2023 Lake Dakotah Survey Summary

Dakotah Lake is a 9-acre reservoir located 5 miles west and 5 miles south of Miller in Hand County. It has a mean depth of 8 feet and maximum depth of 20 feet. Fishing access at Dakotah consists of a gravel road leading to a very steep concrete boat ramp suitable for small boats. Shoreline access is difficult due to the steep embankment surrounding the lake and dense tree and brush growth along the entire shoreline. Macrophyte growth was very dense in 2023, with vegetation in the western portion of the reservoir too dense for boats to navigate through. It is managed as a multi-species fishery consisting of Rainbow Trout, Bluegill, Largemouth Bass, and Black Bullhead. Sampling occurs every three years, consisting of frame netting in late spring.

- **Bluegill:** The catch rate of Bluegill in 2023 was 2.3 fish per frame net. Of the Bluegill sampled, none were 8 inches or larger. Bluegill condition was fair, but most of the fish sampled were less than 5 inches total length.

- **Black Bullhead:** Black Bullhead were abundant in 2023, averaging 5 per frame net. Of the Black Bullhead sampled, nearly all were 12 to 15 inches in total length. Black Bullhead condition was excellent with relative weights (Wr) of 90 to 110.

- **Yellow Perch:** The catch rate of Yellow Perch in 2023 was very low, with only one 9-inch individual collected.

- **Largemouth Bass**: No fall electrofishing was conducted in 2023.

In 2023, 500 catchable adult Rainbow Trout were stocked.

Created 02/07/2024 by Liz Renner

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Dakotah, Hand County
TUR-Lake-14-000
2023

Lake Information

Name: Dakotah
County: Hand
Legal Description: T112-R69-S35
Surface Area: 9 Acres
Maximum Depth: 20 Feet
Mean Depth: 8 Feet

Surveys and Investigations

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

Gear	Date	Effort
frame net (std 3/4 in)	Jun 01, 2023	5 net-nights
frame net (std 3/4 in)	Jun 02, 2023	5 net-nights

Common Fish Species Present

Largemouth Bass

Bluegill

Black Bullhead

Yellow Perch

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
frame net (std 3/4 in)	Black Bullhead	18	1.8	1.1	100		100		101	3
	Bluegill	13	1.0	0.7	0		0		129	8
	Yellow Perch	3	0.3	0.3	100		67		97	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						4.0					4.00
boat shocker (night)	Largemouth Bass			111.0								111.00
frame net (std 3/4 in)	Black Bullhead			3.0			4.2				1.8	3.00
	Bluegill			1.1			0.4				1.0	0.83
	Largemouth Bass			0.0			0.0				0.0	0.00
	Yellow Perch			0.0			0.0				0.3	0.10
std exp gill net	Black Bullhead			1.0								1.00

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						100				
		PSD-P						50				
		Wr						117				
boat shocker (night)	Largemouth Bass	PSD			3							
		PSD-P			3							
		Wr			99							
frame net (std 3/4 in)	Black Bullhead	PSD			70			76				100
		PSD-P			53			48				100
		Wr						93				101
	Bluegill	PSD			45			0				0
		PSD-P			0			0				0
		Wr						125				129
	Largemouth Bass	PSD			0							
		PSD-P			0							
	Yellow Perch	PSD										100
		PSD-P										67
		Wr										97
std exp gill net	Black Bullhead	PSD			0							
		PSD-P			0							

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	4		109 (3)	124 (1)							

Species: Largemouth Bass

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2019	5	188 (3)					382 (2)				
2016	43	166 (2)	224 (34)	249 (6)			464 (1)				

Fish Condition

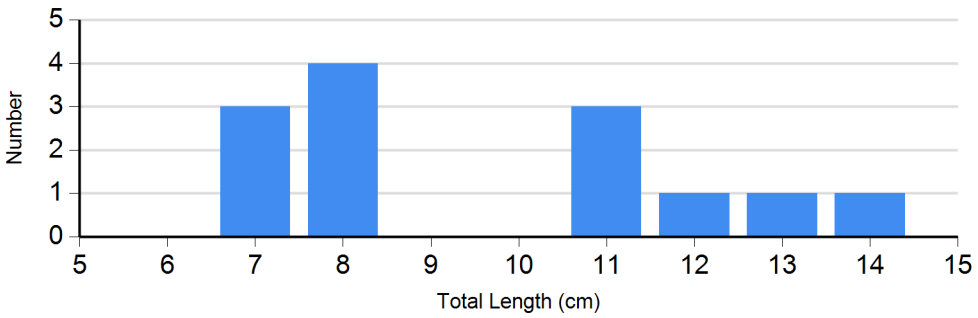
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2019	4	125 (7.9)	0		0		0	
	2023	10	129 (6.4)	0		0		0	
Largemouth Bass Electro Fishing	2019	0		1	117	1	116	0	

Length Frequency Distribution

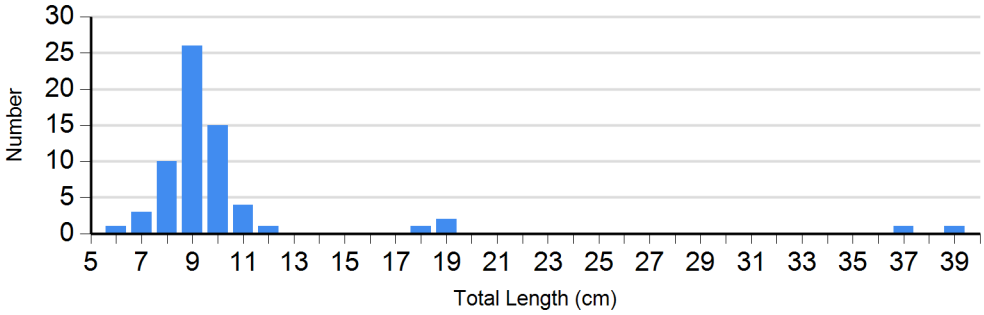
Length frequency histogram of species sampled by year.

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



2023

Species: Largemouth Bass
Gear: boat shocker (day)

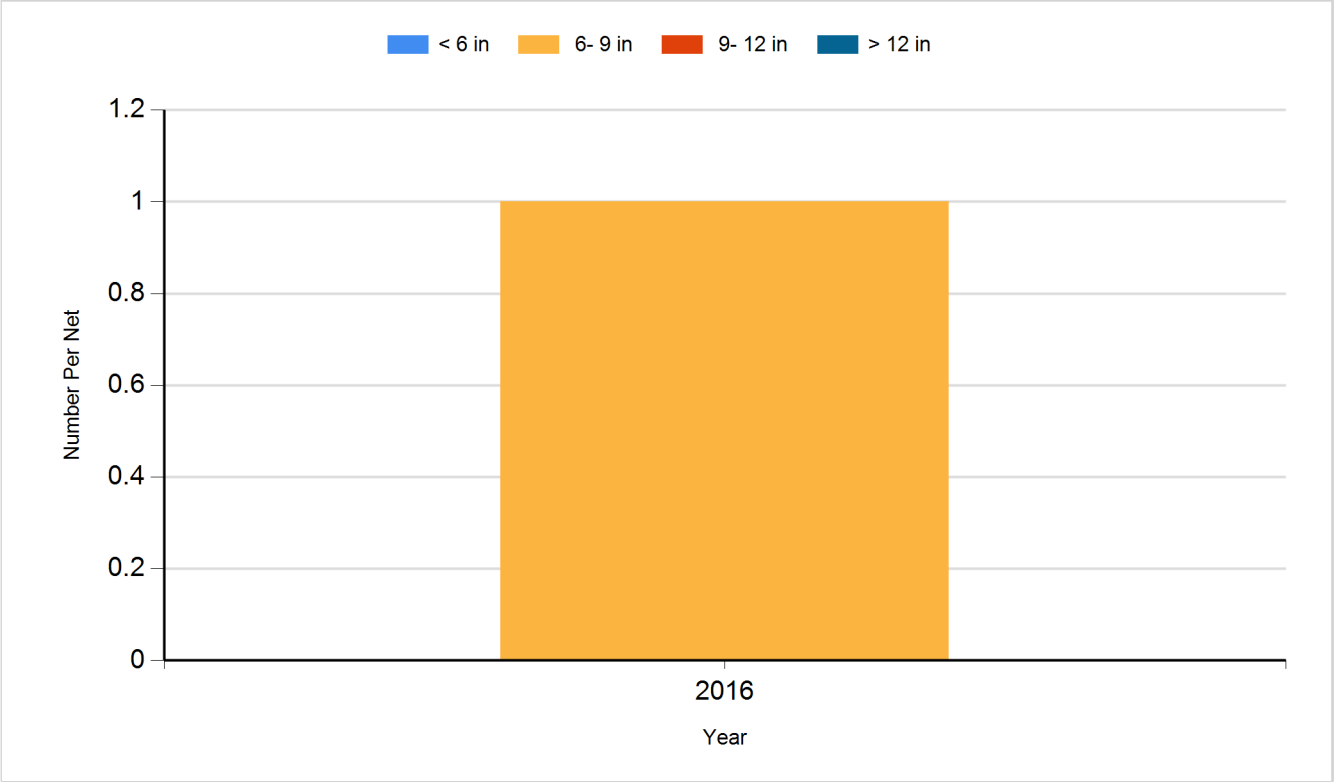


2019

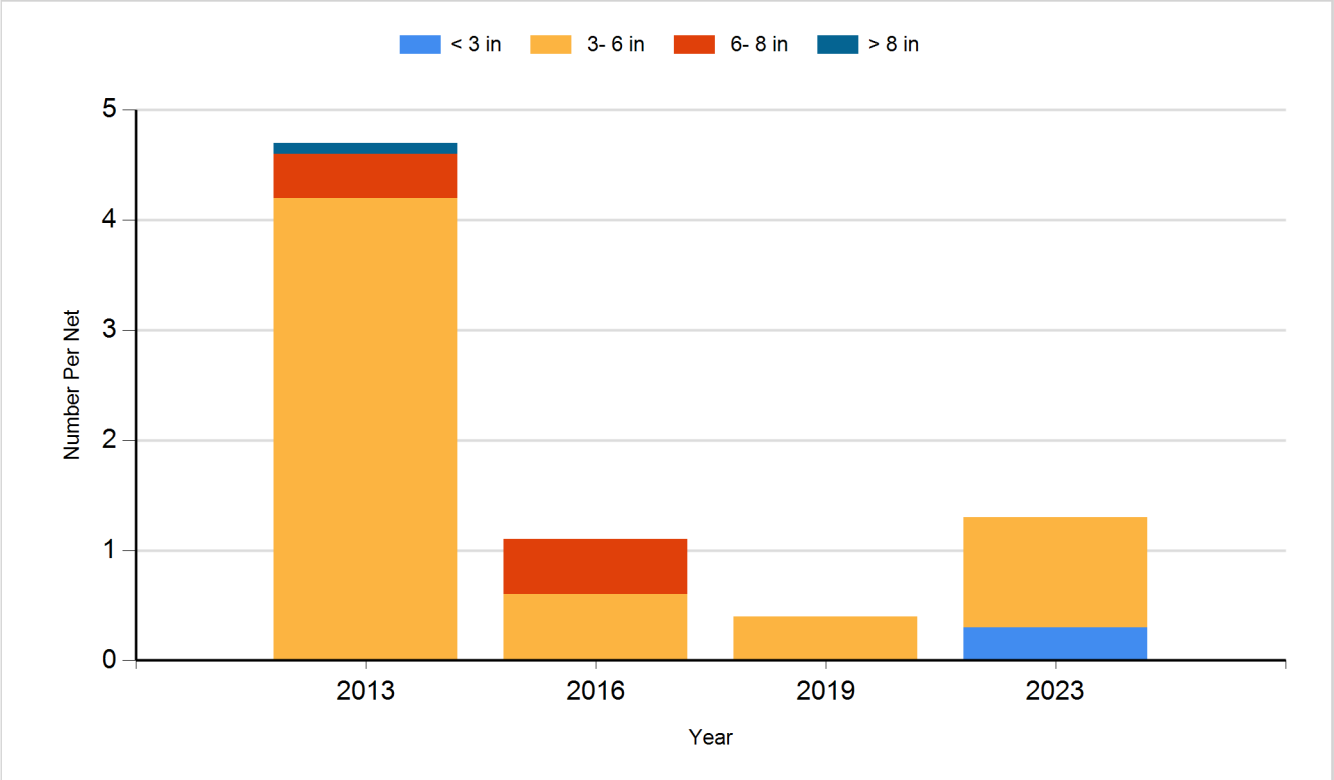
Historic Fish Sizes and Relative Abundance

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

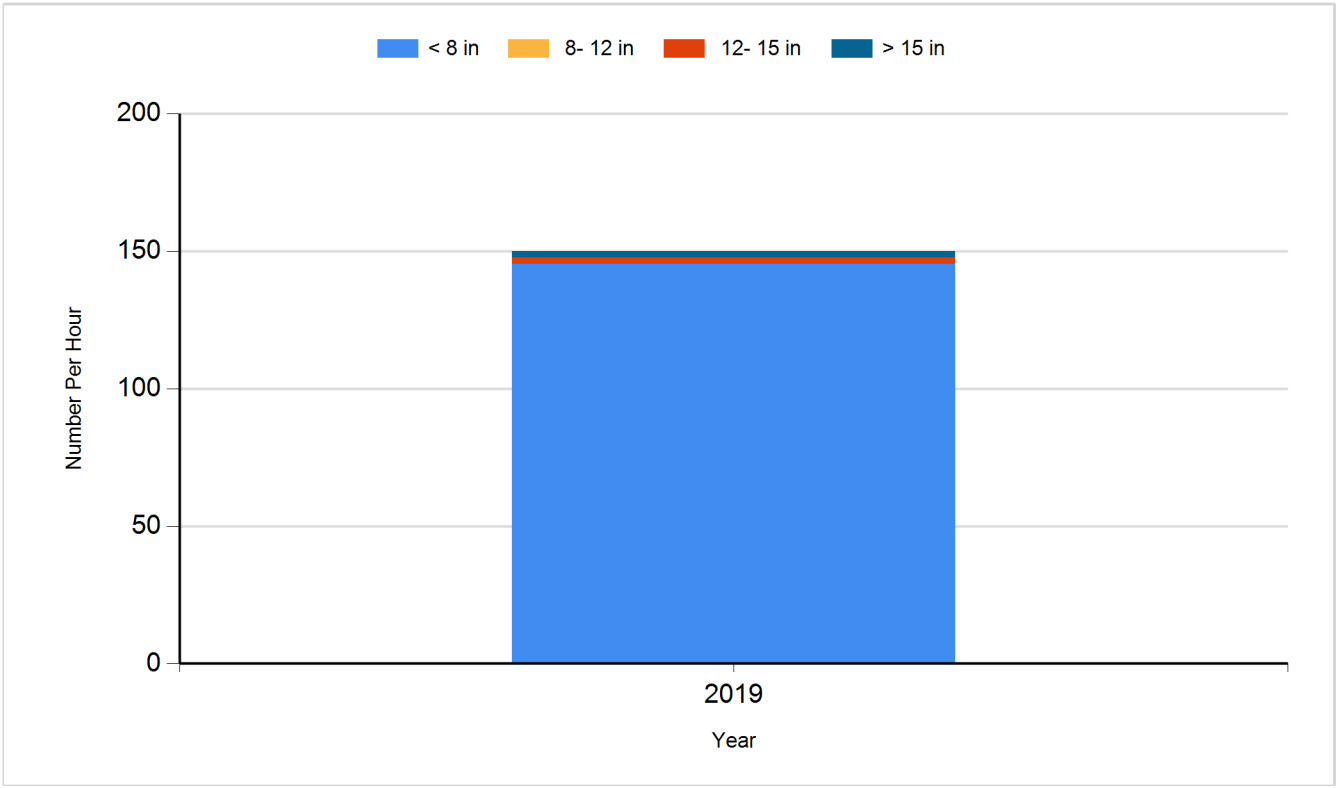
Species: Black Bullhead
Gear: std exp gill net



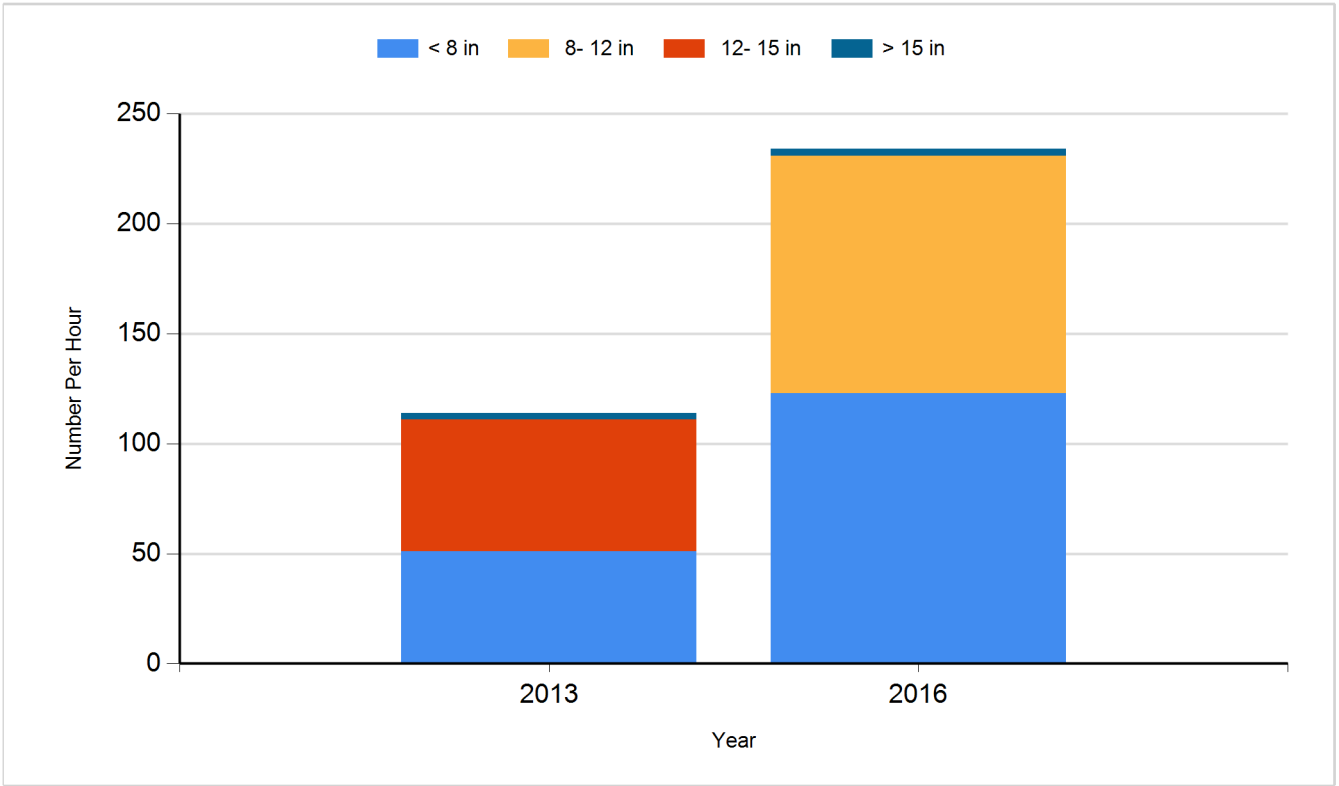
Species: Bluegill
Gear: frame net (std 3/4 in)



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	Bluegill	Adult	204
2023	Rainbow Trout	Adult	500