Opal Lake Survey Summary

Opal Lake is a 31-acre impoundment located 17 miles West, 9 miles South of Faith. Opal is managed as a Bluegill, Largemouth Bass, Northern Pike, Yellow Perch fishery. It also has Black Bullhead and Green Sunfish. Opal suffered a winterkill the winter of 2022/2023. It seemed to be a partial winterkill as all species except bluegill were still in the system. Two hundred adult Bluegill were stocked in the spring of 2023 to reestablish them in the lake.

Bluegill. Bluegill catch has rebounded nicely after none were caught last year. This year's survey caught 29. Fish ranged from 5 to 9 inches.

Largemouth Bass. A twenty-fish, fall electrofishing sample showed 6 recaptures of the 147 adults stocked last year. The other group of naturally produced fish ranged from 8-10 inches.

Yellow Perch. Five hundred adult perch were stocked in the lake during the spring of 2023 and showed up nicely on our frame nets with 22.2 perch per net, last year. This year's survey caught 10.8 fish per net and ranged from 5-9.5 inches.

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Opal, Meade County
CHE-Lake-200-000
2024

Lake Information

Name: Opal

County: Meade

Surface Area: 25 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (day)	Oct 28, 2024	1500 seconds
frame net (std 3/4 in)	Jul 09, 2024	4 net-nights

Common Fish Species Present

Yellow Perch

Northern Pike

Largemouth Bass

Bluegill

Black Bullhead

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	21	53.6	51.6	29	16	0		120	4
frame net (std 3/4 in)	Black Bullhead	1	0.3	0.4	100		100		92	
	Bluegill	29	7.3	11.3	66	14	17		132	5
	Largemouth Bass	5	0.0	0.0	0		0			
	Northern Pike	7	1.5	1.4	50		0		95	3
	Yellow Perch	43	10.8	2.9	21	10	0		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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Avg
AFS std frame net	Black Bullhead			8.5								8.50
	Bluegill			2.0								2.00
	Green Sunfish			0.3								0.30
	Largemouth Bass			0.0								0.00
	Northern Pike			0.8								0.80
	Yellow Perch			0.8								0.80
AFS std gill net	Black Bullhead				68.5							68.50
	Northern Pike				5.0							5.00
boat shocker (day)	Largemouth Bass									8.3	53.6	30.95
boat shocker (night)	Largemouth Bass			60.0								60.00
frame net (std 3/4 in)	Black Bullhead	764.8	131.8		48.4	8.3		4.7		0.4	0.3	136.96
	Bluegill	0.2	11.3		10.0	19.7		155.7		0.2	7.3	29.20
	Green Sunfish	0.2	0.3		0.5	0.0		0.0		0.0	0.0	0.14
	Largemouth Bass	0.0	0.0		0.0	0.0		0.7		0.0	0.0	0.10
	Northern Pike	2.0	0.3		2.0	0.5		2.7		0.6	1.5	1.37
	Sunfish Hybrid	0.0	0.0		0.0	0.2		3.7		0.0	0.0	0.56
	Yellow Perch	0.8	3.8		0.5	4.8		3.7		21.6	10.8	6.57
std exp gill net	Black Bullhead	57.5										57.50
	Green Sunfish	0.5										0.50
	Northern Pike	1.5										1.50
	Yellow Perch	6.5										6.50

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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
AFS std frame net	Black Bullhead	PSD			0							
		PSD-P			0							
		Wr			79							
	Bluegill	PSD			50							
		PSD-P			25							
		Wr			112							
	Largemouth Bass	PSD			0							
		PSD-P			0							
	Northern Pike	PSD			100							
		PSD-P			0							
		Wr			82							
	Yellow Perch	PSD			0							
		PSD-P			0							
		Wr			90							
AFS std gill net	Black Bullhead	PSD				10						
		PSD-P				0						
		Wr				85						
	Northern Pike	PSD				100						
		PSD-P				30						
		Wr				89						
boat shocker (day)	Largemouth Bass	PSD									64	29
		PSD-P									27	0
		Wr									128	120
boat shocker (night)	Largemouth Bass	PSD			70							
		PSD-P			20							
		Wr			112							
frame net (std 3/4 in)	Black Bullhead	PSD	0	1		9	38		100		100	100
		PSD-P	0	0		0	0		0		100	100
		Wr		72		87	82		84		84	92
	Bluegill	PSD	100	47		89	40		21		100	66
		PSD-P	0	44		4	22		6		100	17

			Year									
Gear	Species	Index	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
frame net (std 3/4 in)	Bluegill	Wr	115	122		121	111		106		59	132
	Largemouth Bass	PSD		0			0		0			0
		PSD-P		0			0		0			0
		Wr							98			
	Northern Pike	PSD	80	0		63	67		100		100	50
		PSD-P	50	0		0	33		38		33	0
		Wr	101	91		86	93		89		92	95
	Yellow Perch	PSD	0	61		50	72		45		0	21
		PSD-P	0	0		0	14		9		0	0
		Wr	104	97		99	108		81		95	99
std exp gill net	Black Bullhead	PSD	0									
		PSD-P	0									
		Wr	85									
	Northern Pike	PSD	100									
		PSD-P	67									
		Wr	94									
	Yellow Perch	PSD	8									
		PSD-P	0									
		Wr	97									

Fish Condition

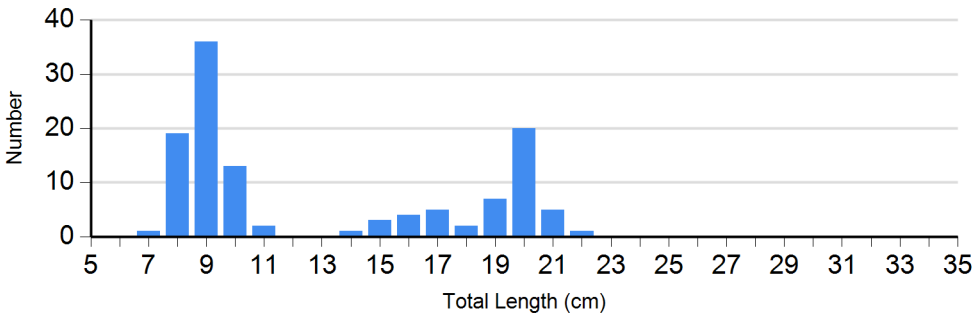
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Bluegill Frame Net	2021	370	106 (1.4)	67	107 (2.3)	28	100 (2.6)	2	
	2023	0		0		0		1	59
	2024	10	143 (11.4)	14	128 (2.0)	5	122 (1.5)	0	
Largemouth Bass Electro Fishing	2023	4	115 (3.5)	4	133 (4.5)	3	138 (6.6)	0	
	2024	15	115 (1.9)	6	133 (5.7)	0		0	

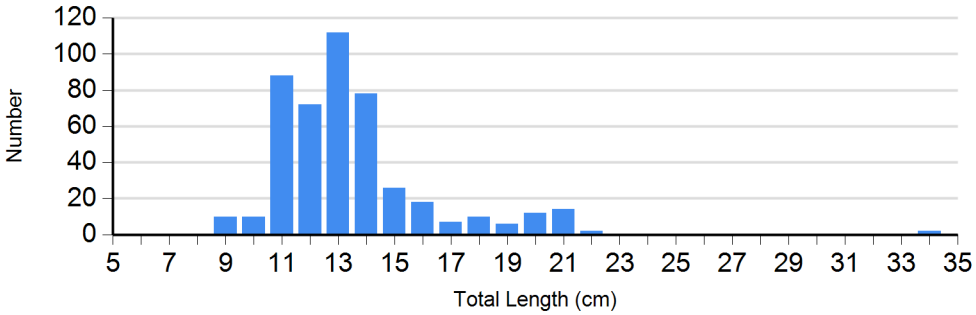
Length Frequency Distribution

Length frequency histogram of species sampled by year.

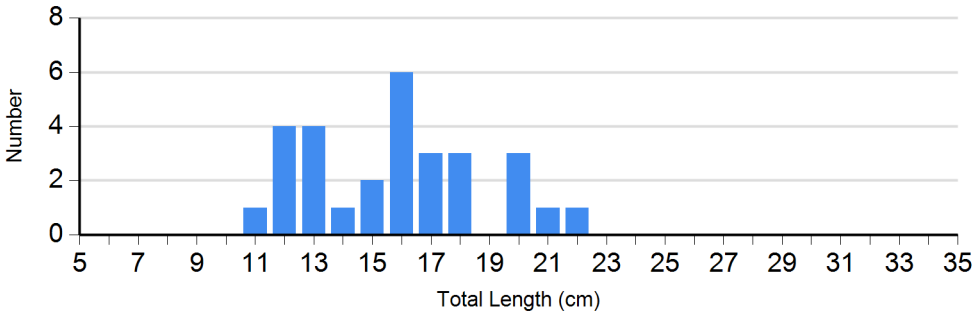
Species: Bluegill
Gear: frame net (std 3/4 in)



2019

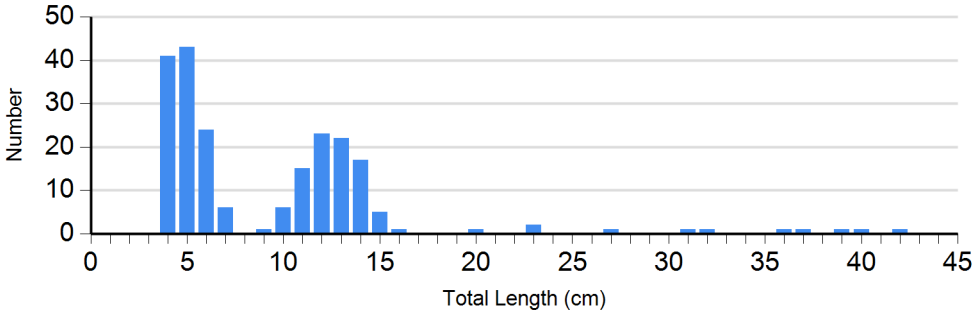


2021

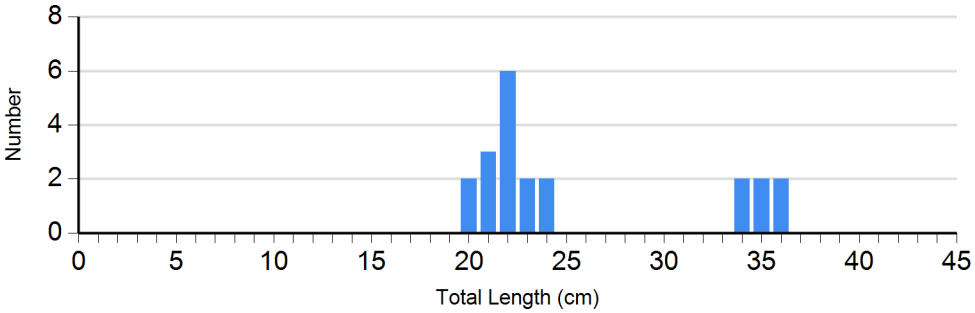


2024

Species: Largemouth Bass
Gear: boat shocker (day)



2023

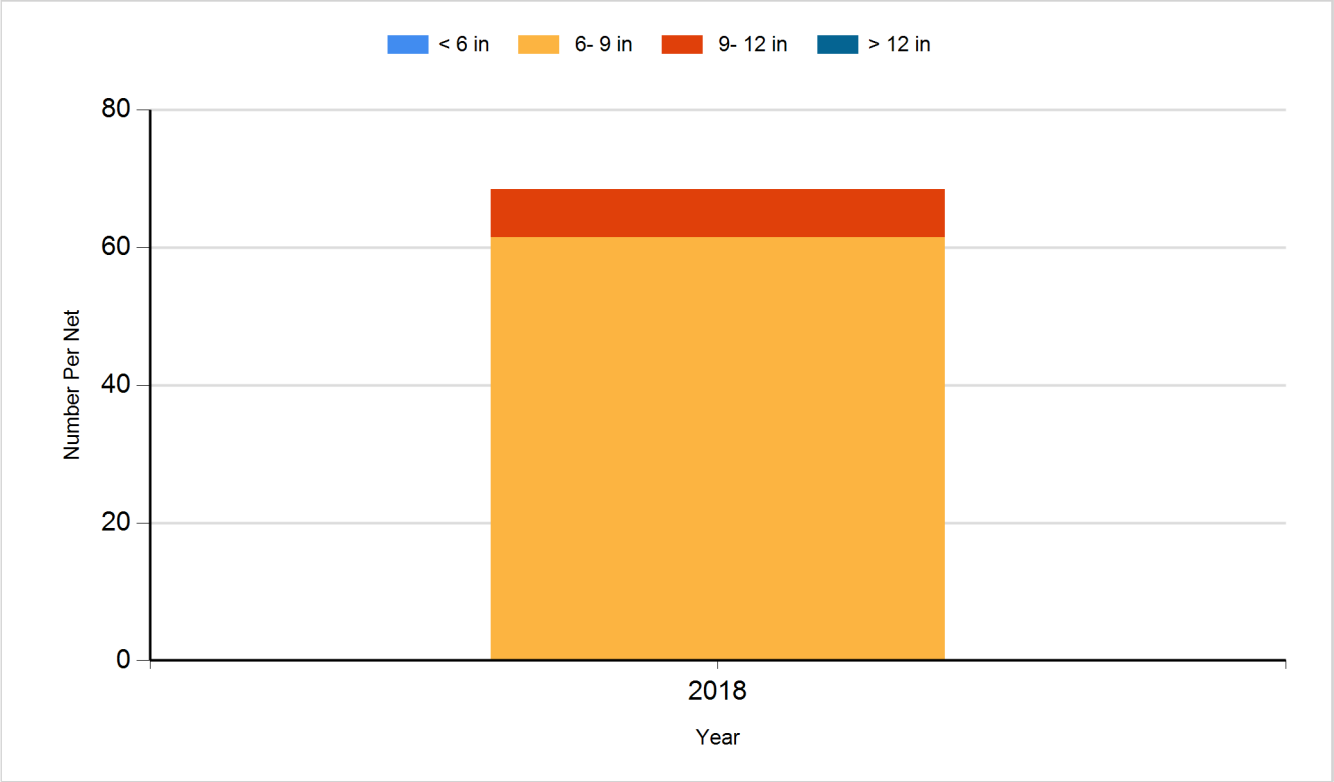


2024

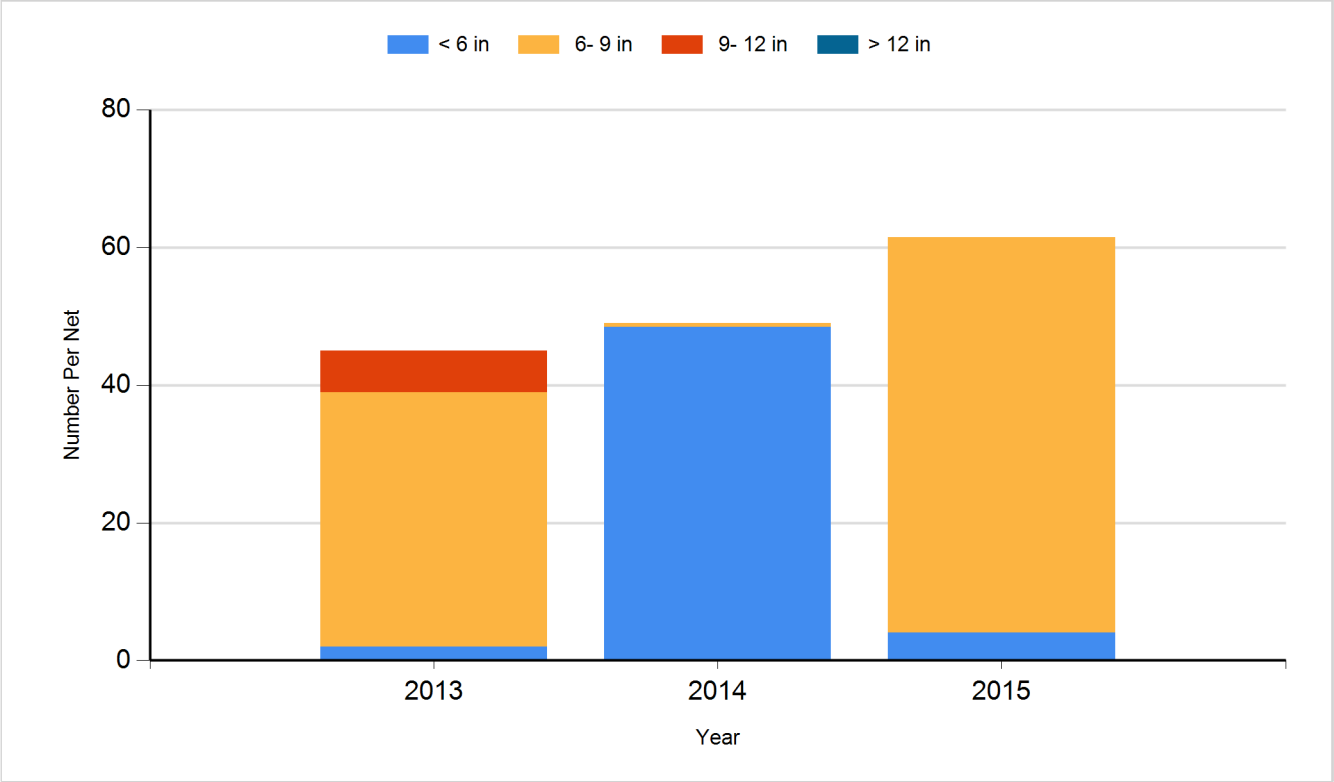
Historic Fish Sizes and Relative Abundance

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

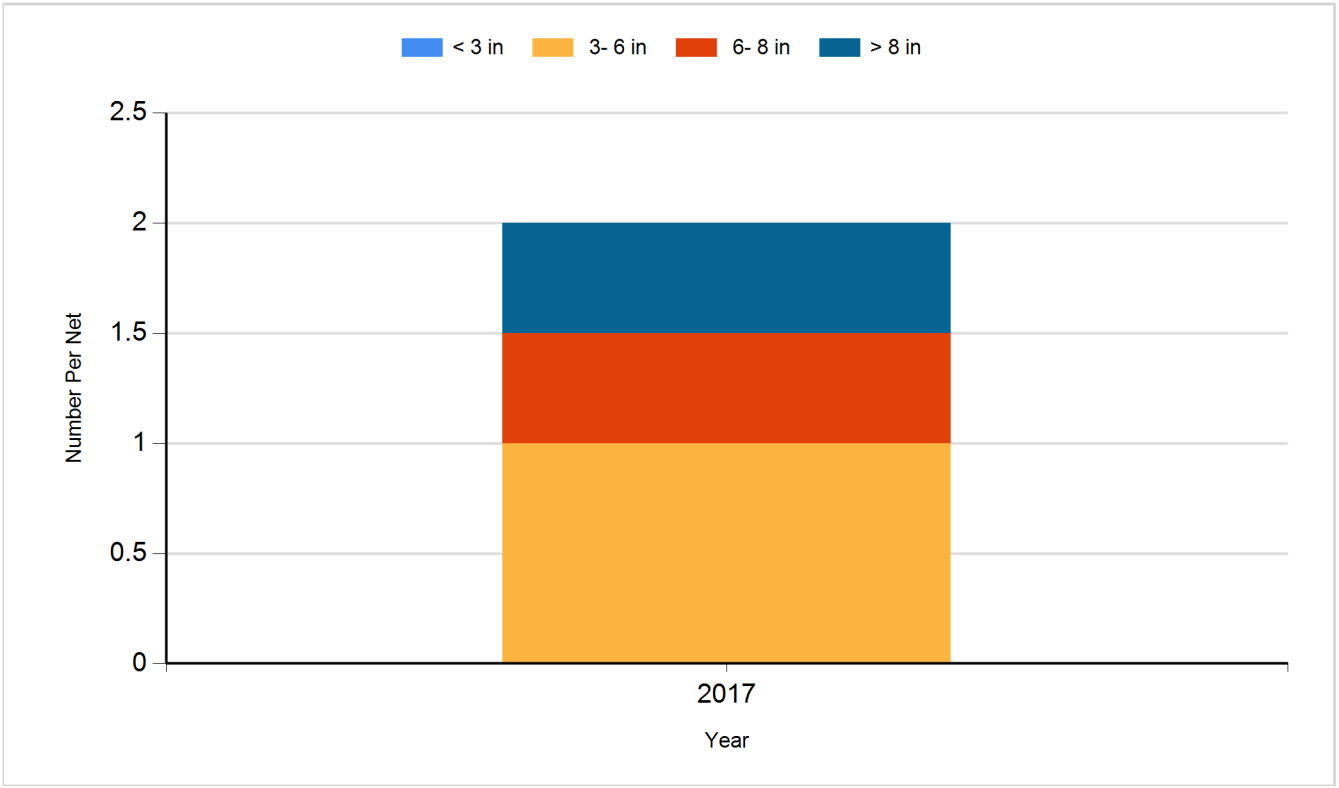
Species: Black Bullhead
Gear: AFS std gill net



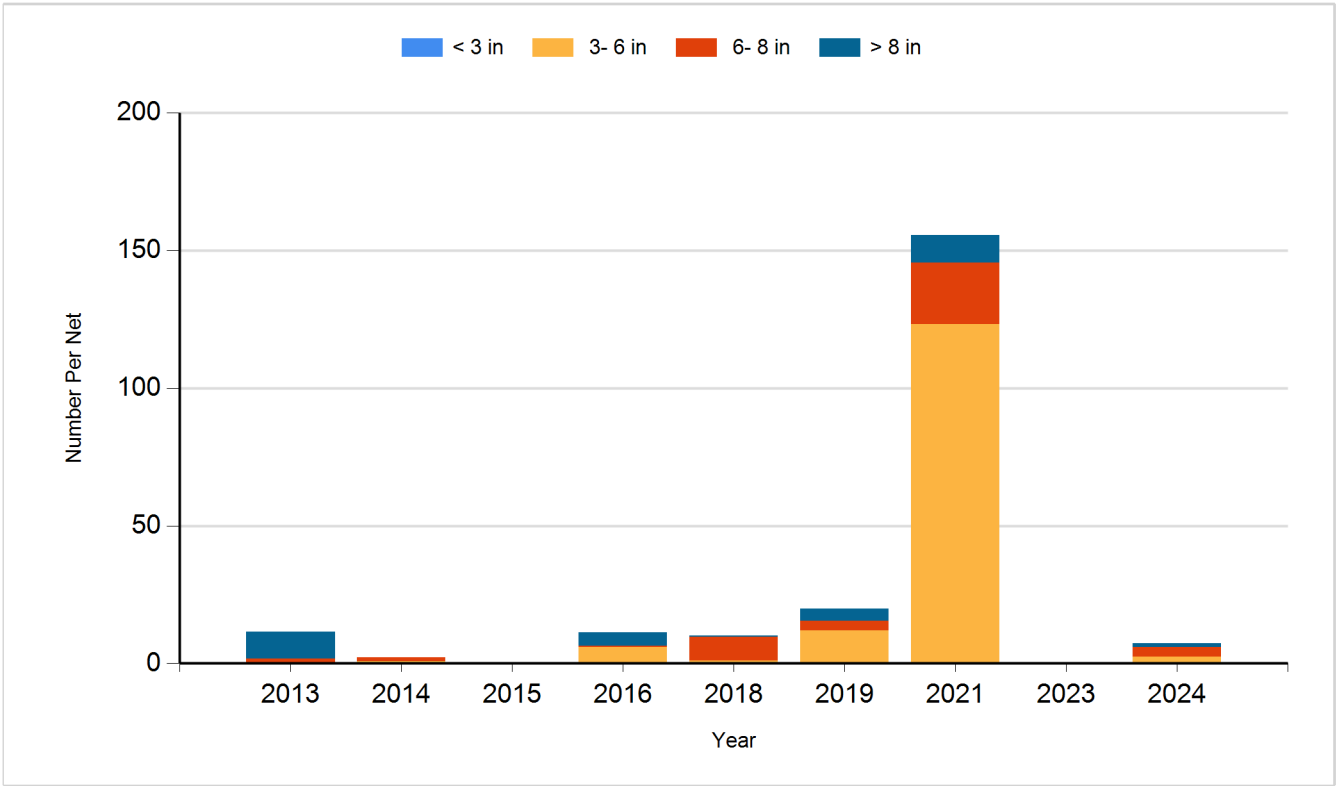
Species: Black Bullhead
Gear: std exp gill net



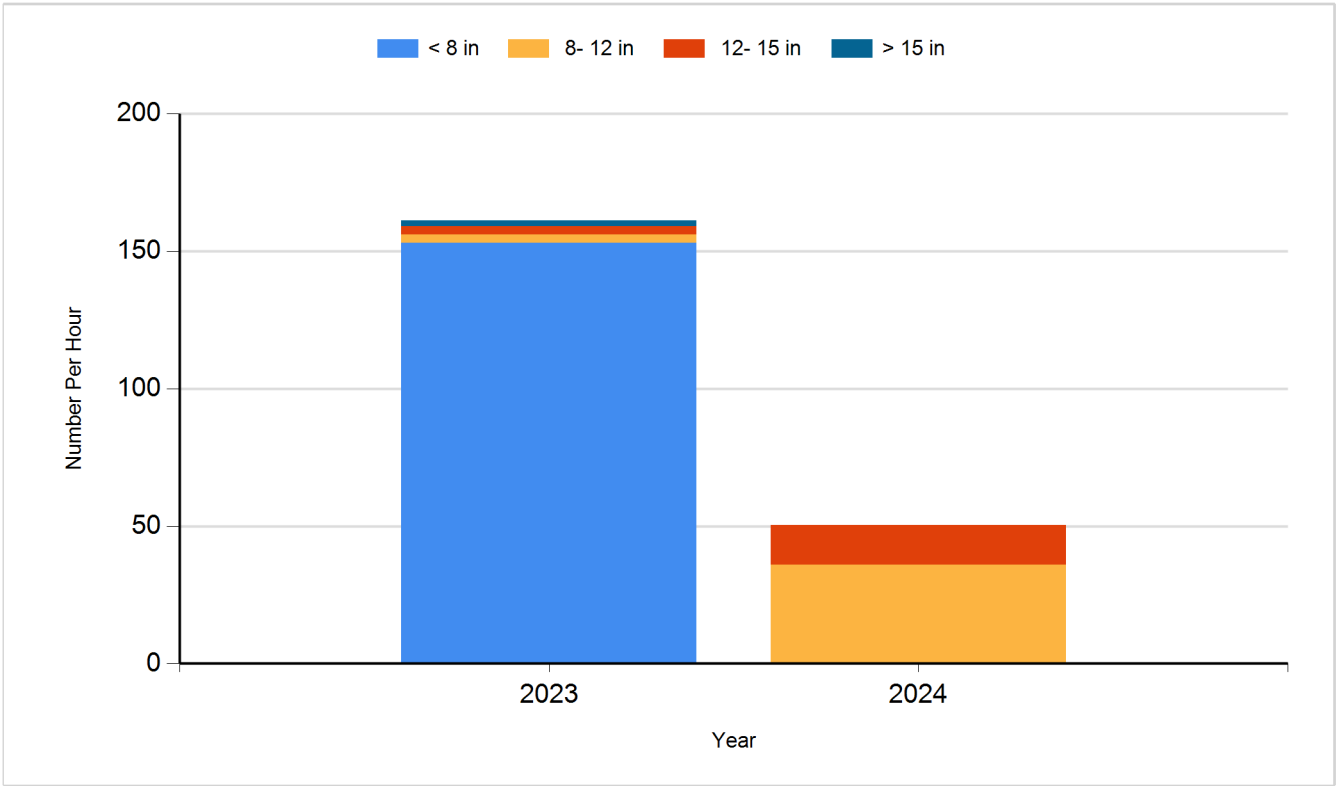
Species: Bluegill
Gear: AFS std frame net



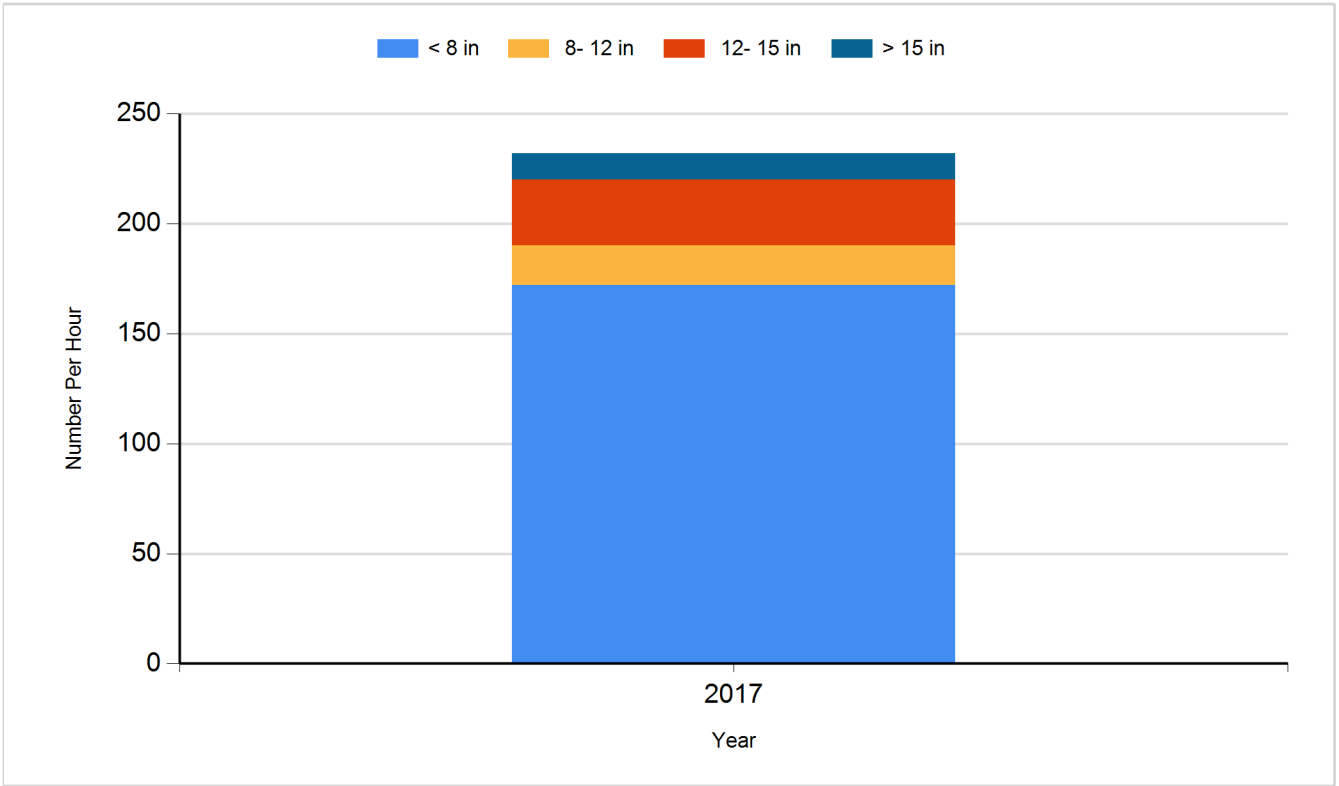
Species: Bluegill
Gear: frame net (std 3/4 in)



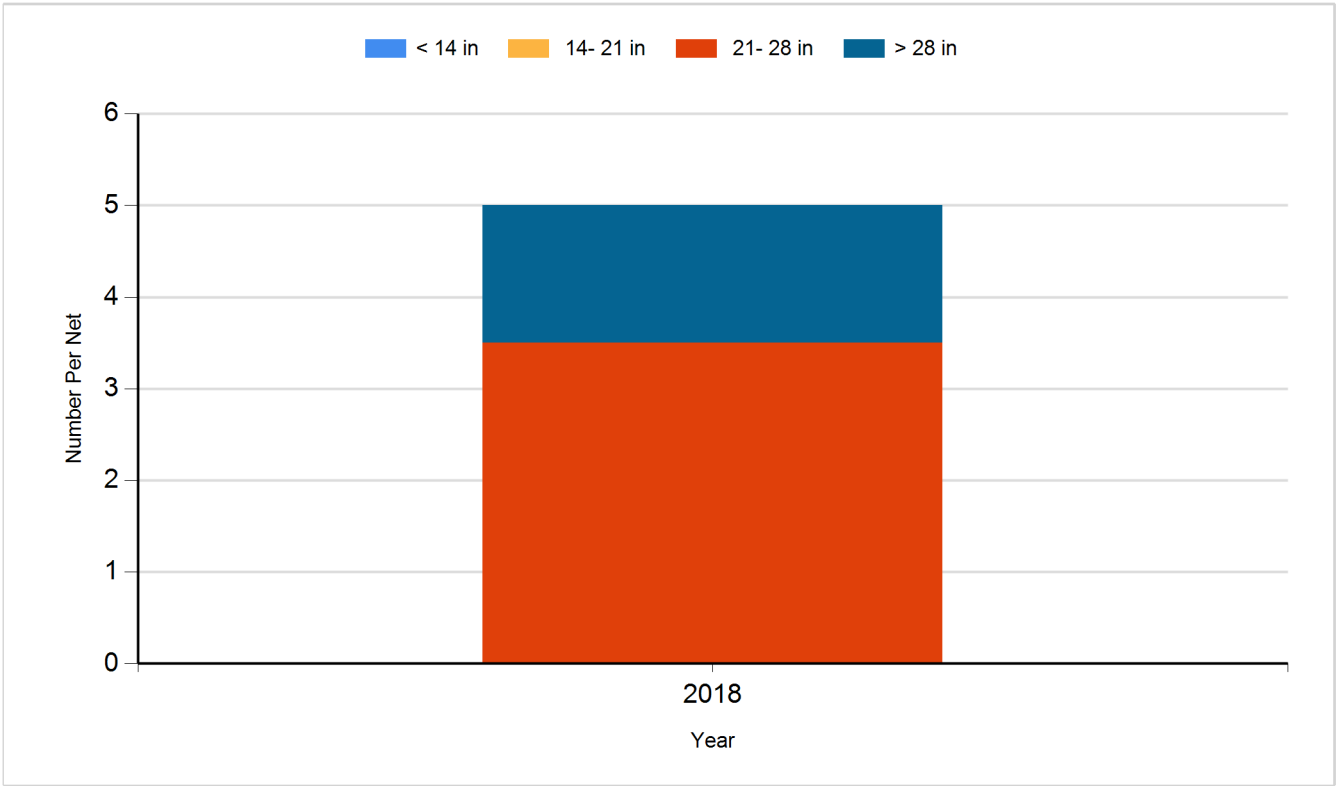
Species: Largemouth Bass
Gear: boat shocker (day)



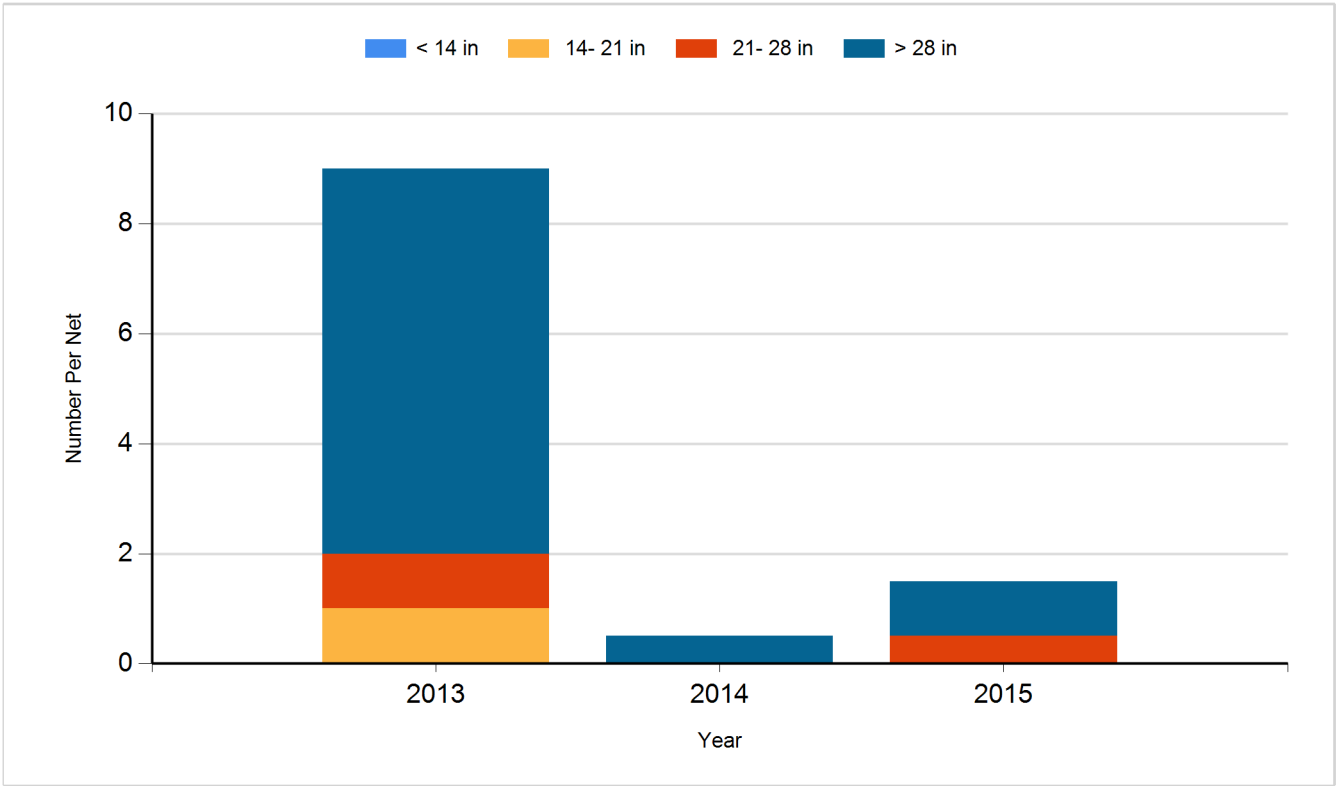
Species: Largemouth Bass
Gear: boat shocker (night)



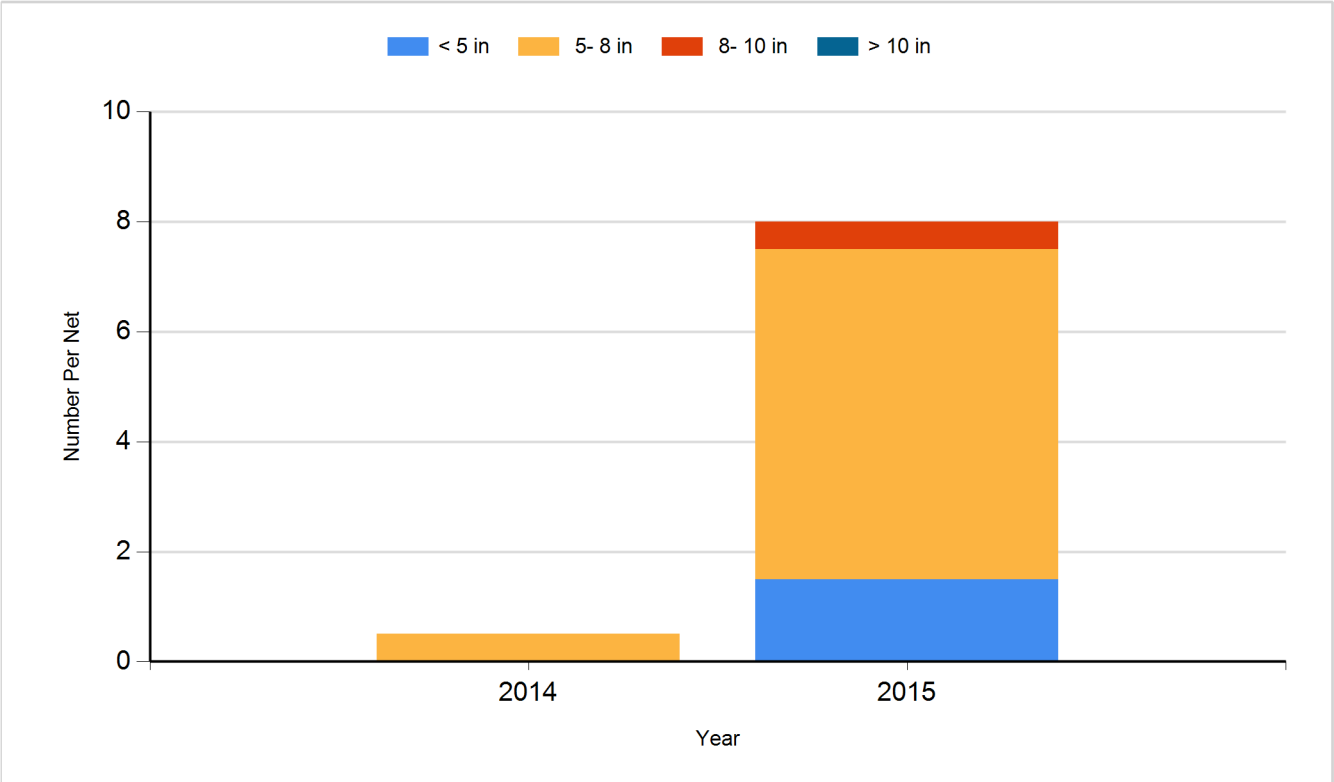
Species: Northern Pike
Gear: AFS std gill net



Species: Northern Pike
Gear: std exp 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
2013	Yellow Perch	Adult	600
2014	Bluegill	Adult	125
2014	Largemouth Bass	Adult	211
2014	Largemouth Bass	Juvenile	200
2014	Yellow Perch	Adult	530
2015	Northern Pike	Adult	50
2015	Yellow Perch	Adult	320
2016	Northern Pike	Adult	30
2023	Bluegill	Adult	200
2023	Largemouth Bass		47
2023	Largemouth Bass	Adult	100