

Enemy Swim Survey Summary

Enemy Swim, located 1.5 miles east and 6.5 miles north of Waubay, is managed as a multiple species fishery including panfish (i.e., black crappie, bluegill, and yellow perch), black bass (largemouth and smallmouth) and walleye.

- **Black crappie.** Black crappies were not abundant (0.6/frame net). Those sampled ranged in length from 5.1 to 13.0 inches, most (11 of 13) were <7.0 inches.
- **Bluegill.** Bluegill CPUE was considerably lower in 2019 than 2018. However, at 63.2/frame net relative abundance remained high. Sampled bluegills ranged in length from 3.1 to 9.4 inches; 15% were ≥ 6.0 inches and 2% were 8.0 inches or longer. Individuals from five consecutive year classes (2013 – 2017) contributed to the catch. Bluegills from the 2015 (age 4) cohort were the most abundant accounting for 64% of fish in the sample, those from the 2016 (age 3) year class made up an additional 32%. Since 2010, mean length at capture values for age-5 bluegills have ranged from 5.4 to 7.8 inches. In 2019, age-5 bluegills had a mean length of 5.7 inches.
- **Largemouth bass.** Spring electrofishing for largemouth bass was not completed in 2019.
- **Smallmouth bass.** Fewer smallmouth bass were sampled by day electrofishing in 2019 (32.0/hour) than combined day and night electrofishing in 2016 (86.0/hour). Smallmouth bass in the 2019 electrofishing catch ranged in length from 7.1 to 16.5 inches, 63% were ≥ 11.0 inches and 38% were 14.0 inches or longer. The proportion of catch ≤ 14.0 inches was comprised of fish from 5 consecutive year classes (2013 – 2017), each represented by seven or fewer individuals. Growth appears to be slow to moderate with mean length at capture values at age 4 from 9.5 to 12.5 inches since 2010. In 2019, the mean length at capture of age-4 fish was 12.5 inches.
- **Walleye.** Similar to 2018, walleye numbers were low (1.5/gill net). Sampled walleyes ranged in length from 7.9 to 23.2, more than half (13 of 21) were 15.0 inches or longer. Individuals from nine year classes produced between 2001 and 2018 contributed to the catch, each was represented by four or fewer fish. The oldest walleye sampled was from the 2001 (age 18) cohort. Currently, walleyes appear to be growing well with a mean length at capture of 16.7 inches at age 3 in 2019.
- **Yellow perch.** Yellow perch numbers remain low (4.8/gill net) in Enemy Swim Lake. Sampled yellow perch ranged in length from 5.1 to 5.9 inches, all were from the 2017 (age 2) year class.

For more detailed results see the computer generated South Dakota Statewide Fisheries Survey for Enemy Swim (Day; below).

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Enemy Swim, Day County

UBS-Lake-196-000

2019

Lake Information

| | | | |
|----------------------|-------------|--------------------------|---------|
| Name: | Enemy Swim | Maximum Depth: | 26 Feet |
| County: | Day | Mean Depth: | 16 Feet |
| | | OHWM Elevation: | 1,854 |
| Surface Area: | 2,186 Acres | Outlet Elevation: | 1,854 |

Surveys and Investigations

Survey methods used by gear type, date, and effort.

| Gear | Date | Effort |
|------------------------|--------------|--------------|
| AFS std gill net | Jul 22, 2019 | 4 net-nights |
| AFS std gill net | Jul 23, 2019 | 4 net-nights |
| AFS std gill net | Jul 24, 2019 | 4 net-nights |
| boat shocker (day) | Jun 04, 2019 | 3600 seconds |
| fall night EF-WAE | Oct 03, 2019 | 3600 seconds |
| frame net (std 3/4 in) | Jul 23, 2019 | 8 net-nights |
| frame net (std 3/4 in) | Jul 24, 2019 | 8 net-nights |
| frame net (std 3/4 in) | Jul 25, 2019 | 7 net-nights |

Common Fish Species Present

Bluegill

Black Crappie

Largemouth Bass

Walleye

Smallmouth Bass

Yellow Perch

White Bass

Rock Bass

White Sucker

Common Carp

Terminology

Catch per unit effort (**CPUE**) refers to the relative abundance of a species. It is defined as the number of fish captured per unit of effort (i.e., number of fish captured per net-night or number of fish captured per hour electrofishing). In this report CPUE is typically given for only stock-length fish (see length categories table for stock lengths).

A statewide effort to help make netting efforts comparable to all waters sampled across the state, occurred in 2017, with a switch to American Fisheries Society gill nets. Past gill netting efforts were completed with different style/types of nets and are not comparable side by side.

- **AFS std gill net** – 80 ft experimental gill net containing eight panels (10 ft each) of varying monofilament meshes of 0.75, 1.00, 1.25, 1.50, 1.75, 2.00, 2.25 and 2.50 inches.
- **std experimental gill net for non-Missouri River waters** - 150 ft experimental gill net containing six panels (25 ft each) of varying monofilament meshes of 0.5, 0.75, 1.00, 1.25, 1.50 and 2.00 inches.
- **std experimental gill net for Missouri River reservoirs** – 300 ft experimental gill net containing six panels (50 ft each) of varying multifilament meshes of 0.5, 0.75, 1.00, 1.25, 1.50 and 2.00 inches.

$$CPUE = \frac{\text{number of fish}}{\text{effort}}$$

Population size structure is quantified using the indices proportional size distribution of quality-length fish (**PSD**) and proportional size distribution of preferred-length fish (**PSD-P**). These indices indicate the proportion of stock-length fish that are equal to or greater than a given length. Minimum lengths for stock, quality and preferred length fish are given in the length categories table.

$$PSD = \left(\frac{\text{number of fish} \geq \text{quality length}}{\text{number of fish} \geq \text{stock length}} \right) \times 100$$

$$PSD - P = \left(\frac{\text{number of fish} \geq \text{preferred length}}{\text{number of fish} \geq \text{stock length}} \right) \times 100$$

Relative weight (**Wr**) is used to quantify fish plumpness. Relative weight is the ratio of what a fish weighs (*W*) compared to a length-specific standard weight (*Ws*) multiplied by 100. Relative weight values of 95-105 are commonly cited as optimum values, but values in the 80s are common during summer sampling in South Dakota.

$$Wr = \left(\frac{W}{Ws} \right) \times 100$$

Confidence intervals (**CI**) are provided for many of the estimates calculated in this report. The confidence interval provides a range in which the true mean is expected to fall. For example, with an 80% CI we are 80% confident that the interval contains the true value.

Length categories include stock (**S**), quality (**Q**), preferred (**P**), memorable (**M**) and trophy (**T**). Length categories for most species have been defined based on a percentage of the world record length for that species. Some species mentioned in this report do not have defined length categories. Length categories for species used in this report are provided in the following table. Measurements are the minimum total length for each category and are reported in inches (in) and centimeters (cm).

| Species Name | Stock | | Quality | | Preferred | | Memorable | | Trophy | |
|-----------------|-------|------|---------|------|-----------|------|-----------|------|--------|------|
| | (in) | (cm) | (in) | (cm) | (in) | (cm) | (in) | (cm) | (in) | (cm) |
| Black Bullhead | 6 | 15 | 9 | 23 | 12 | 30 | 15 | 38 | 18 | 46 |
| Black Crappie | 5 | 13 | 8 | 20 | 10 | 25 | 12 | 30 | 15 | 38 |
| Bluegill | 3 | 8 | 6 | 15 | 8 | 20 | 10 | 25 | 12 | 30 |
| Brown Trout | 8 | 20 | 12 | 30 | 16 | 40 | 20 | 50 | 18 | 46 |
| Channel Catfish | 11 | 28 | 16 | 41 | 24 | 61 | 28 | 71 | 36 | 91 |
| Freshwater Drum | 8 | 20 | 12 | 30 | 15 | 38 | 20 | 51 | 25 | 63 |
| Lake Trout | 12 | 30 | 20 | 50 | 26 | 65 | 31 | 80 | 39 | 100 |
| Largemouth Bass | 8 | 20 | 12 | 30 | 15 | 38 | 20 | 51 | 25 | 63 |
| Muskellunge | 20 | 51 | 30 | 76 | 38 | 97 | 42 | 107 | 50 | 127 |
| Northern Pike | 14 | 35 | 21 | 53 | 28 | 71 | 34 | 86 | 44 | 112 |
| Pumpkinseed | 3 | 8 | 6 | 15 | 8 | 20 | 10 | 25 | 12 | 30 |
| Rainbow Trout | 10 | 25 | 16 | 40 | 20 | 50 | 26 | 65 | 31 | 80 |
| Rudd | 6 | 15 | 10 | 25 | 12 | 30 | 15 | 38 | 19 | 48 |
| Sauger | 8 | 20 | 12 | 30 | 15 | 38 | 20 | 51 | 25 | 63 |
| Smallmouth Bass | 7 | 18 | 11 | 28 | 14 | 35 | 17 | 43 | 20 | 51 |
| Walleye | 10 | 25 | 15 | 38 | 20 | 51 | 25 | 63 | 30 | 76 |
| White Bass | 6 | 15 | 9 | 23 | 12 | 30 | 15 | 38 | 18 | 46 |
| White Crappie | 5 | 13 | 8 | 20 | 10 | 25 | 12 | 30 | 15 | 38 |
| Yellow Bullhead | 4 | 10 | 7 | 18 | 9 | 23 | 11 | 28 | 14 | 36 |
| Yellow Perch | 5 | 13 | 8 | 20 | 10 | 25 | 12 | 30 | 15 | 38 |

Catch Summary of Stock Length Fish

Catch per unit effort (CPUE), proportional size distribution (PSD), proportional size distribution of preferred length fish (PSD-P), and relative weight (Wr) for species sampled in survey with 80% confidence interval (CI-80).

* **Methods/Species that ignore stock length**

| Gear | Species | Sample Size (n)* | Abundance | | Stock Density Indices | | | Condition | | |
|------------------------|-----------------|------------------|-----------|-------|-----------------------|-------|-------|-----------|-----|-------|
| | | | CPUE | CI-80 | PSD | CI-80 | PSD-P | CI-80 | Wr | CI-80 |
| AFS std gill net | Black Crappie | 2 | 0.2 | 0.2 | 50 | | 50 | | 100 | 5 |
| | Bluegill | 42 | 3.5 | 1.6 | 98 | | 21 | 10 | 116 | 2 |
| | Common Carp | 7 | 0.6 | 0.3 | 100 | | 100 | | 77 | 14 |
| | Largemouth Bass | 1 | 0.1 | 0.1 | 100 | | 100 | | 110 | |
| | Northern Pike | 3 | 0.3 | 0.2 | 100 | | 33 | | 84 | 6 |
| | Rock Bass | 6 | 0.5 | 0.5 | 100 | | 50 | | 112 | 2 |
| | Smallmouth Bass | 32 | 2.3 | 0.9 | 50 | 15 | 25 | 13 | 97 | 2 |
| | Walleye | 21 | 1.5 | 0.8 | 83 | | 11 | | 86 | 2 |
| | White Bass | 47 | 3.9 | 1.2 | 100 | | 100 | | 86 | 1 |
| | White Sucker | 13 | 1.1 | 0.4 | 100 | | 100 | | 95 | 2 |
| | Yellow Perch | 57 | 4.8 | 1.5 | 0 | | 0 | | 97 | 1 |
| boat shocker (day) | Smallmouth Bass | 32 | 32.0 | 9.9 | 63 | 13 | 38 | 13 | 93 | 1 |
| fall night EF-WAE* | Walleye | 15 | 15.0 | 7.8 | | | | | 92 | 2 |
| frame net (std 3/4 in) | Black Bullhead | 7 | 0.3 | 0.2 | 100 | | 100 | | 91 | 4 |
| | Black Crappie | 13 | 0.6 | 0.3 | 15 | | 8 | | 105 | 3 |
| | Bluegill | 1453 | 63.2 | 13.0 | 15 | 1 | 2 | 1 | 103 | 1 |
| | Northern Pike | 2 | 0.1 | 0.1 | 100 | | 0 | | 81 | 4 |
| | Pumpkinseed | 9 | 0.4 | 0.3 | 11 | | 0 | | 111 | 4 |
| | Rock Bass | 70 | 3.0 | 0.9 | 51 | 9 | 14 | 6 | 102 | 1 |
| | Smallmouth Bass | 320 | 2.6 | 0.9 | 13 | 7 | 5 | | 100 | 1 |
| | Walleye | 4 | 0.1 | 0.1 | 100 | | 50 | | 90 | 3 |
| | White Bass | 10 | 0.4 | 0.2 | 100 | | 100 | | 84 | 2 |
| | White Sucker | 3 | 0.1 | 0.1 | 100 | | 100 | | 87 | 7 |
| Yellow Perch | 18 | 0.7 | 0.7 | 0 | | 0 | | 83 | 2 | |

10-Year Catch Per Unit Effort by Gear and Species

Catch per unit effort (CPUE) and average (Avg) of species across 10 years using different gear types.

*Night sampling included prior to 2018 **Method ignores stock length ***AFS standard frame net used in 2016-17

| Gear | Species | CPUE | | | | | | | | | | Avg |
|---------------------------|-----------------|-------|------|-------|-------|-------|------|------|------|-------|------|-------|
| | | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | |
| AFS std gill net | Black Bullhead | | | | | | | 0.1 | 0.2 | 0.1 | 0.0 | 0.1 |
| | Black Crappie | | | | | | | 0.8 | 0.3 | 0.1 | 0.2 | 0.4 |
| | Bluegill | | | | | | | 3.8 | 0.9 | 6.5 | 3.5 | 3.7 |
| | Common Carp | | | | | | | 0.8 | 0.3 | 0.1 | 0.6 | 0.5 |
| | Largemouth Bass | | | | | | | 0.1 | 0.3 | 0.0 | 0.1 | 0.1 |
| | Northern Pike | | | | | | | 1.2 | 1.3 | 0.3 | 0.3 | 0.8 |
| | Pumpkinseed | | | | | | | 0.3 | 0.1 | 0.0 | 0.0 | 0.1 |
| | Rock Bass | | | | | | | 0.2 | 0.1 | 0.6 | 0.5 | 0.4 |
| | Smallmouth Bass | | | | | | | 2.4 | 0.9 | 2.8 | 2.3 | 2.1 |
| | Walleye | | | | | | | 7.2 | 1.3 | 3.8 | 1.5 | 3.5 |
| | White Bass | | | | | | | 7.6 | 3.0 | 2.1 | 3.9 | 4.2 |
| | White Sucker | | | | | | | 2.2 | 3.5 | 1.6 | 1.1 | 2.1 |
| | Yellow Perch | | | | | | | 4.9 | 0.9 | 1.0 | 4.8 | 2.9 |
| boat shocker* | Smallmouth Bass | 107.0 | | 299.0 | | 82.0 | | 86.0 | | | 32.0 | 121.2 |
| boat shocker | Largemouth Bass | 112.1 | | 67.2 | | 224.3 | | | | 21.2 | | 106.2 |
| fall night EF-WAE** | Walleye | 34.7 | 31.0 | 3.0 | 116.0 | 8.0 | 20.0 | 38.5 | 9.0 | 11.0 | 15.0 | 28.6 |
| frame net (std 3/4 in)*** | Black Bullhead | 0.1 | 0.5 | 0.3 | 0.2 | 0.7 | 0.2 | 0.1 | 0.3 | 0.3 | 0.3 | 0.3 |
| | Black Crappie | 1.3 | 8.3 | 2.1 | 5.7 | 1.2 | 0.3 | 2.6 | 0.2 | 3.7 | 0.6 | 2.6 |
| | Bluegill | 57.3 | 90.2 | 53.8 | 54.2 | 31.5 | 26.1 | 62.7 | 39.2 | 118.0 | 63.2 | 59.6 |
| | Channel Catfish | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 |
| | Common Carp | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.2 | 0.1 | 0.0 | 0.1 |
| | Northern Pike | 0.3 | 0.3 | 0.3 | 0.4 | 0.3 | 0.6 | 0.5 | 0.2 | 0.3 | 0.1 | 0.3 |
| | Pumpkinseed | 1.7 | 2.3 | 0.6 | 2.1 | 0.4 | 1.5 | 1.1 | 0.3 | 0.5 | 0.4 | 1.1 |
| | Rock Bass | 5.3 | 12.7 | 8.2 | 3.8 | 5.3 | 6.4 | 0.8 | 2.3 | 4.5 | 3.0 | 5.2 |
| | Smallmouth Bass | 1.9 | 14.9 | 4.6 | 3.4 | 3.3 | 2.0 | 0.6 | 0.5 | 0.8 | 2.6 | 3.5 |
| | Walleye | 0.0 | 0.6 | 1.2 | 0.7 | 0.8 | 0.8 | 1.0 | 0.6 | 0.1 | 0.1 | 0.6 |
| | White Bass | 0.0 | 0.1 | 0.2 | 0.1 | 0.2 | 0.3 | 0.3 | 0.0 | 0.5 | 0.4 | 0.2 |
| | White Sucker | 0.2 | 0.1 | 0.1 | 0.2 | 0.0 | 0.2 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 |
| | Yellow Perch | 5.1 | 7.4 | 0.9 | 1.1 | 0.5 | 0.3 | 1.4 | 0.1 | 3.8 | 0.7 | 2.1 |
| std exp gill net | Black Crappie | 0.7 | 0.7 | 4.0 | 8.5 | 3.5 | 1.3 | | | | | 3.1 |
| | Bluegill | 1.3 | 0.8 | 54.8 | 41.8 | 10.3 | 15.5 | | | | | 20.8 |
| | Common Carp | 0.1 | 0.1 | 1.2 | 0.0 | 0.2 | 0.2 | | | | | 0.3 |
| | Northern Pike | 0.4 | 0.9 | 3.7 | 1.0 | 1.7 | 0.2 | | | | | 1.3 |
| | Pumpkinseed | 0.0 | 0.0 | 0.2 | 0.3 | 0.2 | 0.3 | | | | | 0.2 |
| | Rock Bass | 0.4 | 0.1 | 0.7 | 2.7 | 2.0 | 0.7 | | | | | 1.1 |
| | Smallmouth Bass | 0.2 | 0.5 | 2.7 | 2.3 | 5.3 | 1.5 | | | | | 2.1 |
| | Walleye | 1.9 | 3.6 | 7.5 | 8.7 | 8.5 | 8.7 | | | | | 6.5 |
| | White Bass | 0.1 | 0.6 | 8.0 | 5.8 | 1.3 | 2.0 | | | | | 3.0 |
| | White Sucker | 2.6 | 1.1 | 1.5 | 2.2 | 4.7 | 1.8 | | | | | 2.3 |
| Yellow Perch | 37.4 | 50.7 | 34.0 | 9.7 | 1.7 | 0.0 | | | | | 22.3 | |

10-Year Size Structure and Condition Statistics by Gear and Species

Species proportional size distribution (PSD), proportional size distribution of preferred length fish (PSD-P), and relative weight (Wr) collected by different gear types across 10 years.

*Night sampling included prior to 2018 **AFS standard frame net used in 2016-17

| Gear | Species | Index | Year | | | | | | | | | | |
|-----------------------------|-----------------|-------|------|------|------|------|------|------|------|------|------|------|----|
| | | | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | |
| AFS std gill net | Walleye | PSD | | | | | | | 52 | 81 | 70 | 83 | |
| | | PSD-P | | | | | | | 1 | 6 | 4 | 11 | |
| | | Wr | | | | | | | 86 | 83 | 90 | 86 | |
| | Yellow Perch | PSD | | | | | | | | 7 | 18 | 0 | 0 |
| | | PSD-P | | | | | | | | 0 | 0 | 0 | 0 |
| | | Wr | | | | | | | | 95 | 87 | 94 | 97 |
| boat shocker (day)* | Smallmouth Bass | PSD | 72 | | 8 | | 71 | | 50 | | | 63 | |
| | | PSD-P | 41 | | 3 | | 12 | | 10 | | | 38 | |
| | | Wr | 95 | | 83 | | 86 | | 92 | | | 93 | |
| frame net (std 3/4 in)** | Black Crappie | PSD | 23 | 84 | 84 | 99 | 100 | 100 | 37 | 40 | 9 | 15 | |
| | | PSD-P | 16 | 5 | 57 | 46 | 93 | 100 | 34 | 20 | 0 | 8 | |
| | | Wr | 102 | 104 | 96 | 100 | 95 | 98 | 94 | 101 | 104 | 105 | |
| | Bluegill | PSD | 41 | 61 | 78 | 68 | 46 | 42 | 43 | 3 | 25 | 15 | |
| | | PSD-P | 7 | 0 | 7 | 32 | 27 | 21 | 18 | 1 | 8 | 2 | |
| | | Wr | 101 | 103 | 110 | 104 | 103 | 105 | 104 | 107 | 104 | 103 | |
| std exp gill net | Walleye | PSD | 56 | 14 | 18 | 21 | 16 | 10 | | | | | |
| | | PSD-P | 9 | 5 | 9 | 17 | 4 | 2 | | | | | |
| | | Wr | 92 | 85 | 81 | 80 | 82 | 83 | | | | | |
| | Yellow Perch | PSD | 0 | 1 | 3 | 2 | 10 | 0 | | | | | |
| | | PSD-P | 0 | 0 | 0 | 0 | 0 | 0 | | | | | |
| | | Wr | 99 | 93 | 94 | 92 | 92 | | | | | | |

Length at Capture

Mean length at capture by age across years sampled, sample size (N).

Species: Bluegill

| Mean Length (expanded sample number) at capture by age | | | | | | | | | | | |
|--|------|-------------|--------------|---------------|--------------|--------------|--------------|--------------|-------------|------------|-------------|
| Year | N | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10+ |
| 2019 | 1452 | | 94 (21) | 99 (465) | 126 (926) | 146 (21) | 200 (19) | | | | |
| 2018 | 2500 | | 84 (41) | 110 (1854) | 151 (193) | 187 (299) | 223 (28) | 237 (29) | 242 (36) | | 251 (22) |
| 2017 | 2228 | | 75 (1923) | 123 (74) | 125 (158) | 136 (66) | 204 (1) | 249 (1) | | 245 (4) | 242 (2) |
| 2016 | 2140 | 68 (636) | 100 (206) | 95 (582) | 161 (338) | 198 (248) | 215 (85) | 243 (8) | 233 (17) | 256 (8) | 246 (14) |
| 2015 | 636 | 77 (6) | 77 (3) | 93 (327) | 163 (122) | 187 (61) | 205 (22) | 224 (81) | 226 (10) | 224 (5) | 242 (1) |
| 2014 | 757 | | 96 (125) | 109 (209) | 144 (101) | 196 (92) | 200 (155) | 198 (76) | 234 (1) | 234 (1) | |
| 2013 | 1323 | 94 (12) | 84 (91) | 116 (328) | 173 (124) | 190 (249) | 199 (431) | 201 (77) | 214 (14) | | |
| 2012 | 1291 | | 94 (54) | 126 (63) | 158 (358) | 176 (530) | 190 (129) | 193 (114) | 198 (45) | | |
| 2011 | 2164 | | | 108 (266) | 130 (505) | 173 (669) | 183 (727) | | | | |
| 2010 | 1374 | | 93 (57) | 106 (196) | 130 (307) | 153 (728) | 212 (77) | 216 (6) | | | 261 (3) |

Species: Smallmouth Bass

| Mean Length (expanded sample number) at capture by age | | | | | | | | | | | |
|--|-----|---|------------|-------------|--------------|-------------|-------------|------------|------------|------------|-------------|
| Year | N | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10+ |
| 2019 | 22 | | 191 (5) | 255 (7) | 318 (6) | 346 (3) | 355 (1) | | | | |
| 2016 | 86 | | 181 (1) | 221 (30) | 258 (13) | 299 (20) | 327 (10) | 359 (6) | 401 (6) | | |
| 2014 | 82 | | | 202 (2) | 264 (15) | 293 (17) | 304 (36) | 332 (8) | 403 (4) | 460 (1) | |
| 2012 | 298 | | 184 (1) | 209 (59) | 241 (208) | 307 (25) | 295 (1) | | | 444 (3) | 478 (1) |
| 2010 | 107 | | | 208 (21) | 283 (28) | 328 (11) | 356 (17) | 373 (5) | 399 (8) | 403 (6) | 425 (13) |

Species: Walleye

| Mean Length (expanded sample number) at capture by age | | | | | | | | | | | |
|--|----|-------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|-------------|------------|
| Year | N | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10+ |
| 2019 | 21 | 233 (4) | 325 (2) | 424 (2) | 479 (3) | | 480 (4) | | 524 (1) | 456 (1) | 500 (4) |
| 2018 | 47 | 218 (1) | 316 (5) | 366 (10) | 380 (2) | 434 (7) | | 443 (8) | 420 (2) | 462 (11) | 672 (1) |
| 2017 | 17 | | 281 (2) | 151 (1) | 410 (4) | | 392 (3) | | 438 (7) | | |
| 2016 | 88 | 248 (2) | 281 (4) | 331 (11) | 366 (1) | 381 (28) | 398 (7) | 386 (36) | | | 625 (1) |
| 2015 | 54 | | 256 (6) | | 329 (7) | 360 (3) | 354 (37) | | | | 681 (1) |
| 2014 | 55 | 187 (4) | | 278 (4) | | 356 (45) | | | | | 584 (2) |
| 2013 | 56 | | 224 (6) | 288 (10) | 334 (30) | | | 559 (1) | 565 (1) | 559 (1) | 581 (7) |
| 2012 | 48 | 167 (3) | 264 (1) | 320 (40) | | | | 552 (1) | | 636 (1) | 544 (2) |
| 2011 | 73 | 209 (3) | 298 (61) | 399 (1) | 481 (2) | | 478 (2) | | | 536 (2) | 580 (2) |
| 2010 | 85 | 210 (52) | 311 (13) | 402 (1) | 446 (3) | 445 (4) | | | 478 (3) | 494 (3) | 525 (6) |

Species: Yellow Perch

| Mean Length (expanded sample number) at capture by age | | | | | | | | | | | |
|--|------|-------------|---------------|--------------|--------------|-------------|------------|------------|------------|---|-----|
| Year | N | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10+ |
| 2019 | 57 | | 147 (57) | | | | | | | | |
| 2017 | 11 | | | 161 (4) | 192 (2) | 189 (3) | | 197 (1) | 206 (1) | | |
| 2016 | 59 | 136 (1) | 147 (40) | 171 (13) | 199 (2) | | 222 (1) | 205 (1) | 240 (1) | | |
| 2015 | 11 | 100 (10) | 97 (1) | | | | | | | | |
| 2014 | 19 | 97 (7) | 110 (2) | | 155 (1) | 184 (3) | 195 (6) | | | | |
| 2013 | 70 | 97 (11) | 112 (1) | 142 (2) | 158 (21) | 169 (32) | 169 (4) | | | | |
| 2012 | 215 | 102 (2) | 112 (7) | 144 (20) | 165 (168) | 187 (18) | | | | | |
| 2011 | 1606 | | 109 (683) | 150 (813) | 169 (113) | | | | | | |
| 2010 | 1826 | 96 (25) | 120 (1517) | 164 (277) | 199 (7) | | | | | | |

Fish Condition

Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

| Species | Year | Length Groups | | | | | | | |
|------------------------------------|------|---------------|--------------|-----|--------------|-----|--------------|----|--------------|
| | | S-Q | | Q-P | | P-M | | M | |
| | | N | Wr (SE) | N | Wr (SE) | N | Wr (SE) | N | Wr (SE) |
| Black Crappie Frame Net | 2015 | 0 | | 0 | | 6 | 98 (2.3) | 0 | |
| | 2016 | 39 | 97 (0.9) | 2 | 104 (4.7) | 5 | 90 (2.2) | 16 | 86 (2.3) |
| | 2017 | 3 | 108 (4.4) | 1 | 95 | 0 | | 1 | 85 |
| | 2018 | 70 | 104 (2.2) | 7 | 102 (2.0) | 0 | | 0 | |
| | 2019 | 11 | 107 (2.4) | 1 | 105 | 0 | | 1 | 84 |
| Bluegill Frame Net | 2015 | 366 | 104 (0.9) | 127 | 110 (0.6) | 134 | 106 (0.9) | 0 | |
| | 2016 | 864 | 101 (1.1) | 368 | 111 (0.6) | 257 | 103 (1.1) | 15 | 100 (3.8) |
| | 2017 | 908 | 106 (0.6) | 23 | 111 (1.7) | 7 | 106 (2.5) | 2 | 95 (4.6) |
| | 2018 | 1851 | 102 (0.5) | 434 | 110 (0.6) | 165 | 107 (0.9) | 29 | 104 (3.4) |
| | 2019 | 1228 | 101 (0.5) | 195 | 113 (0.8) | 30 | 114 (1.6) | 0 | |
| Smallmouth Bass Electro Fishing | 2016 | 43 | 93 (0.9) | 34 | 91 (0.8) | 9 | 85 (2.3) | 0 | |
| | 2019 | 12 | 91 (1.7) | 8 | 92 (1.4) | 12 | 96 (1.6) | 0 | |
| Walleye Gill Net | 2015 | 47 | 83 (1.5) | 4 | 79 (0.6) | 0 | | 1 | 74 |
| | 2016 | 41 | 87 (0.8) | 44 | 85 (0.9) | 1 | 80 | 0 | |
| | 2017 | 3 | 86 (3.7) | 12 | 83 (1.6) | 1 | 78 | 0 | |
| | 2018 | 14 | 94 (1.5) | 30 | 88 (0.8) | 1 | 87 | 1 | 79 |
| | 2019 | 3 | 85 (2.1) | 13 | 87 (1.5) | 2 | 81 (5.9) | 0 | |
| Yellow Perch Gill Net | 2015 | 0 | | 0 | | 0 | | 0 | |
| | 2016 | 55 | 95 (0.9) | 4 | 90 (3.3) | 0 | | 0 | |
| | 2017 | 9 | 88 (2.3) | 2 | 86 (4.7) | 0 | | 0 | |
| | 2018 | 12 | 94 (2.1) | 0 | | 0 | | 0 | |
| | 2019 | 57 | 97 (0.8) | 0 | | 0 | | 0 | |

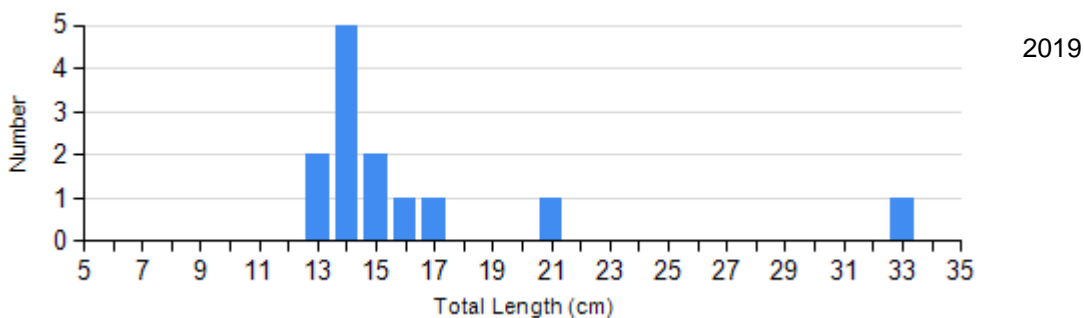
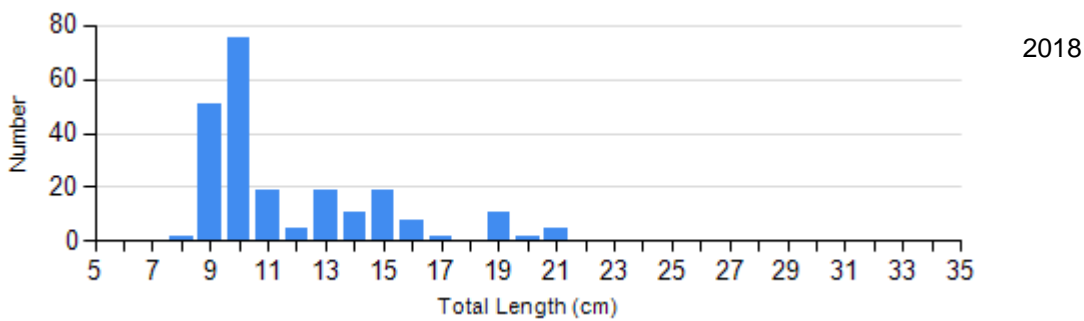
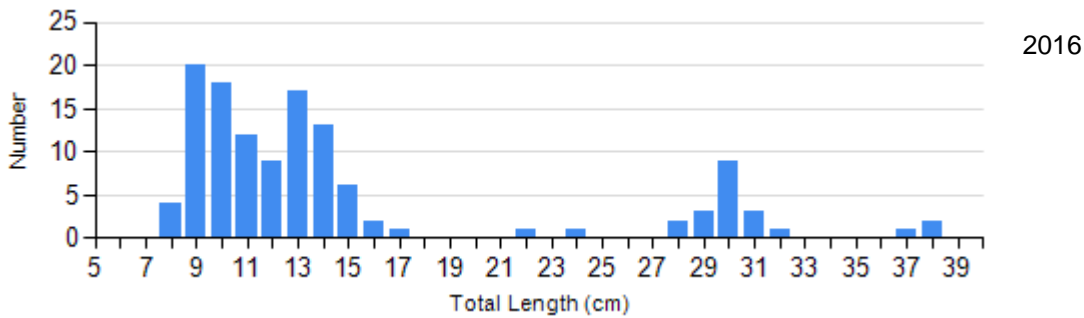
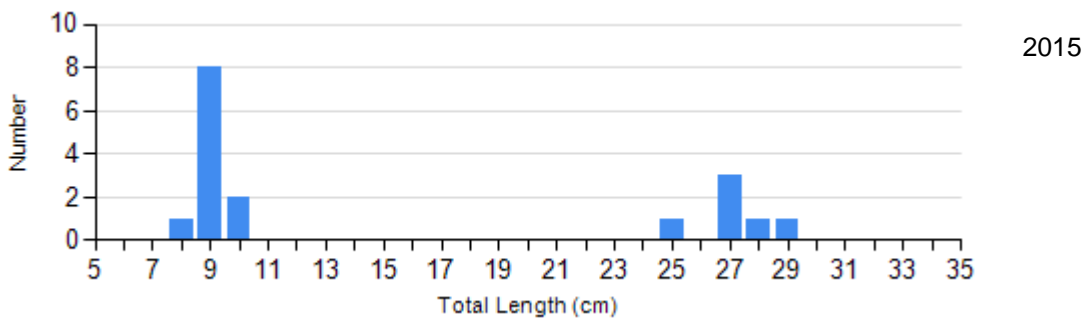
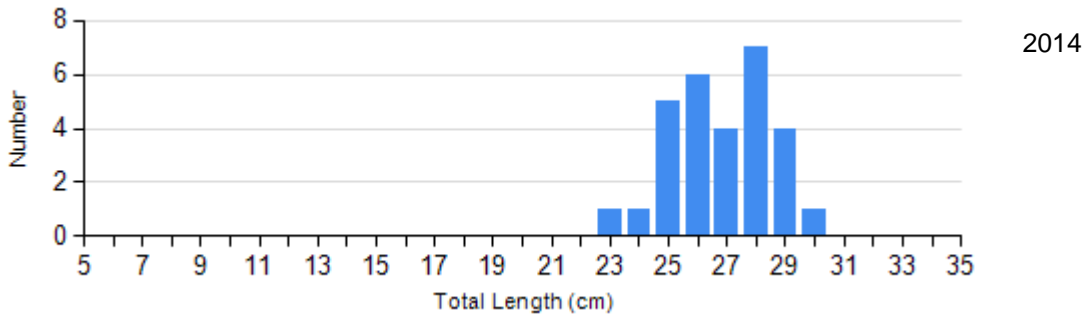
Length Frequency Distribution

Length frequency histogram of species sampled by year.

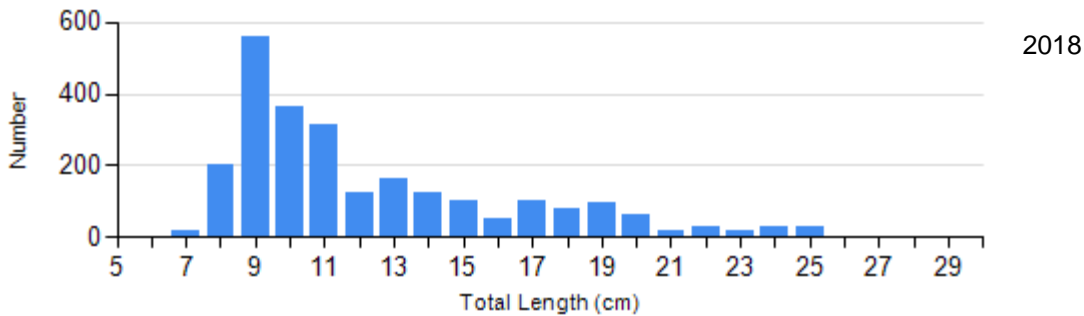
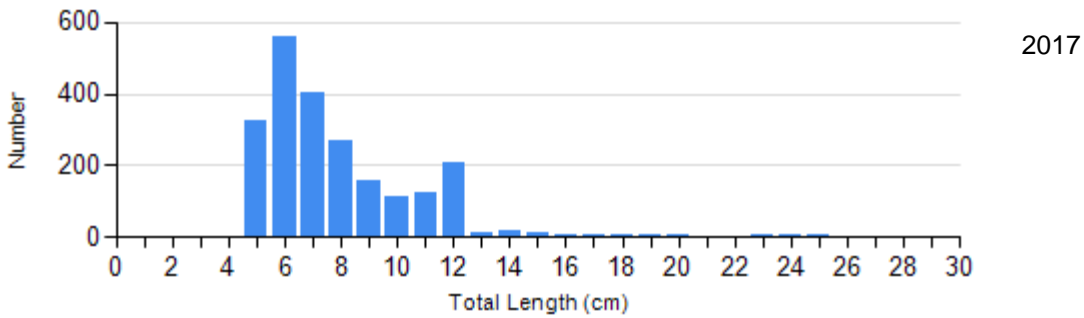
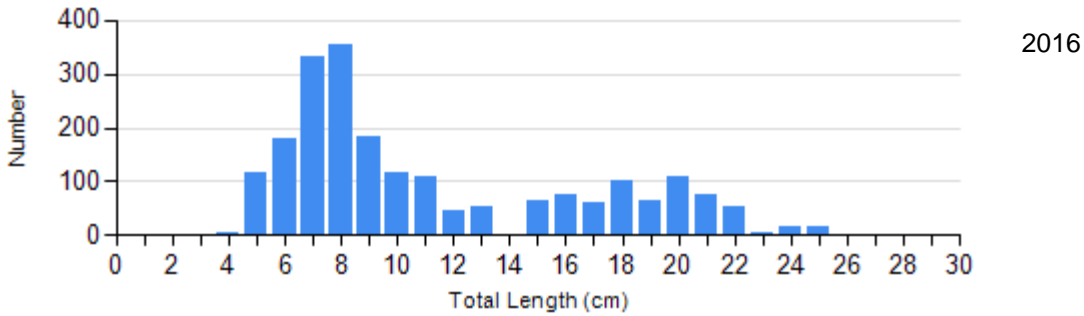
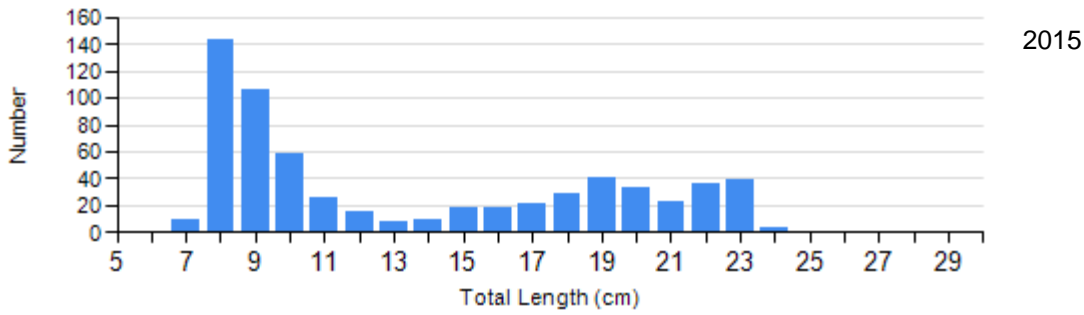
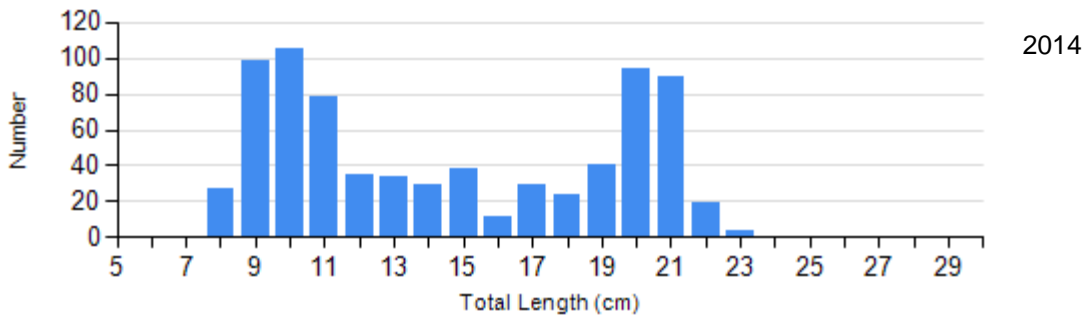
*AFS standard frame nets used in 2016-17

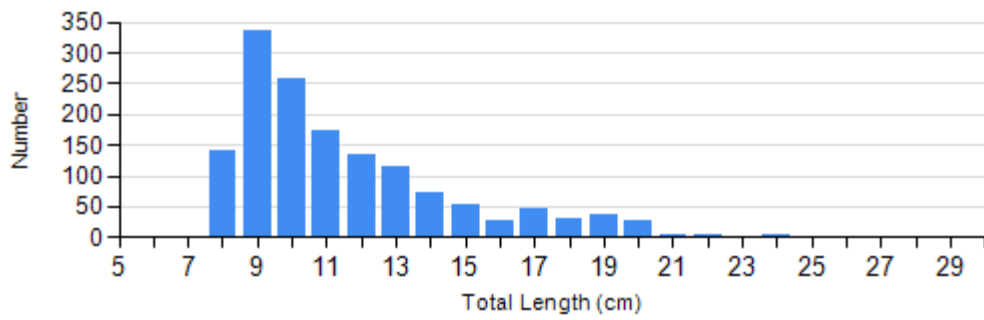
Species: Black Crappie

Gear: frame net (std 3/4 in)*



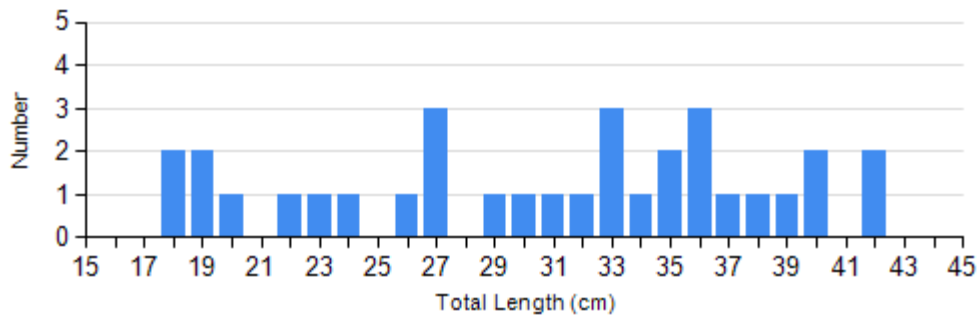
Species: Bluegill
Gear: frame net (std 3/4 in)*





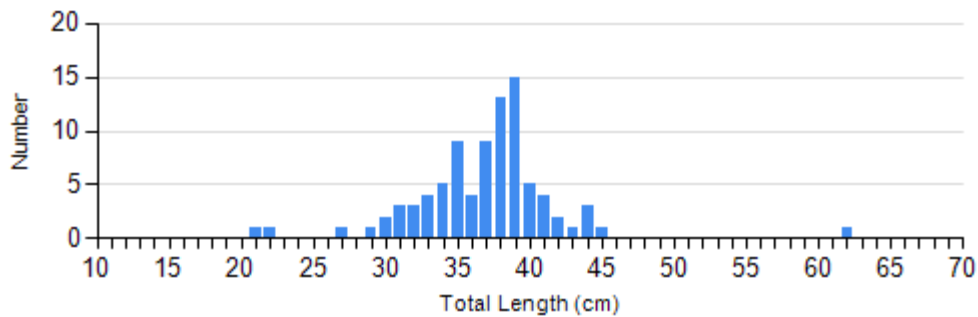
2019

Species: Smallmouth Bass
Gear: boat shocker (day)

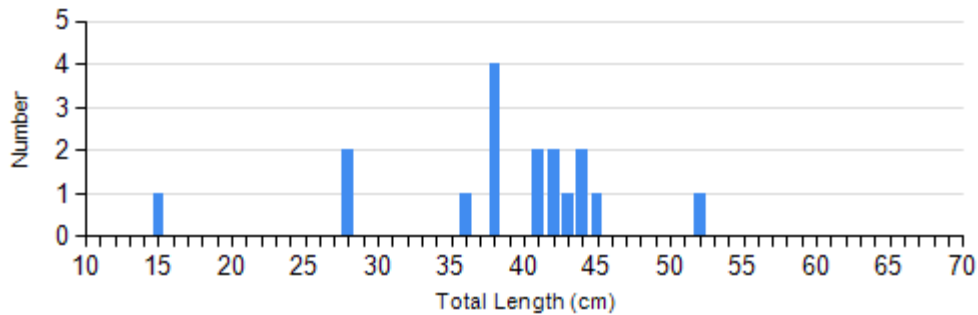


2019

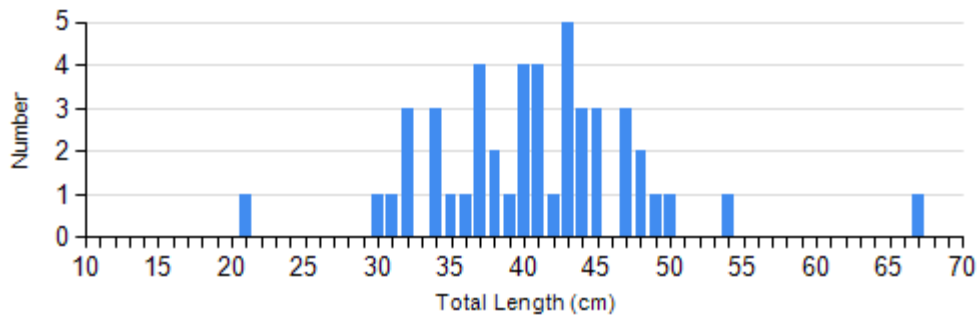
Species: Walleye
Gear: AFS std gill net



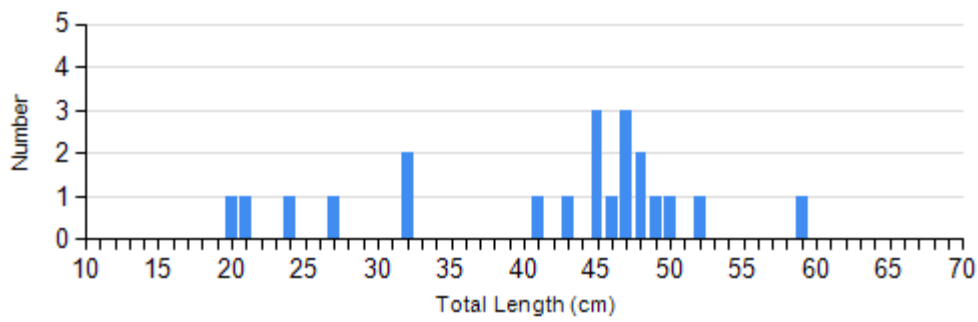
2016



2017

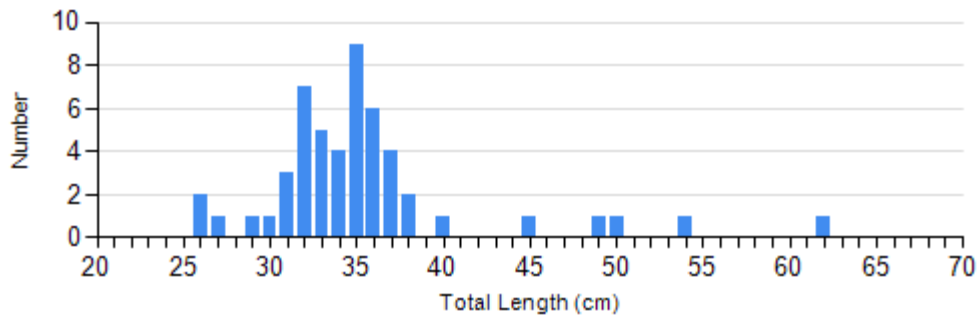


2018

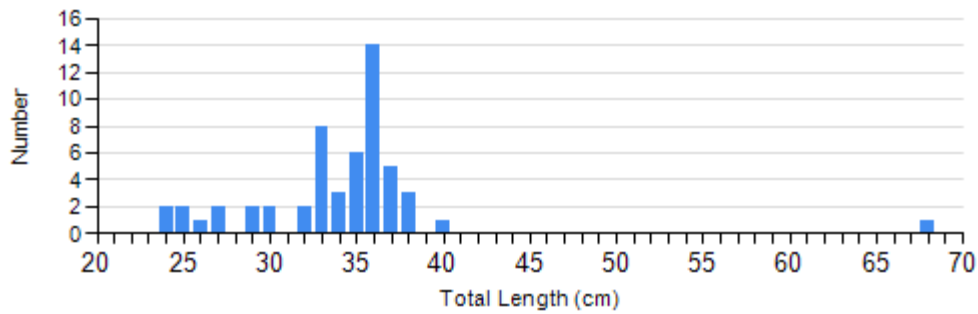


2019

Species: Walleye
Gear: std exp gill net

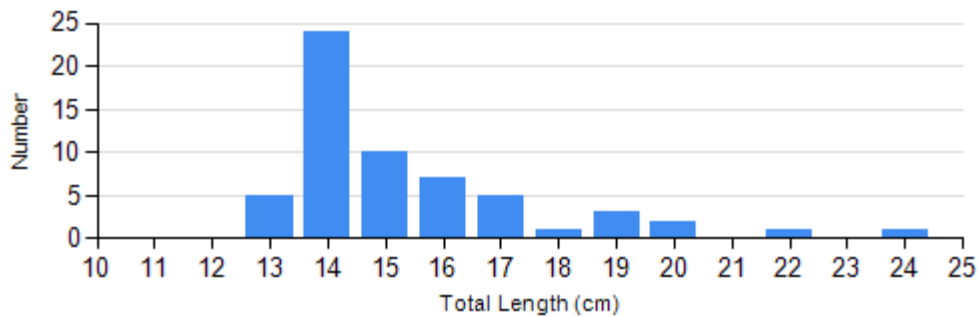


2014

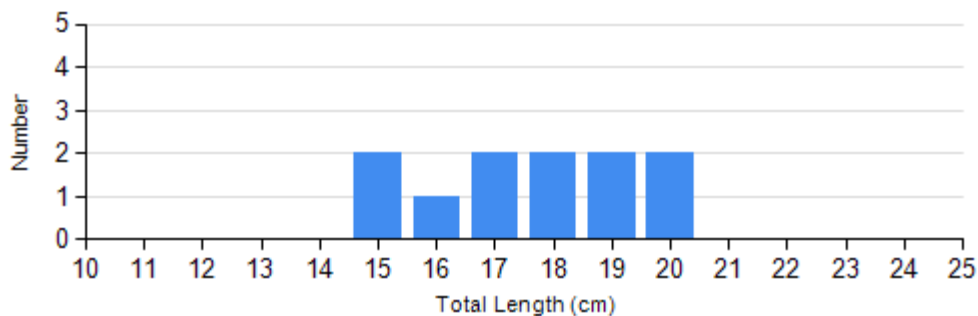


2015

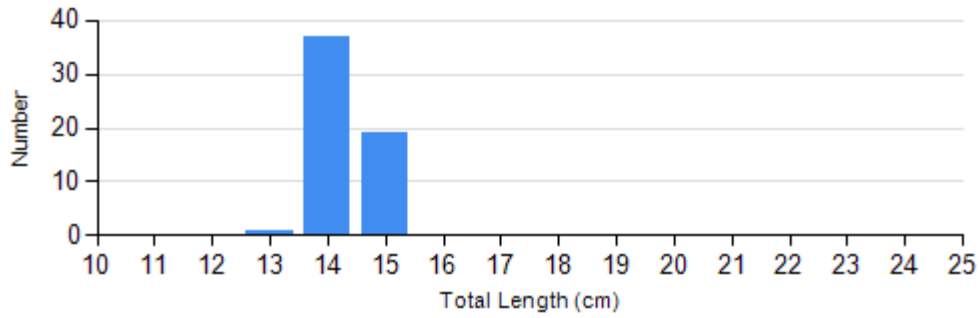
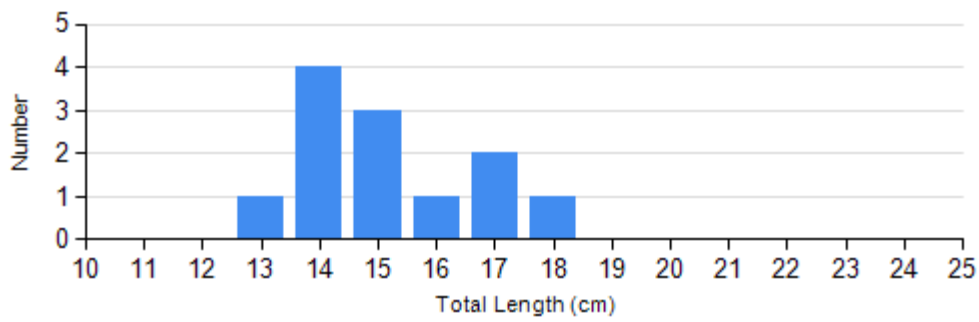
Species: Yellow Perch
Gear: AFS std gill net



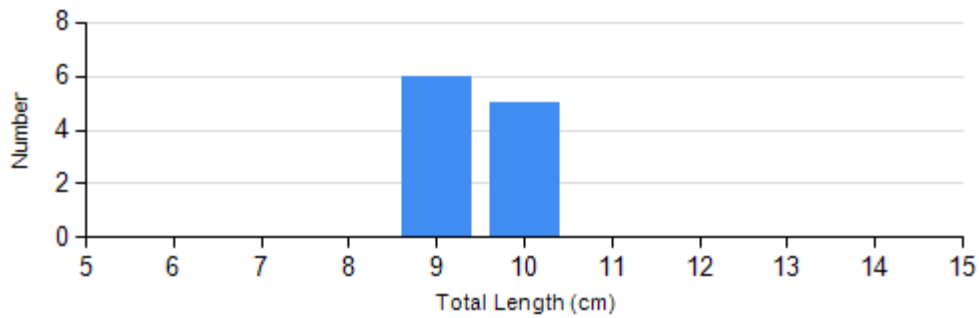
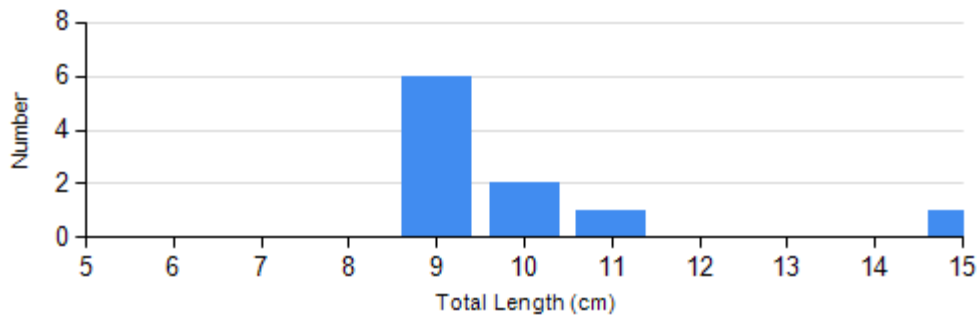
2016



2017



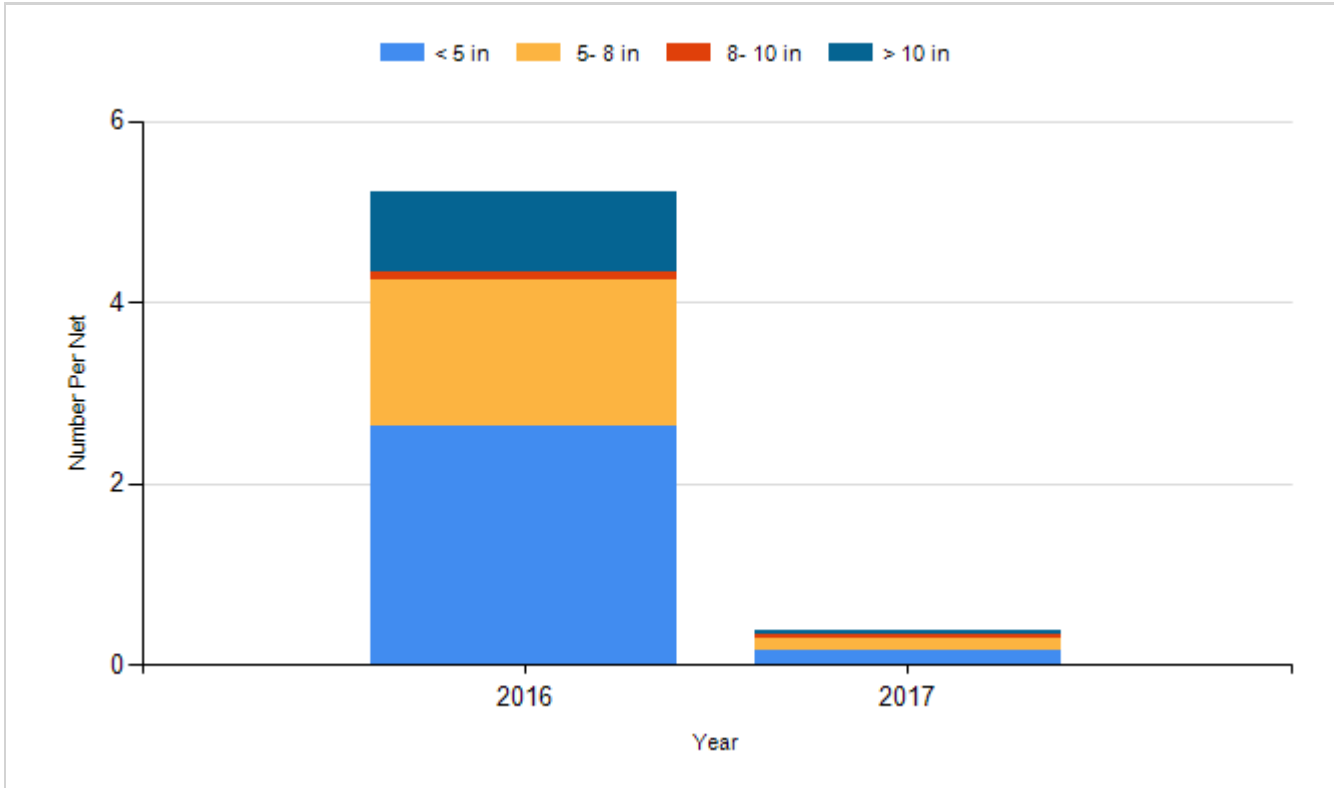
Species: Yellow Perch
 Gear: std exp gill net



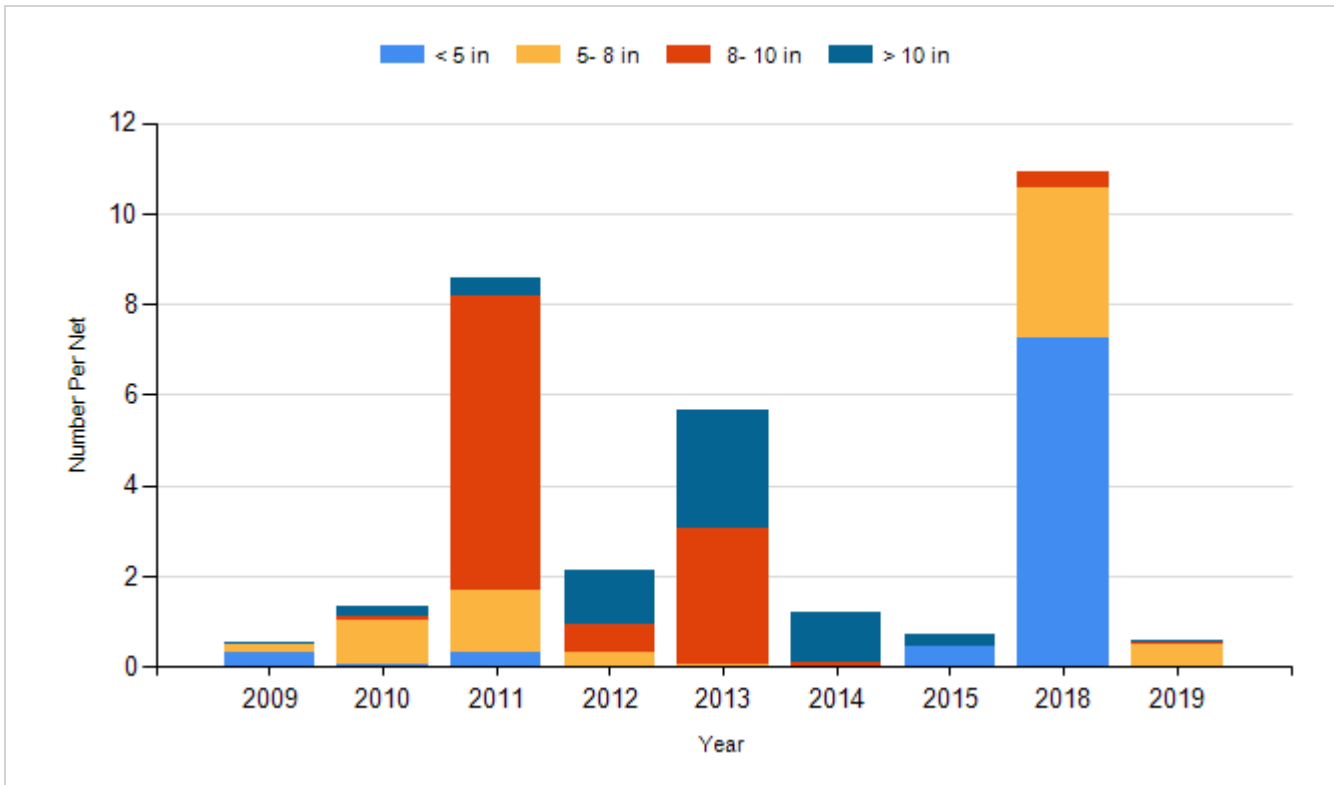
Historic Fish Sizes and Relative Abundance

Size distribution per net by color for species sampled by year.

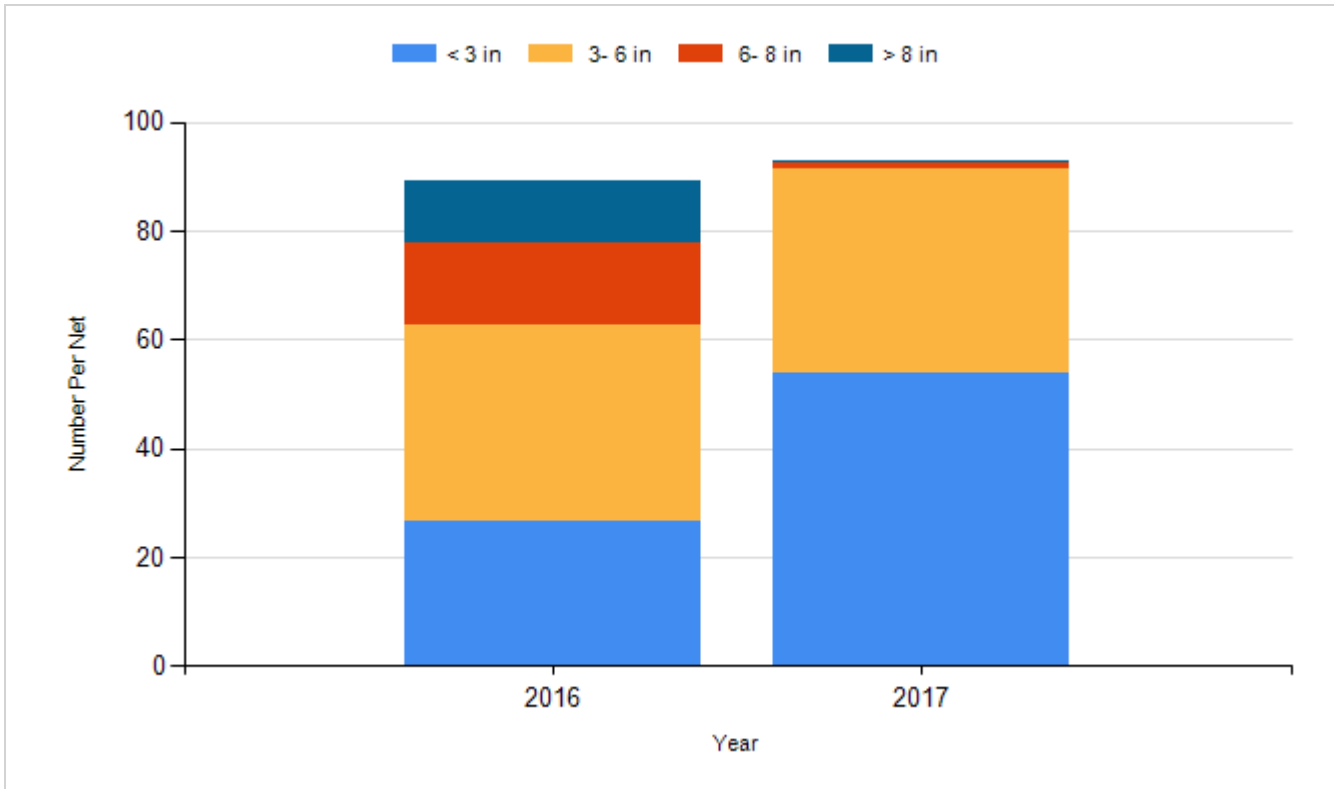
Species: Black Crappie
Gear: AFS std frame net



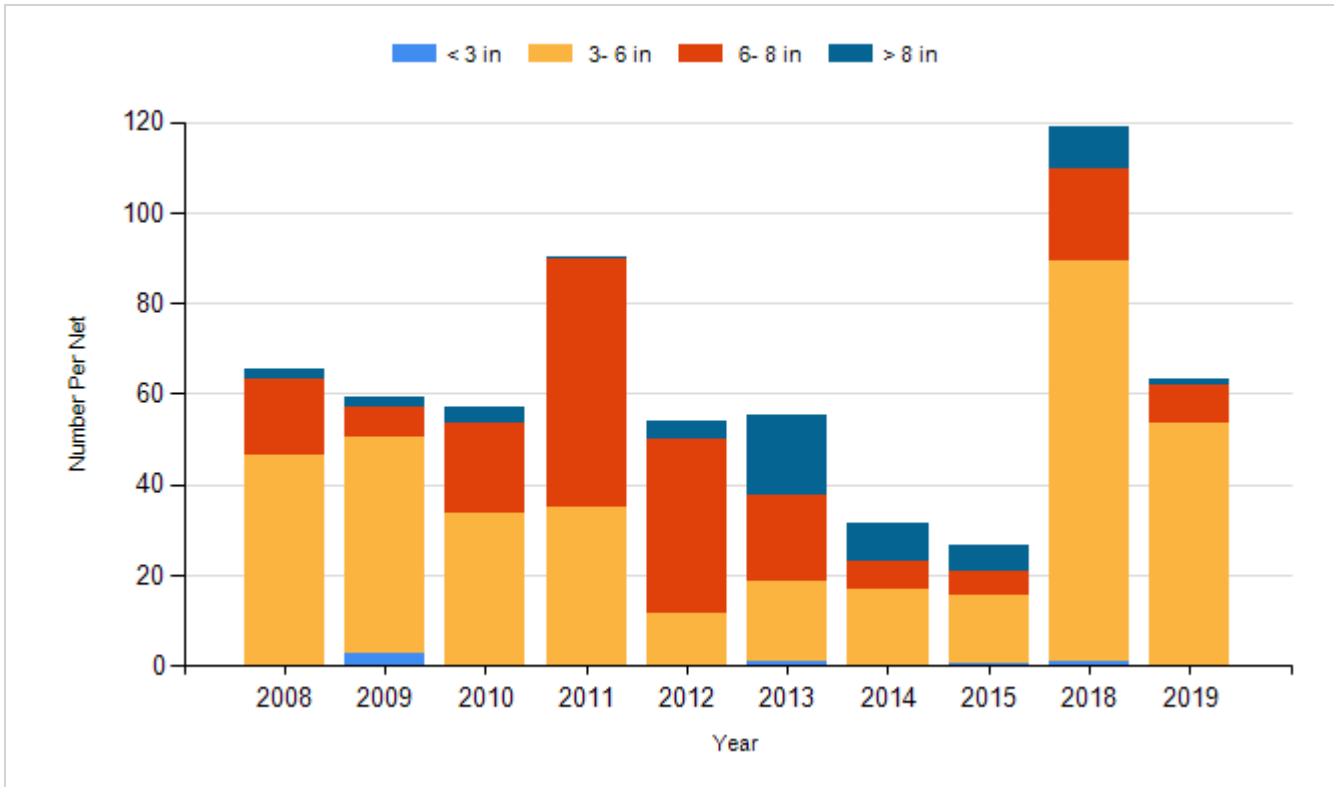
Species: Black Crappie
Gear: frame net (std 3/4 in)



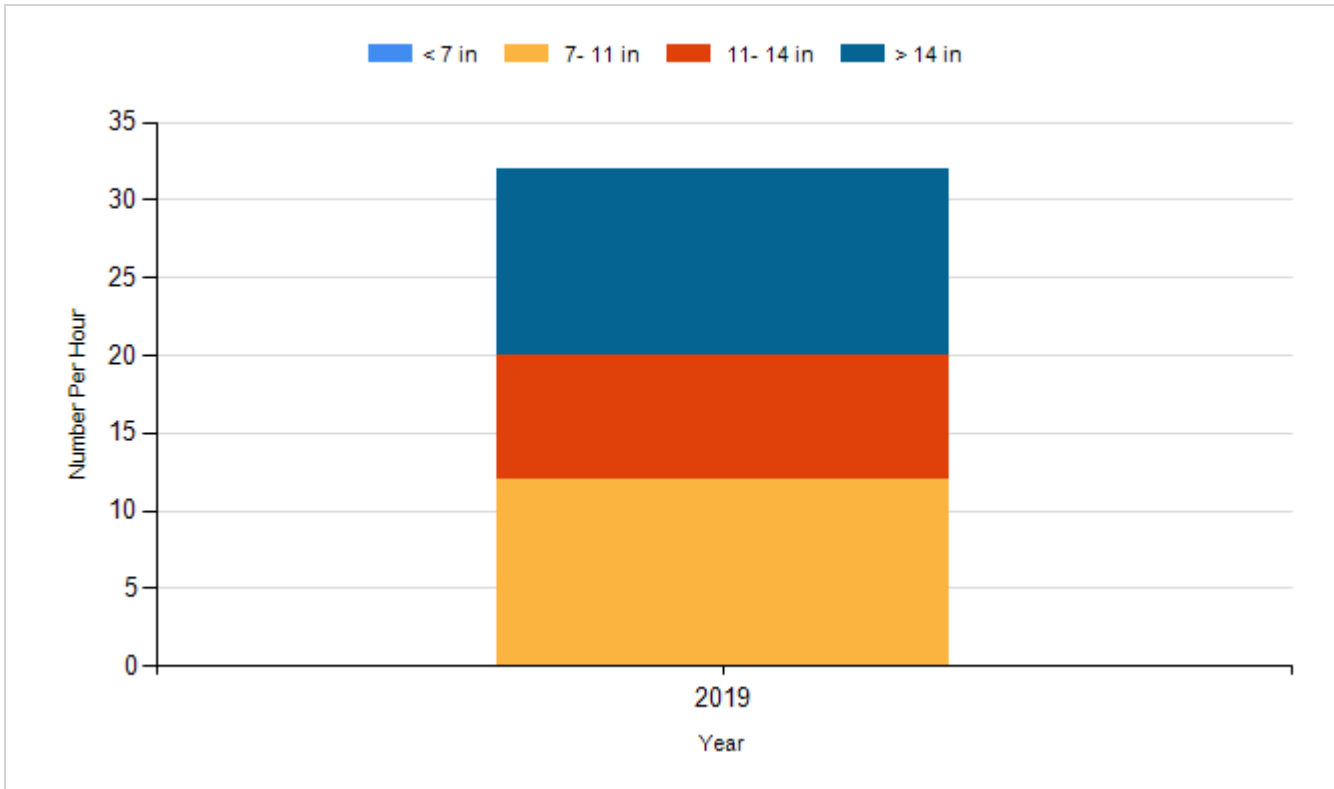
Species: Bluegill
Gear: AFS std frame net



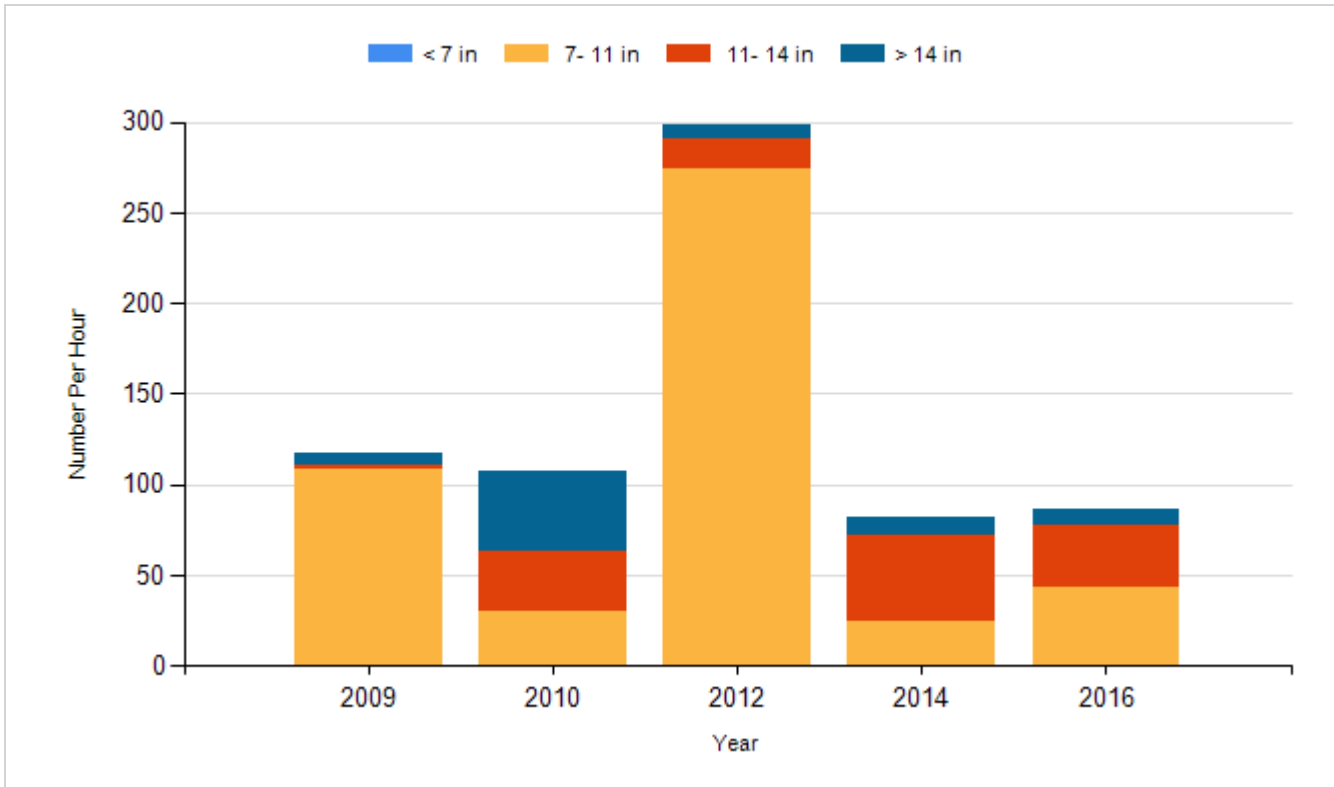
Species: Bluegill
Gear: frame net (std 3/4 in)



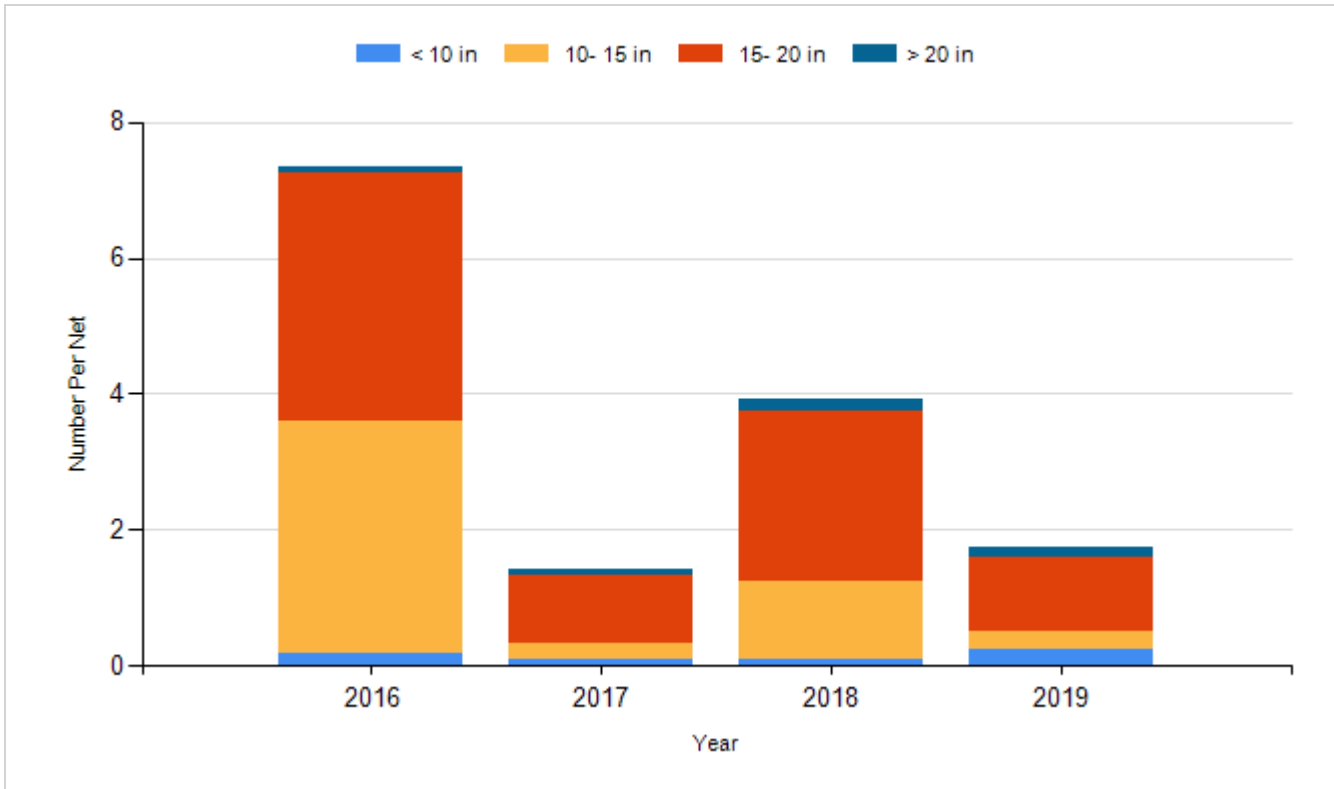
Species: Smallmouth Bass
Gear: boat shocker (day)



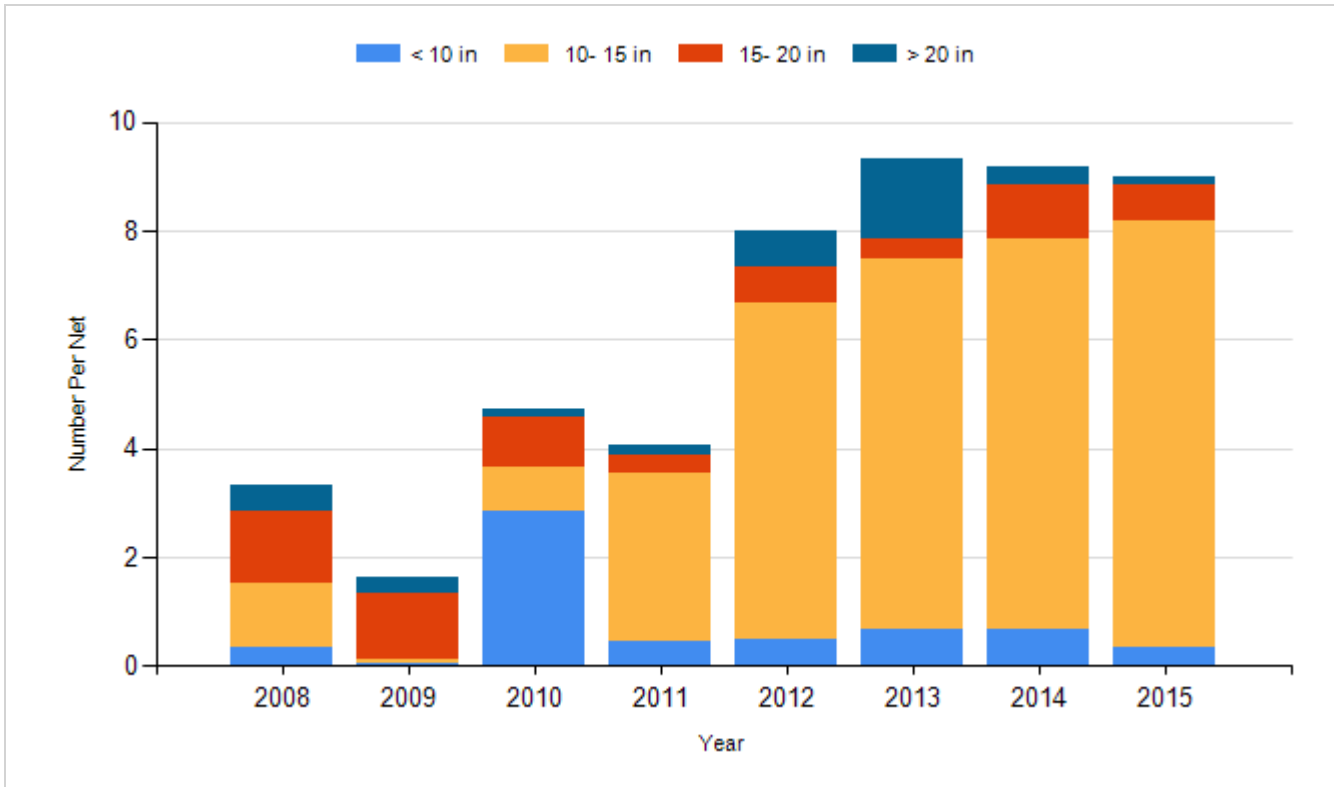
Species: Smallmouth Bass
Gear: boat shocker (night, DC)



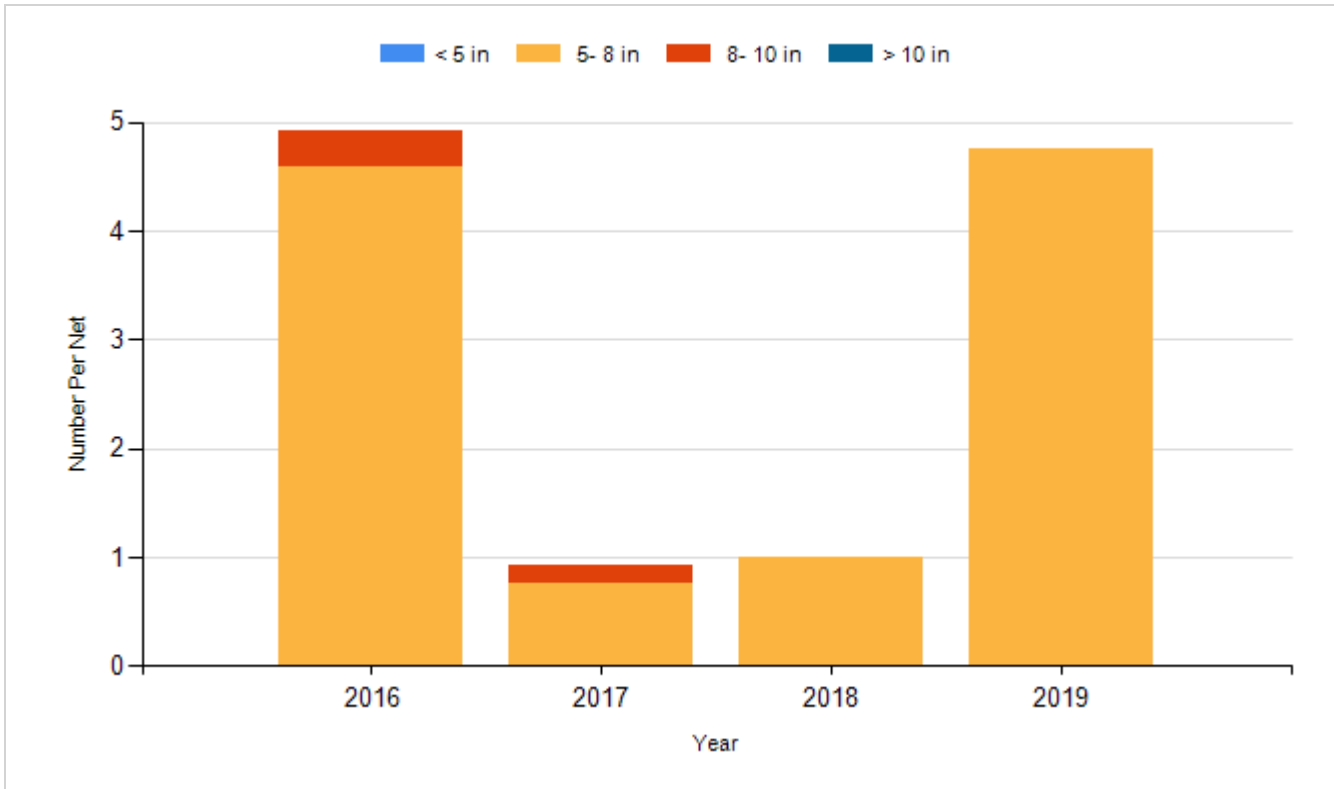
Species: Walleye
Gear: AFS std gill net



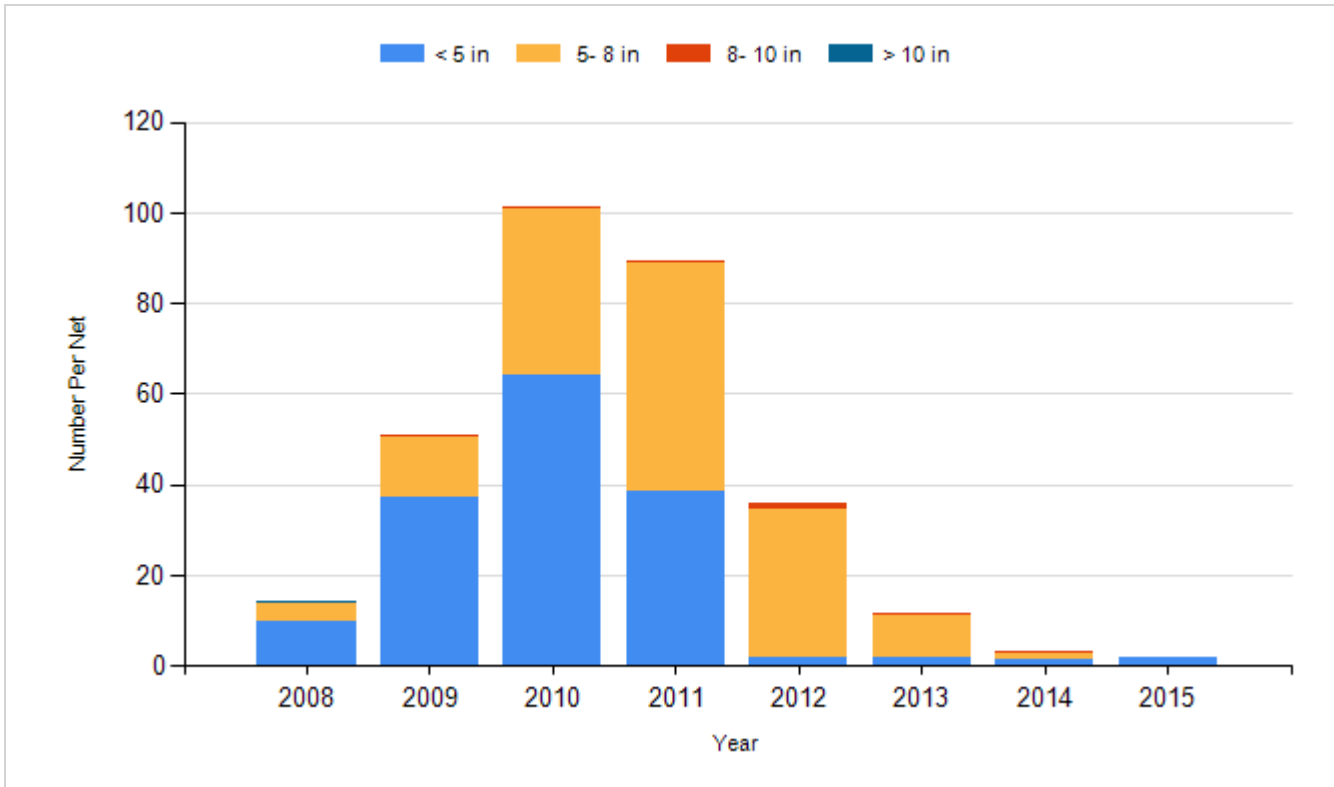
Species: Walleye
Gear: std exp gill net



Species: Yellow Perch
Gear: AFS std gill net



Species: Yellow Perch
Gear: std exp gill net



Fish Stocking

Number of fish stocked by year, species, and size.

| Year | Species | Size | Number |
|------|---------|------------------|---------|
| 2009 | Walleye | Large Fingerling | 14,949 |
| 2011 | Walleye | Large Fingerling | 38,634 |
| 2011 | Walleye | Small Fingerling | 235,640 |
| 2013 | Walleye | Small Fingerling | 217,450 |
| 2015 | Walleye | Large Fingerling | 13,264 |
| 2017 | Walleye | Large Fingerling | 900 |
| 2018 | Walleye | Large Fingerling | 48,484 |
| 2019 | Walleye | Large Fingerling | 3,800 |
