Old Wall Dam Lake Survey Summary

Old Wall is a 12-acre impoundment located .5 miles South and 1 mile West of Wall. Old Wall suffered a winterkill during the 2022/2023 winter. This survey was to check on the remaining fish populations. Bluegill were a primary species before the winterkill but were no longer present in the 2023 survey. The primary species at this point are Black Bullhead, Black Crappie, Yellow Perch and Largemouth bass.

Black Bullhead. Black Bullhead numbers have exploded with a catch rate of 1,648 per net. Bullheads comprised 99% of the fish sampled. Fish were on the small side with only 3 percent of the adult bullheads being over nine inches.

Largemouth Bass. Bass numbers were way down after the winterkill. Old Wall was stocked with 500 fingerlings and 100 adult bass in 2023. Hopefully, these fish will survive and reproduce providing a predatory component to help control Black Bullhead. Thirteen bass were sampled in 21 minutes of fall electrofishing and were similar size to the adults that were stocked (8-11in).

Yellow Perch. Perch numbers were still good with 14.8 fish per net. Sizes were also decent with fish ranging between 7 and 10 inches.

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Old Wall, Pennington County
MCE-Lake-214-000
2023

Lake Information

Name: Old Wall

County: Pennington

Surface Area: 13 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (day)	Oct 24, 2023	1267 seconds
frame net (std 3/4 in)	Jul 21, 2023	4 net-nights

Common Fish Species Present

Black Bullhead

Walleye

Largemouth Bass

Yellow Perch

Black Crappie

Golden Shiner

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.
- s**td 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.

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

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.

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

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

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.

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

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).

	Stock		Quality		Preferred		Memorable		Trophy	
Species Name	(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**

			Abundance		Stock Density Indices				Condition	
Gear	Species	Sample Size (n)	CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
boat shocker (day)	Largemouth Bass	13	17.0		0		0		115	1
	Walleye*	10	28.4		0		0		92	3
frame net (std 3/4 in)	Black Bullhead	6597	1,148.0	714.5	11	1	0		89	1
	Black Crappie	7	1.5	1.6	33		0		111	4
	Golden Shiner	2	0.0	0.0						
	Yellow Perch	59	14.8	9.7	29	9	2		99	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.

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

		CPUE										
Gear	Species	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Avg
boat shocker (day)	Largemouth Bass							81.0			17.0	49.00
	Walleye*							0.0			28.4	14.20
boat shocker (night)	Largemouth Bass			112.5		22.5						67.50
frame net (std 3/4 in)	Black Bullhead		33.8	10.5		2.8	1.0	151.0			1,148.0	224.52
	Black Crappie		0.5	7.0		22.2	4.8	18.5			1.5	9.08
	Bluegill		9.3	114.3		18.2	4.1	2.2			0.0	24.68
	Golden Shiner		0.0	0.0		0.0	0.0	0.0			0.0	0.00
	Largemouth Bass		0.0	0.3		0.0	0.0	0.0			0.0	0.05
	Rock Bass		0.0	0.0		0.0	0.1	0.0			0.0	0.02
	Yellow Perch		18.5	10.1		0.0	0.4	2.0			14.8	7.63

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.

			Year									
Gear	Species	Index	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
boat shocker (day)	Largemouth Bass	PSD							7			0
		PSD-P							4			0
		Wr							102			115
	Walleye	PSD										0
		PSD-P										0
		Wr										92
boat shocker (night)	Largemouth Bass	PSD			56		40					
		PSD-P			27		40					
		Wr			99		100					
frame net (std 3/4 in)	Black Bullhead	PSD		100	98		86	100	0			11
		PSD-P		93	96		43	75	0			0
		Wr		96	95		93	96	83			89
	Black Crappie	PSD		100	5		16	89	56			33
		PSD-P		0	5		0	0	4			0
		Wr		104	116		101	103	101			111
	Largemouth Bass	PSD			50				0			
		PSD-P			50				0			
		Wr			106							
	Yellow Perch	PSD		96	95			67	67			29
		PSD-P		32	51			0	8			2
		Wr		93	89			122	85			99

Fish Condition

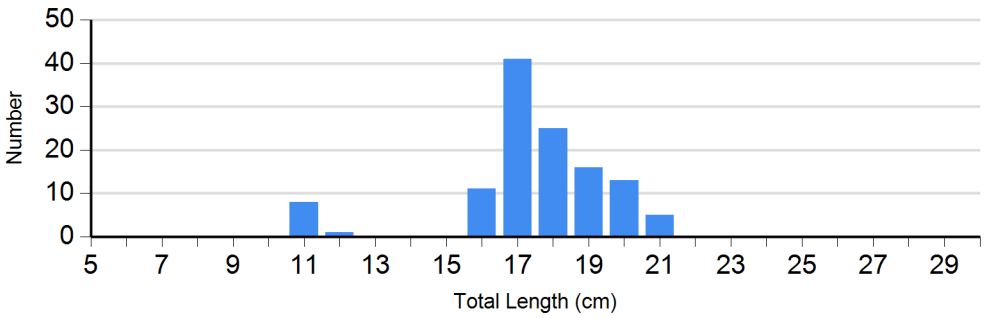
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2019	4	102	34	103 (1.2)	0		0	
	2020	49	107 (1.4)	58	95 (0.8)	4	97	0	
	2023	4	107 (1.7)	2	120 (5.7)	0		0	
Largemouth Bass Electro Fishing	2020	25	102 (1.3)	1	99	1	108	0	
	2023	6	115 (1.0)	0		0		0	

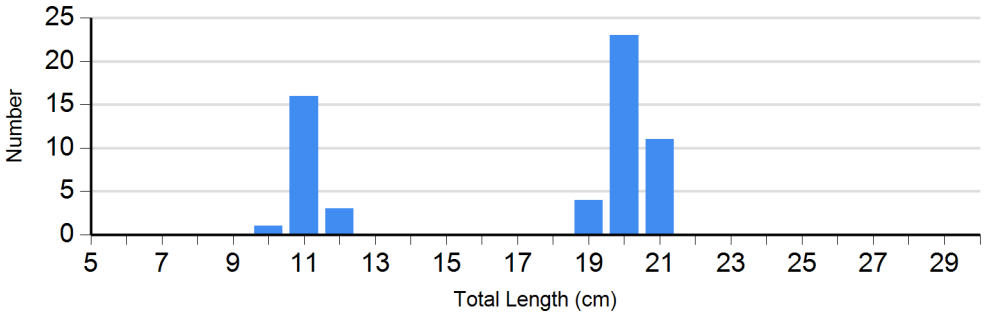
Length Frequency Distribution

Length frequency histogram of species sampled by year.

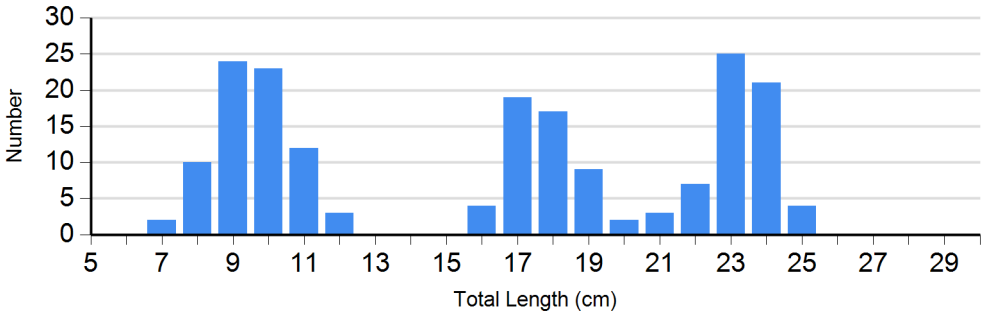
Species: Black Crappie
Gear: frame net (std 3/4 in)



2018

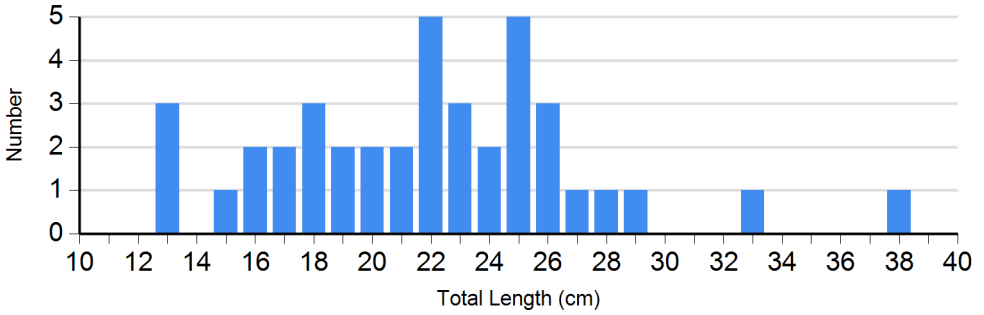


2019

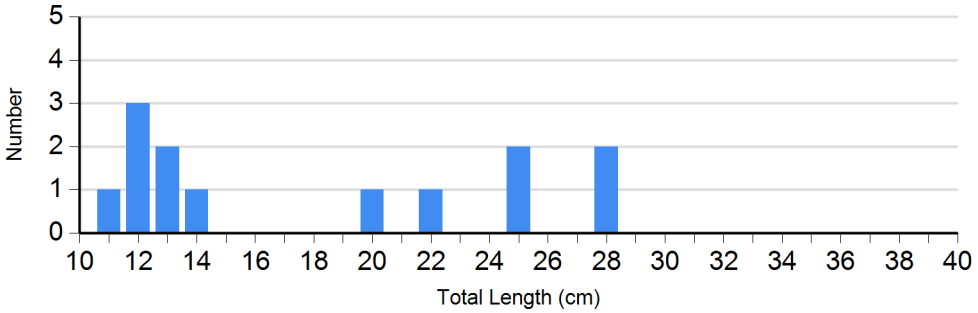


2020

Species: Largemouth Bass
Gear: boat shocker (day)

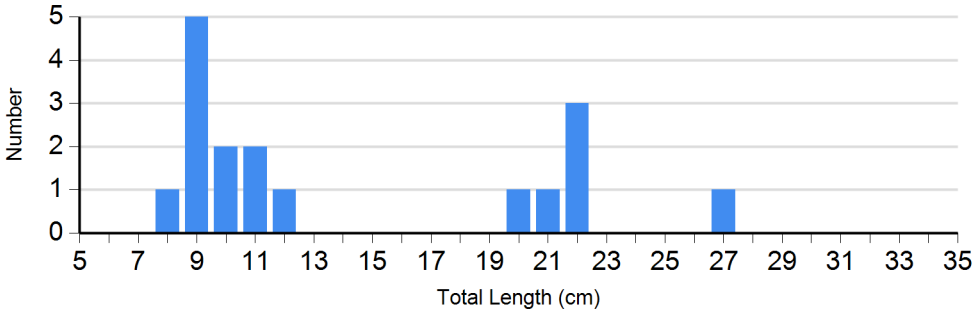


2020



2023

Species: Largemouth Bass
Gear: boat shocker (night)

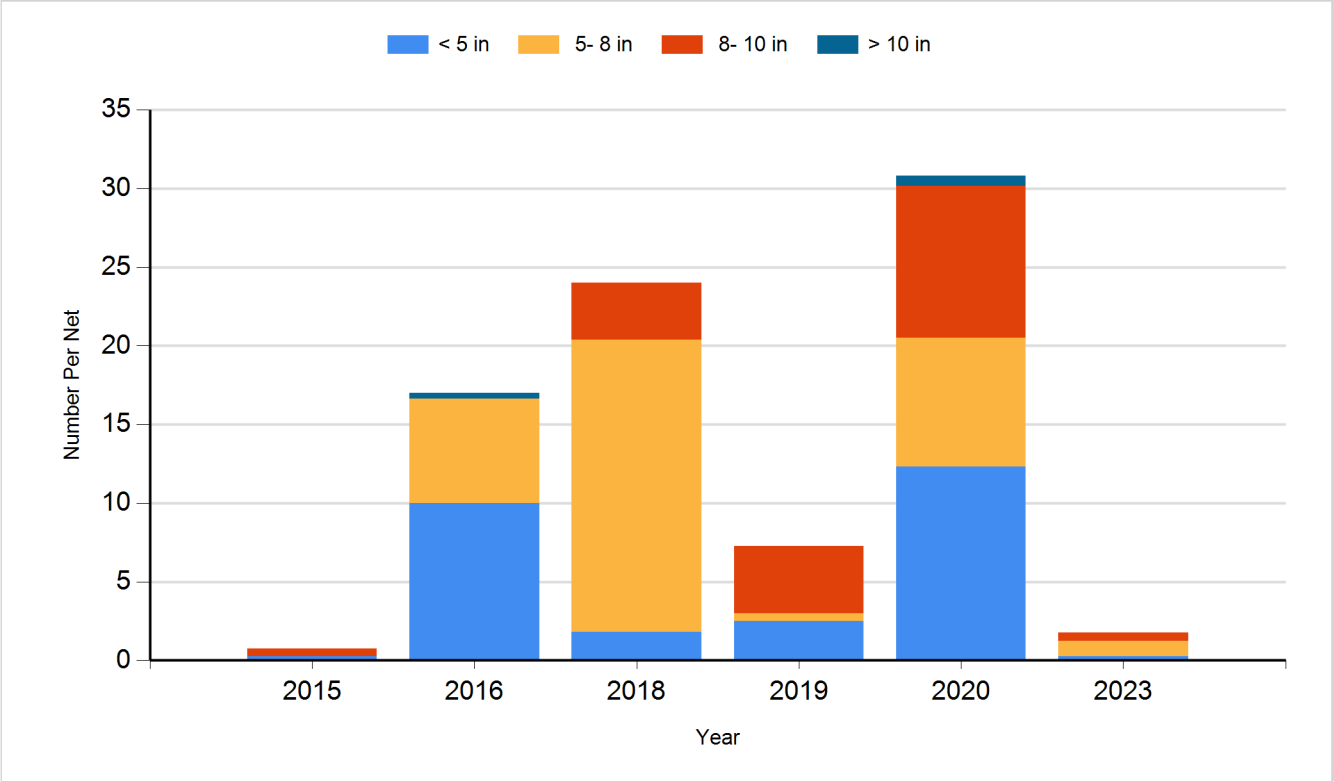


2018

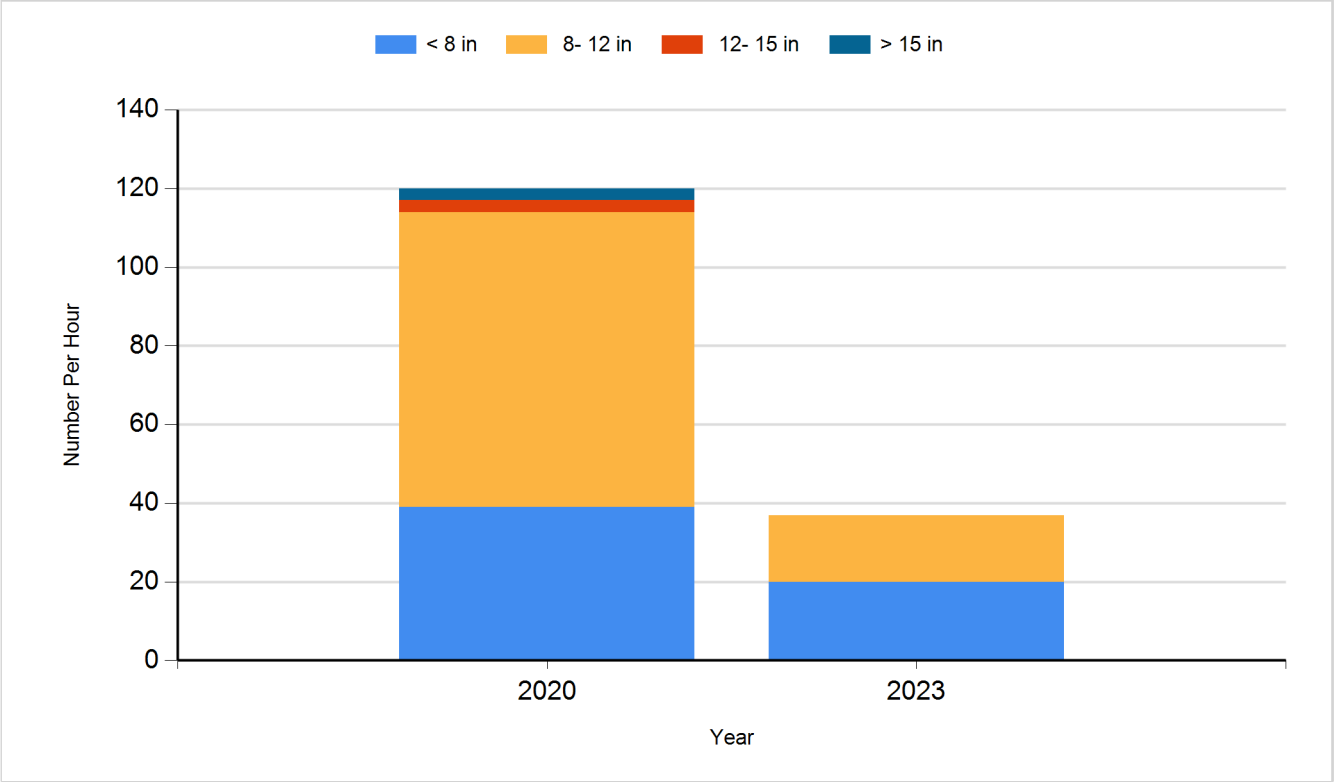
Historic Fish Sizes and Relative Abundance

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

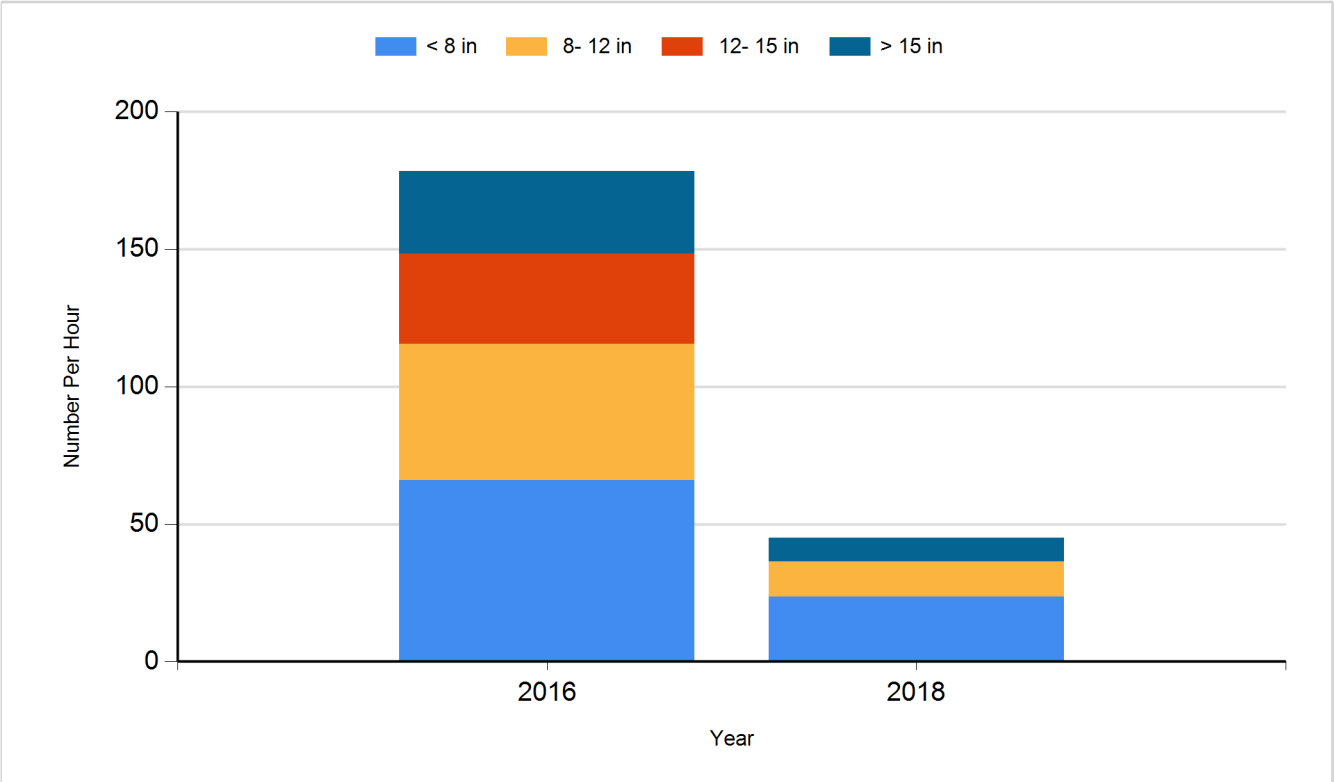
Species: Black Crappie
Gear: frame net (std 3/4 in)



Species: Largemouth Bass
Gear: boat shocker (day)



Species: Largemouth Bass
Gear: boat shocker (night)



Fish Stocking

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

Year	Species	Size	Number
2019	Yellow Perch	Adult	300
2022	Largemouth Bass	Fry	48,500
2022	Yellow Perch	Adult	1,000
2023	Largemouth Bass	Juvenile	500
2023	Walleye	Fry	518,300