 |
| Grand Total | 1209 | 44008 | 40.4 | 54.2 | 35.2 | 33.0 |

*"Summer" is May-October; "Winter" is December-March

**Number of Angler Party Interview**s 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 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 in order to compare effort on Big Arbor Vitae Lake to other lakes.

**2011-12 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 Arbor Vitae 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 Arbor Vitae Lake to other lakes in northern Wisconsin.

**Table 2. Comparison of creel survey synopses, Big Arbor Vitae Lake, 2014-15 and 2011-12 fishing seasons.**

CREEL YEAR: 2014-15

| 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 | 11144 | 12.92% | 1389 | 8.4 | 964 | 12.0 | 17.4 |
| Northern Pike | 131 | 0.15% | 32 | | 0 | | |
| Muskellunge | 10546 | 12.23% | 179 | 61.3 | 0 | | |
| Smallmouth Bass | 3923 | 4.55% | 2106 | 3.5 | 37 | 322.6 | 15.9 |
| Largemouth Bass | 8163 | 9.47% | 7712 | 1.4 | 705 | 16.3 | 15.2 |
| Yellow Perch | 16689 | 19.35% | 27309 | 0.7 | 3517 | 5.1 | 8.5 |
| Bluegill | 15329 | 17.78% | 35727 | 0.4 | 6702 | 2.3 | 7.1 |
| Pumpkinseed | 1291 | 1.50% | 1437 | 1.1 | 336 | 4.9 | 7.0 |
| Rock Bass | 190 | 0.22% | 748 | 3.7 | 247 | 5.5 | 8.5 |
| Black Crappie | 18825 | 21.83% | 26342 | 0.7 | 12937 | 1.5 | 9.9 |



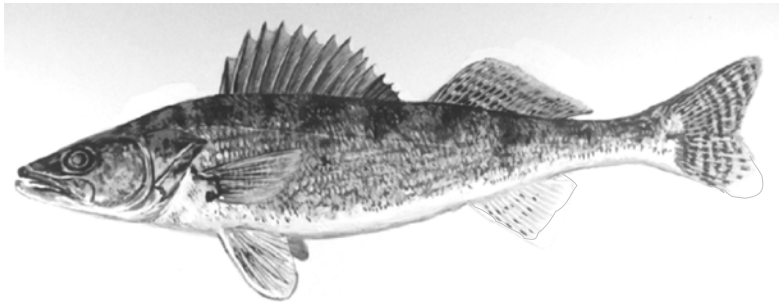
* A blank cell in this column indicates that no fish of a given species were caught by anglers who specifically targeted that species.

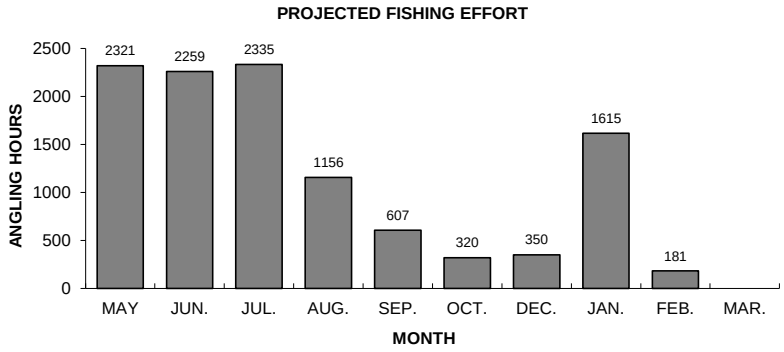
** A blank cell in this column indicates that no fish of a given species were harvested by anglers who specifically targeted that species.

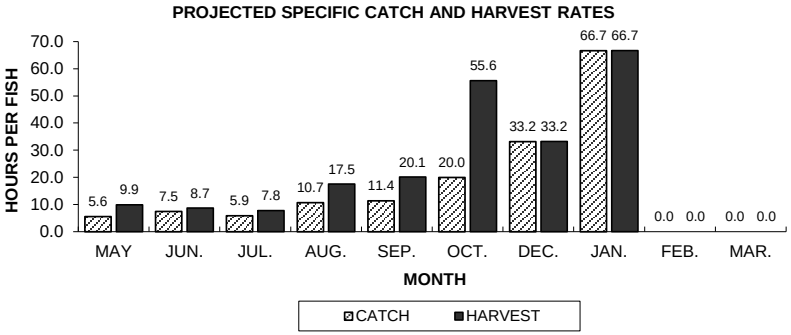
CREEL YEAR: 2011-12

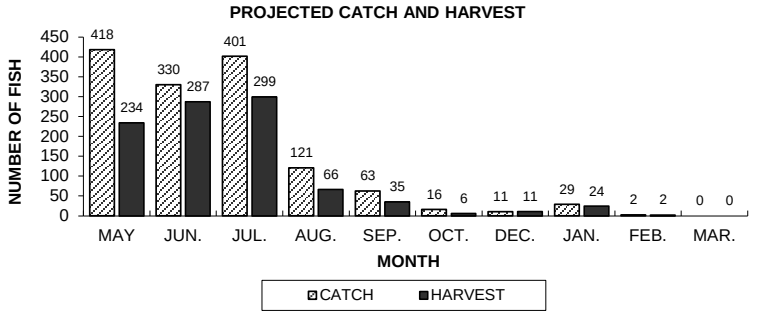
| SPECIES | DIRECTED EFFORT (Hours) | PERCENT OF TOTAL | TOTAL CATCH | SPECIFIC CATCH RATE (Hrs/Fish) | TOTAL HARVEST | SPECIFIC HARVEST RATE (Hrs/Fish) | MEAN LENGTH OF HARVESTED FISH |
|---|---|---|---|---|---|---|---|
| Walleye | 24624 | 20.86% | 3013 | 8.5 | 2117 | 11.7 | 15.0 |
| Northern Pike | 663 | 0.56% | 18 | 384.6 | 9 | 384.6 | 31.8 |
| Muskellunge | 13439 | 11.38% | 421 | 41.0 | 7 | 2000.0 | 37.3 |
| Smallmouth Bass | 8054 | 6.82% | 2991 | 5.5 | 112 | 111.1 | 15.7 |
| Largemouth Bass | 8703 | 7.37% | 10017 | 1.2 | 222 | 55.9 | 15.0 |
| Yellow Perch | 19611 | 16.61% | 24589 | 0.9 | 5977 | 3.7 | 8.6 |
| Bluegill | 17003 | 14.40% | 39841 | 0.5 | 14394 | 1.3 | 7.0 |
| Pumpkinseed | 9165 | 7.76% | 15350 | 0.8 | 5790 | 1.7 | 6.8 |
| Rock Bass | 1106 | 0.94% | 3743 | 3.3 | 432 | 6.1 | 8.1 |
| Black Crappie | 15685 | 13.29% | 3193 | 5.3 | 2072 | 8.1 | 10.5 |

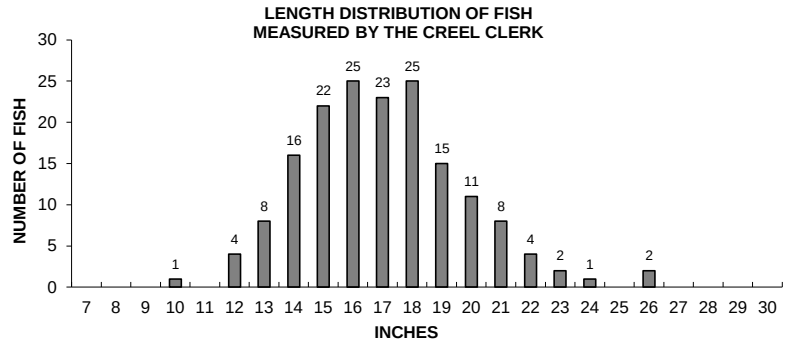
# WALLEYE





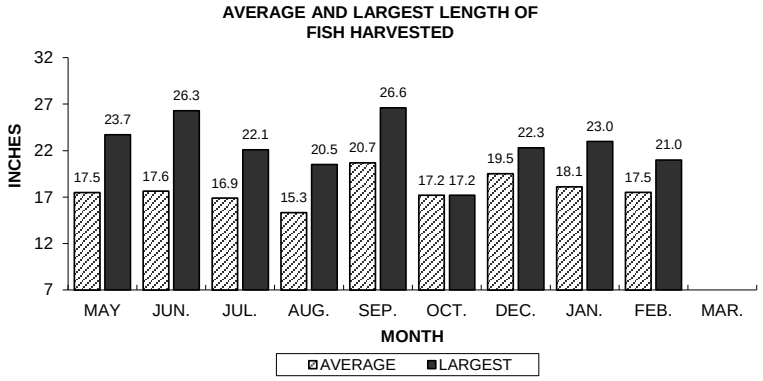
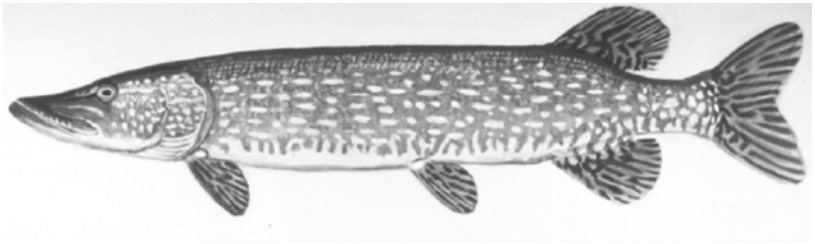



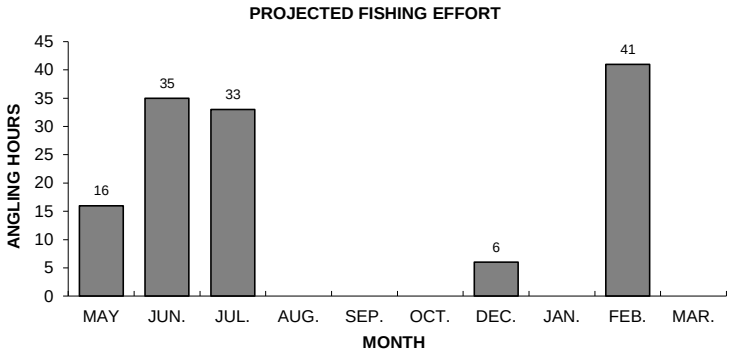



**Figure 1. Walleye sportfishing effort, catch, harvest, and length distribution, Big Arbor Vitae Lake, during 2014-15.**

# NORTHERN PIKE







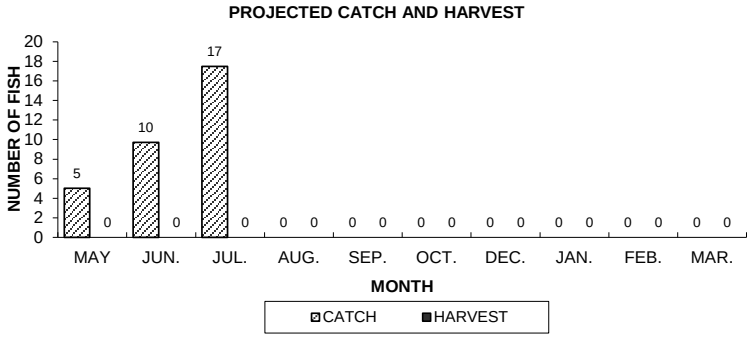
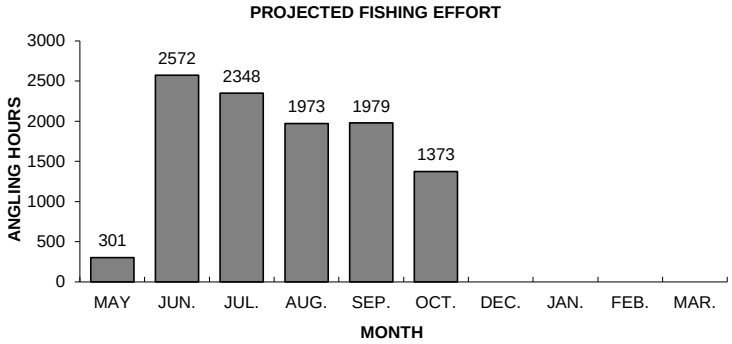
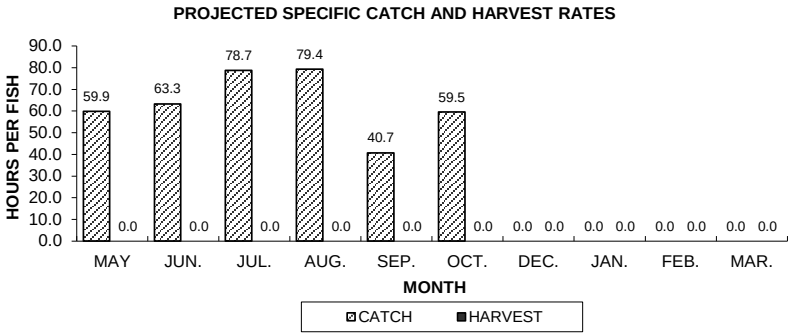




**Figure 2. Northern pike sportfishing effort, catch, harvest, and length distribution, Big Arbor Vitae Lake, during 2014-15.**

# MUSKELLUNGE



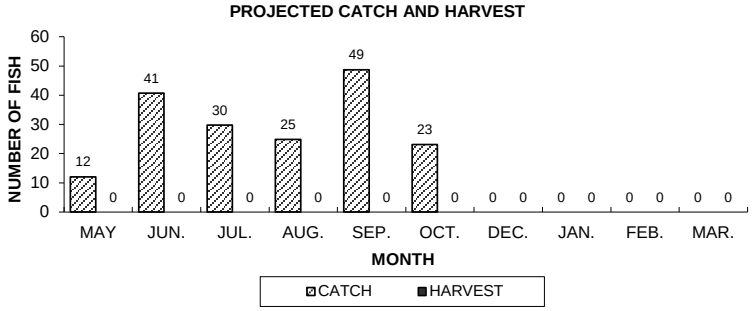
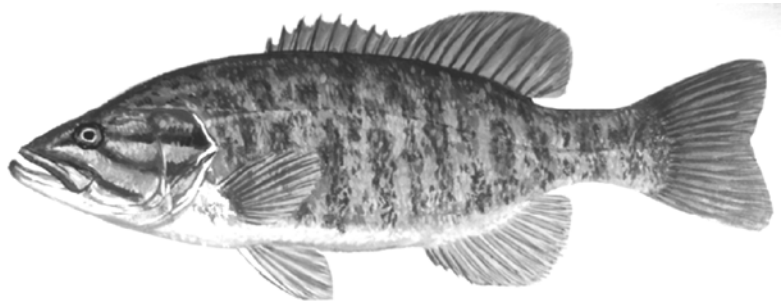
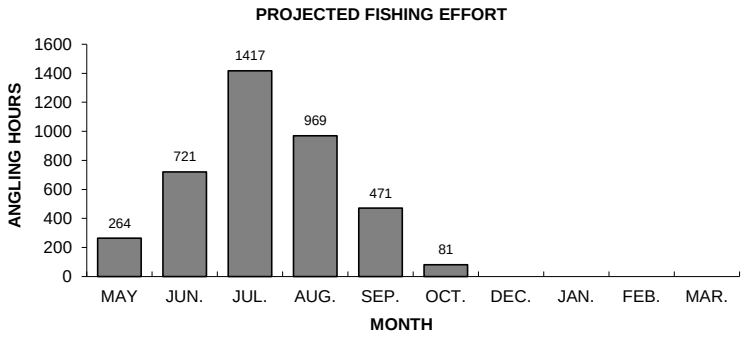



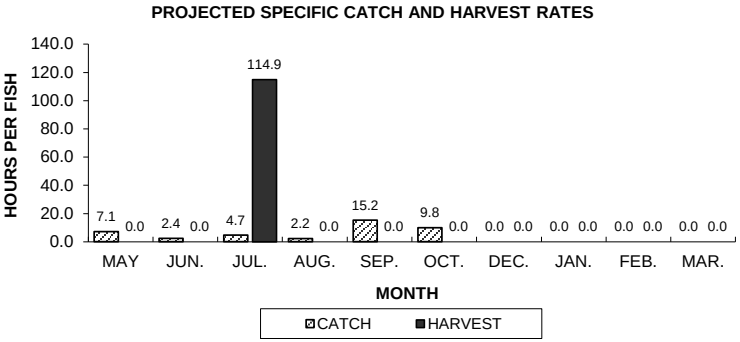


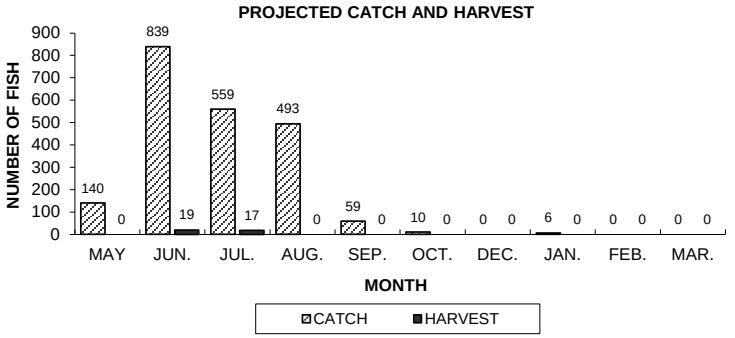

**Figure 3. Muskellunge sportfishing effort, catch, harvest, and length distribution, Big Arbor Vitae Lake, during 2014-15.**

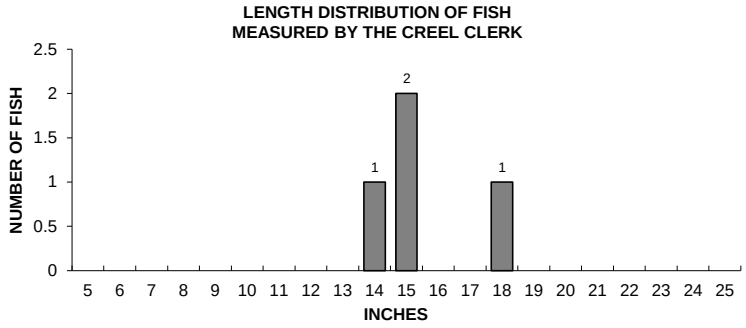
# SMALLMOUTH BASS





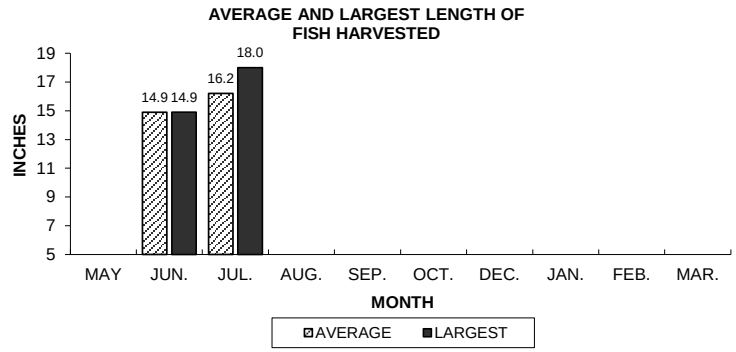
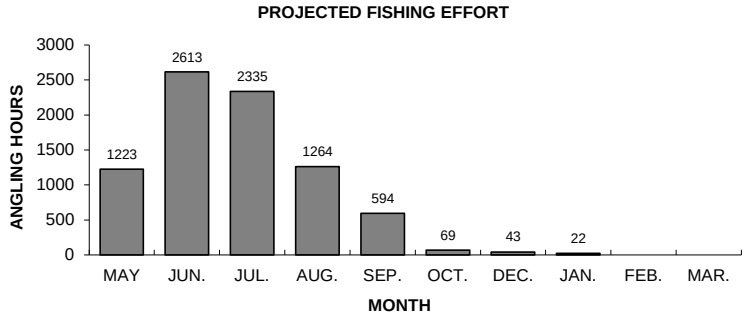
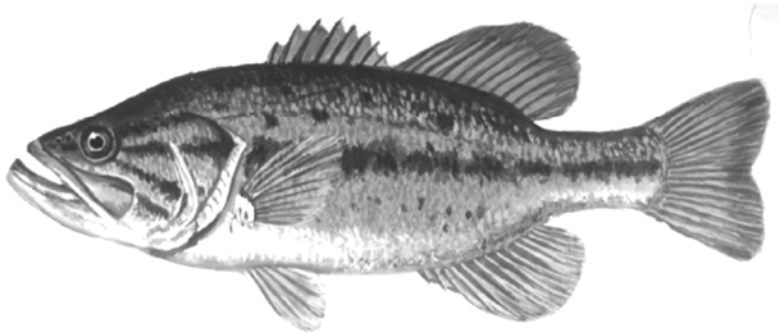



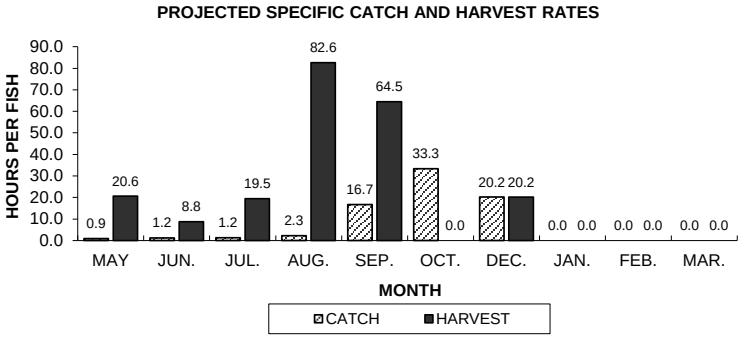


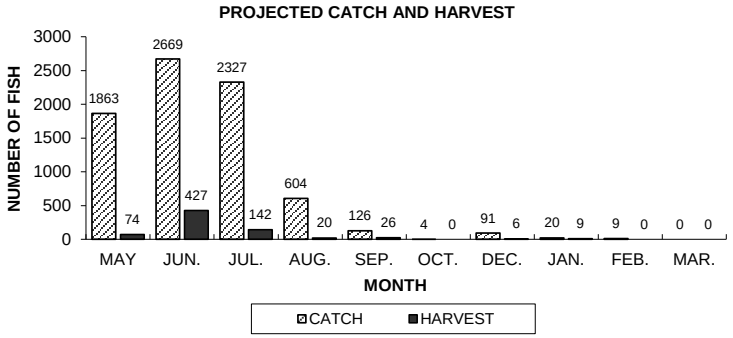

**Figure 4. Smallmouth bass sportfishing effort, catch, harvest, and length distribution, Big Arbor Vitae Lake, during 2014-15.**

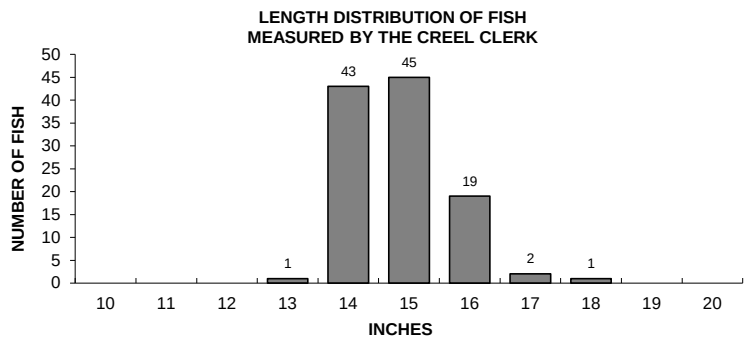
# LARGEMOUTH BASS





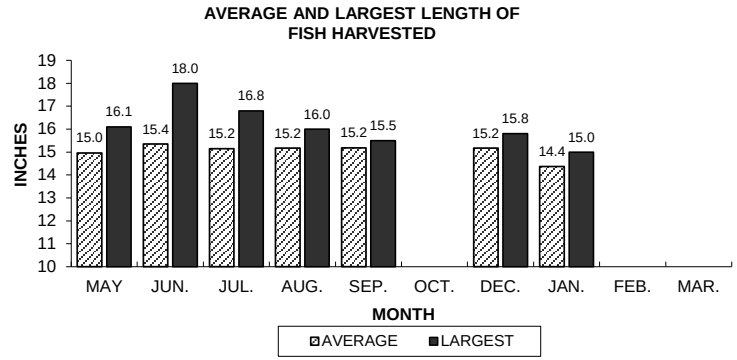
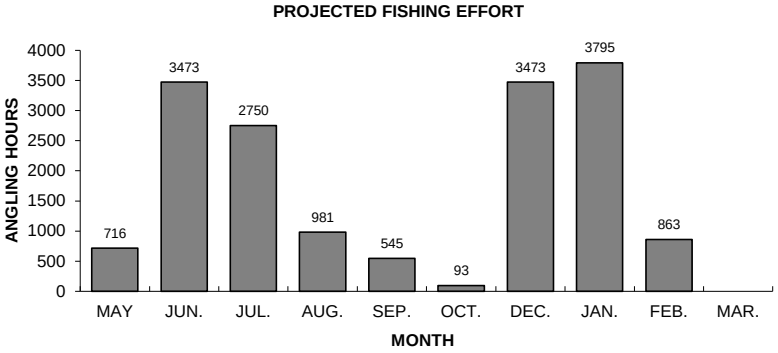
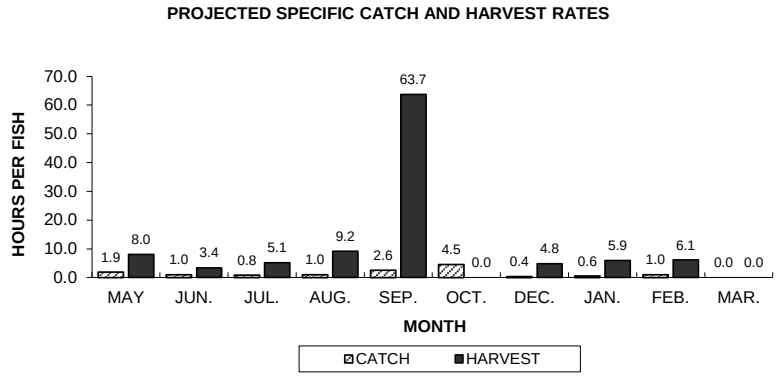
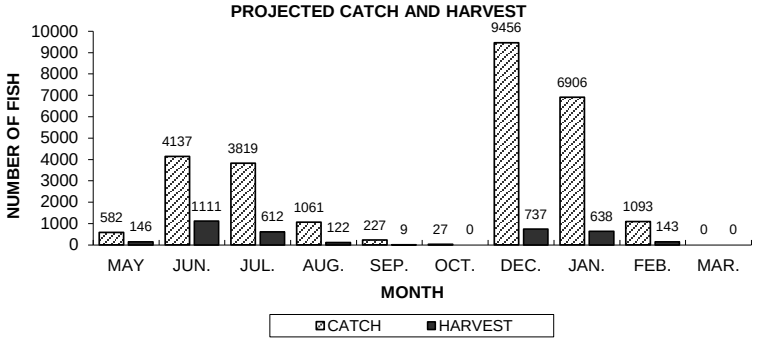



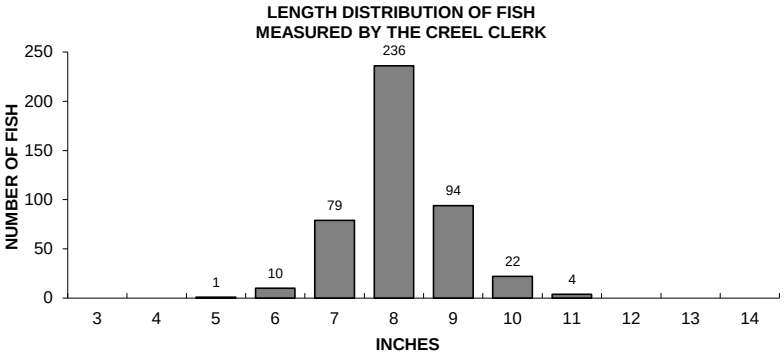

**Figure 5. Largemouth bass sportfishing effort, catch, harvest, and length distribution, Big Arbor Vitae Lake, during 2014-15.**

# YELLOW PERCH



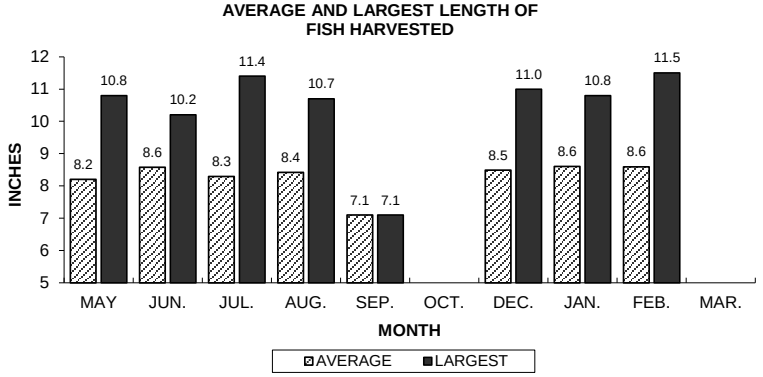
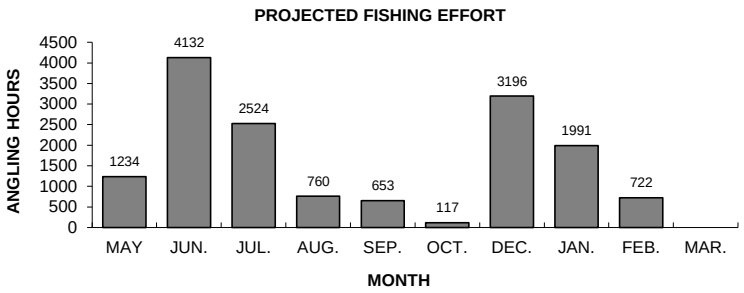
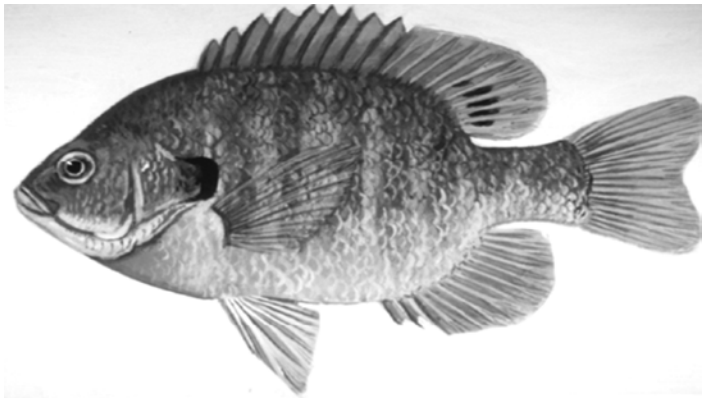



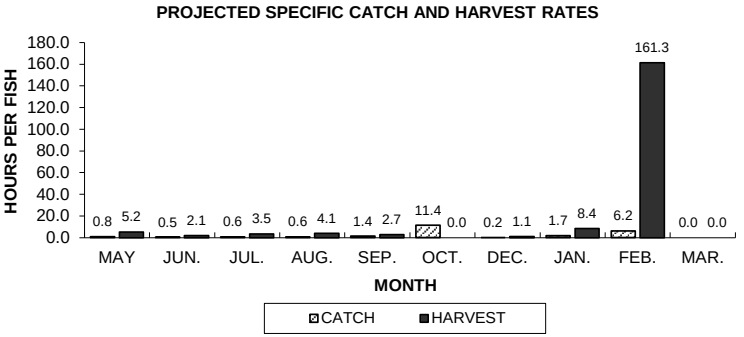


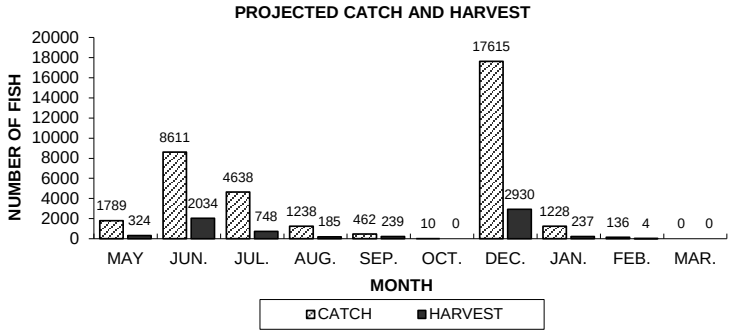

**Figure 6. Yellow perch sportfishing effort, catch, harvest, and length distribution, Big Arbor Vitae Lake, during 2014-15.**

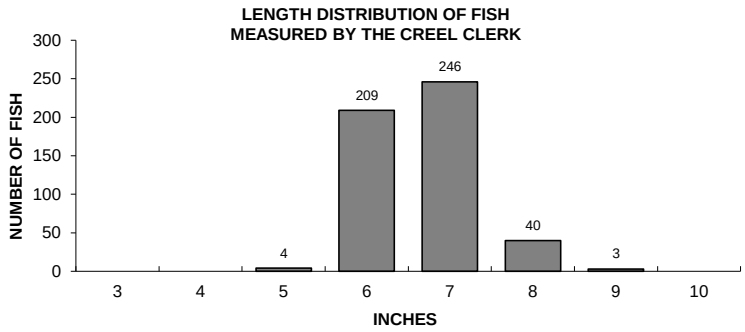
# BLUEGILL





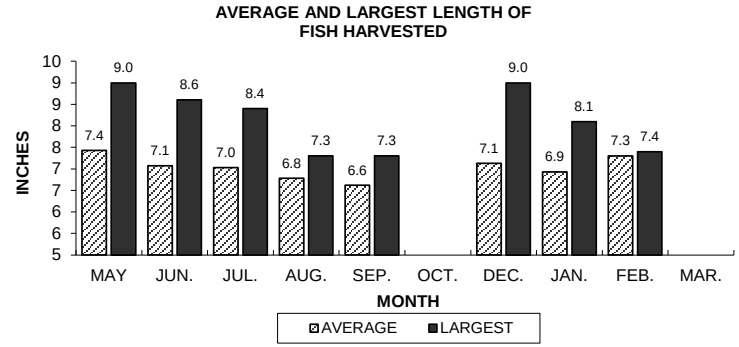
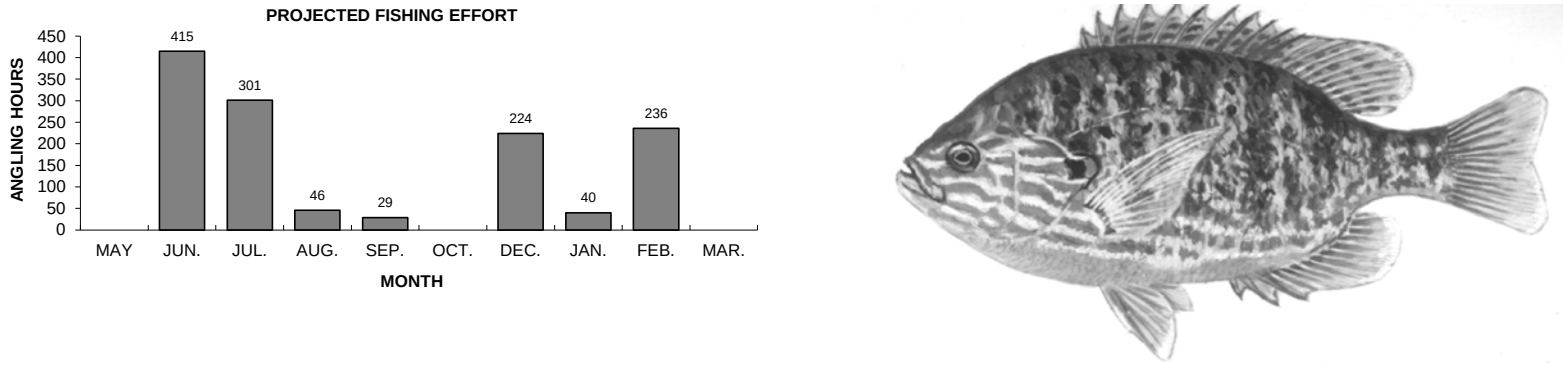



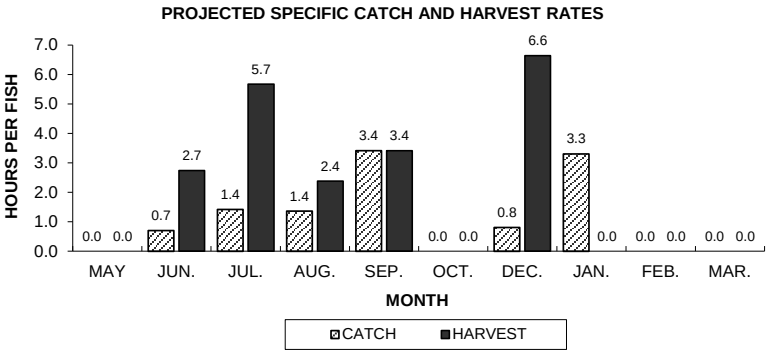


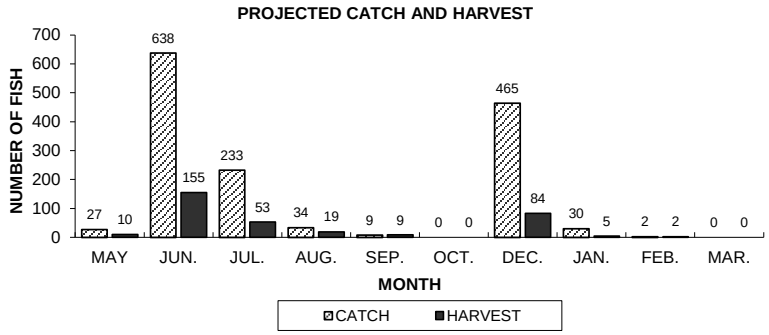

**Figure 7. Bluegill sportfishing effort, catch, harvest, and length distribution, Big Arbor Vitae Lake, during 2014-15.**

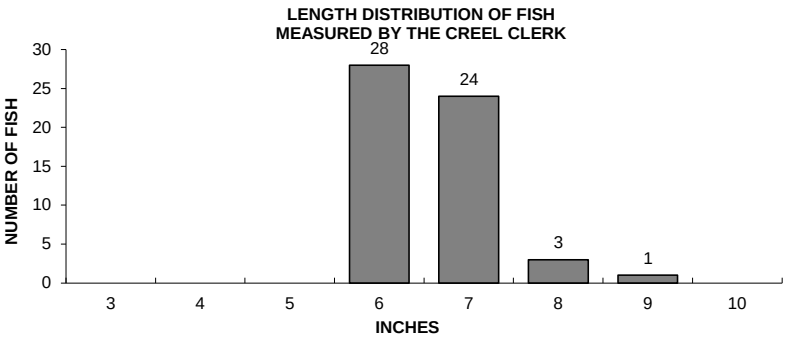
# PUMPKINSEED





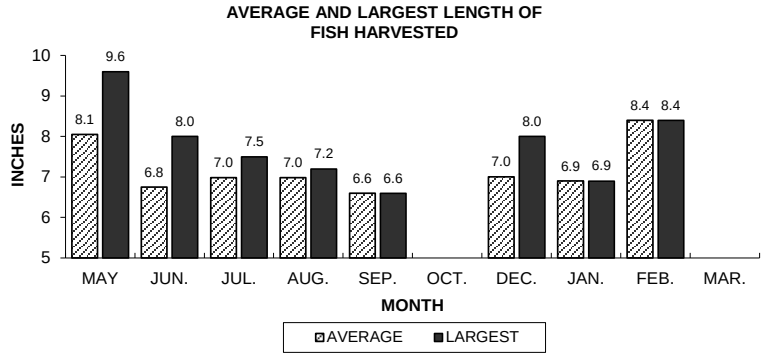
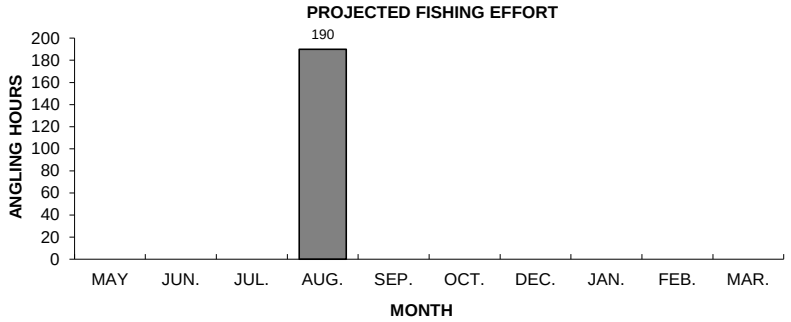
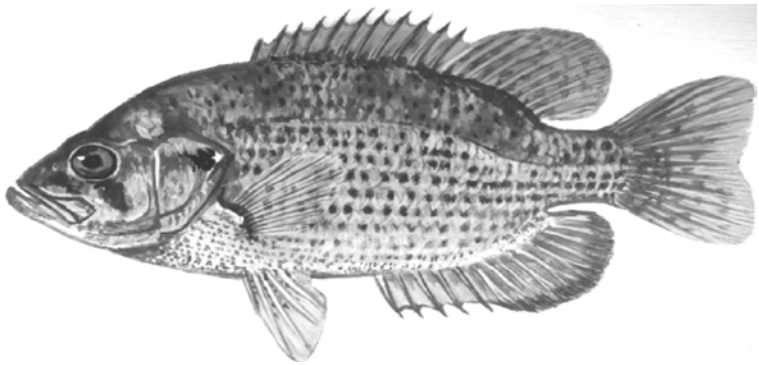



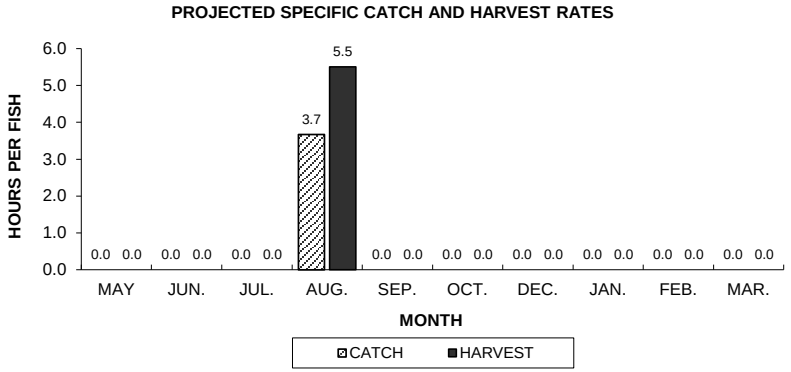


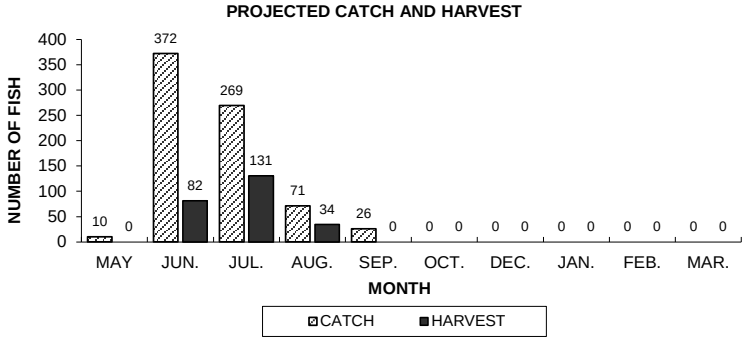

**Figure 8. Pumpkinseed sportfishing effort, catch, harvest, and length distribution, Big Arbor Vitae Lake, during 2014-15.**

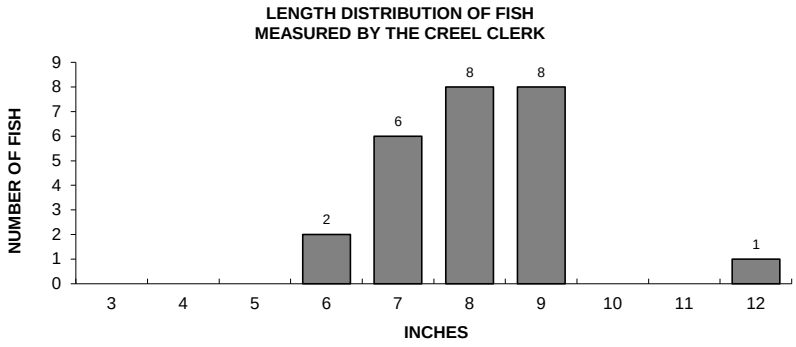
# ROCK BASS





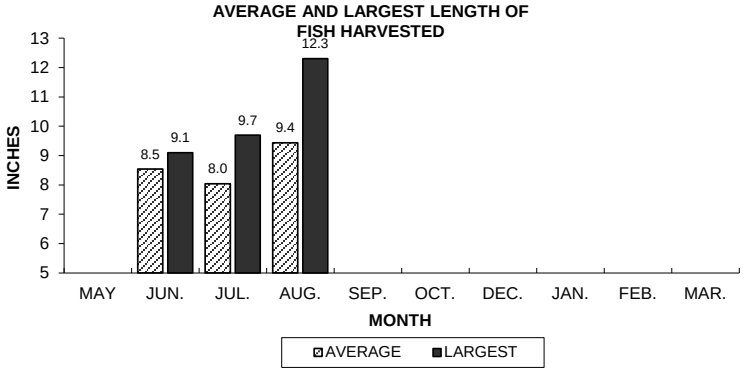
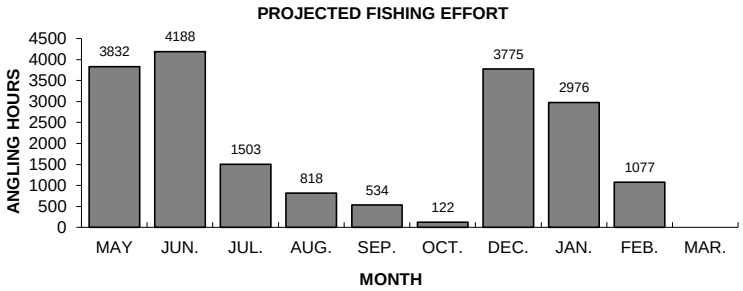
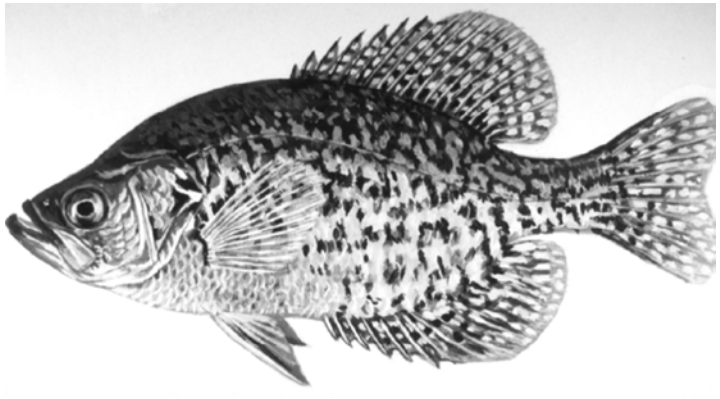



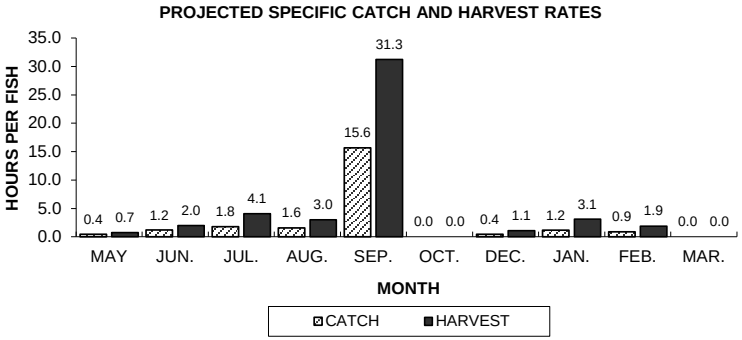


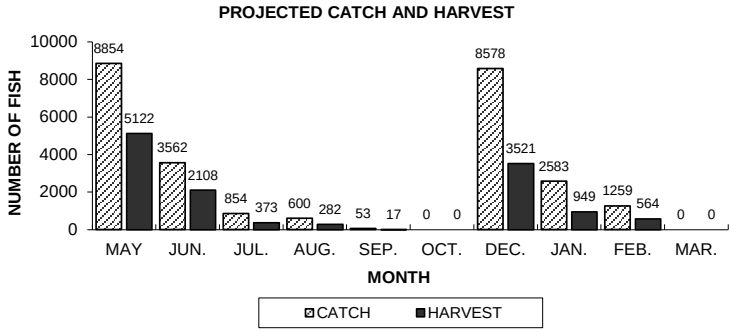

**Figure 9. Rock bass sportfishing effort, catch, harvest, and length distribution, Big Arbor Vitae Lake, during 2014-15.**

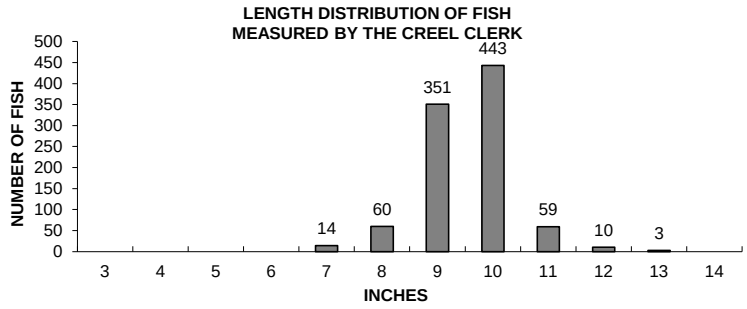
# BLACK CRAPPIE





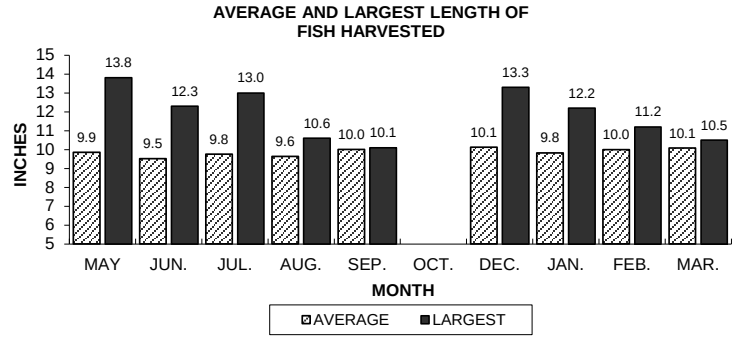






**Figure 10. Black crappie sportfishing effort, catch, harvest, and length distribution, Big Arbor Vitae Lake, during 2014-15.**