2023 Potts Dam Survey Summary

Water: Potts Dam

County: Potter

Legal Description: T117N-R74W-S20

GPS: 44.929058, -99.777864

Surface Area: 52 Acres

Class: Warm Water Semi-Permanent

Maximum Depth: 15 feet

Mean Depth: 6 feet

Potts Dam is a 52-acre impoundment on the upper end of Okobojo Creek, 8 miles east and 6 miles south of the City of Gettysburg in southeast Potter County. The dam grade and entire lake is within a 360-acre Game Production Area owned and managed by the South Dakota Department of Game, Fish and Parks. From a county gravel road south and east of Gettysburg, a gravel trail through the GPA provides access to the lake. A concrete plank ramp and dock provide boat access on the south shoreline. A vault toilet is the only other public use facility at Potts Dam.

Primary game fish managed at Lake Isabel include Largemouth Bass, Bluegill, and Yellow Perch. Black Bullhead also have a historical presence. A combination of decreased water levels, abundant aquatic vegetation, and snow cover during the winter of 2022-23 resulted in significant fish loss due to insufficient dissolved oxygen levels (winterkill). Local runoff refilled the impoundment during the spring of 2023.

Potts Dam was surveyed on June 6-7, 2023, utilizing ¾ inch standard frame net sets. Yellow Perch, Bluegill, and Black Bullhead were observed during the 2023 survey. Electrofishing was not completed in 2023 to monitor Largemouth Bass. The current condition of the bass population is unknown, and electrofishing should be conducted in 2024.

- **Black Bullhead:** A high density population of small fish has been present in Potts Dam since 2018. This trend continued in 2023 with a frame net catch per unit effort (CPUE) of 76.3 bullheads greater than 6 inches and an overall CPUE of 337. A few of the larger fish measured above 10 inches.

- **Yellow Perch:** Catch rates were moderate with 4.5 individuals sampled in each frame net. Most fish sampled were between 4 and 7 inches, with an occasional larger perch observed. Condition was slightly above average.

- **Bluegill:** During the 2023 netting efforts 3.7 adult fish were captured per frame net. The most common length was between 6 and 8 inches. Condition was above average but may be artificially high due to several prespawn females being sampled.

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Potts, Potter County
LLO-Lake-2378-000
2023

Lake Information

Name: Potts

County: Potter

Legal Description: T117-R74-S20

Surface Area: 52 Acres

Maximum Depth: 15 Feet

Mean Depth: 6 Feet

Surveys and Investigations

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

Gear	Date	Effort
frame net (std 3/4 in)	Jun 05, 2023	5 net-nights
frame net (std 3/4 in)	Jun 06, 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	3608	76.3	16.8	19	2	0		97	1
	Bluegill	37	3.7	1.4	73	11	0		132	3
	Yellow Perch	45	4.5	1.8	2		2		101	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 (night)	Largemouth Bass		45.0			15.0		157.0				72.33
frame net (std 3/4 in)	Black Bullhead		3.6			485.8		173.6			76.3	184.83
	Bluegill		0.1			4.6		4.0			3.7	3.10
	Largemouth Bass		0.0			0.0		0.0			0.0	0.00
	Yellow Perch		1.7			13.2		29.0			4.5	12.10

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 (night)	Largemouth Bass	PSD		0			67		7			
		PSD-P		0			67		4			
		Wr		130			110		106			
frame net (std 3/4 in)	Black Bullhead	PSD		6			1		7			19
		PSD-P		0			1		0			0
		Wr		87			82		91			97
	Bluegill	PSD		100			100		100			73
		PSD-P		0			9		93			0
		Wr		141			118		116			132
	Largemouth Bass	PSD							0			
		PSD-P							0			
	Yellow Perch	PSD		47			67		23			2
		PSD-P		6			5		2			2
		Wr		95			88		95			101

Back-Calculated Lengths

Mean species back-calculated total length (mm) at age, standard error (SE), and sample size (N).

Species: Bluegill

Year Class	Age	Mean back-calculated length (SE) at age										
		N	1	2	3	4	5	6	7	8	9	10
2021	2	18	77 (1.6)	129 (2.2)								
Weighted Mean		18	77	129								

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2021	2	18										
Weighted Mean		18										

Species: Yellow Perch

Year Class	Age	Mean back-calculated length (SE) at age										
		N	1	2	3	4	5	6	7	8	9	10
2021	2	18	69 (1.2)	139 (2)								
2020	3	1	88	178	246							
Weighted Mean		19	70	141	246							

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2021	2	18										
2020	3	1										
Weighted Mean		19										

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+
2023	37		155 (37)								
2020	40		156 (1)				202 (5)	214 (13)	209 (20)		221 (1)
2018	46			170 (7)	177 (10)	179 (11)	195 (13)	197 (3)		230 (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+
2020	452		195 (414)	232 (31)		414 (2)	436 (1)	431 (4)			
2018	25	112 (9)	112 (1)		283 (3)		396 (1)	381 (6)	359 (3)	415 (2)	
2015	46	248 (46)									

Fish Condition

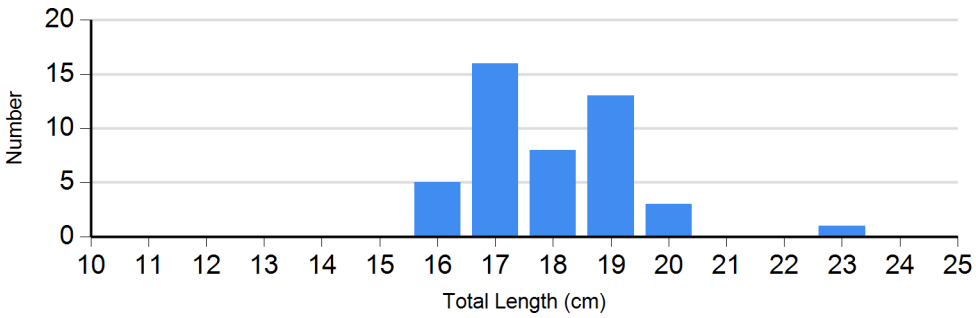
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2020	0		3	132 (8.3)	37	115 (1.1)	0	
	2023	10	131 (2.1)	27	132 (2.8)	0		0	
Largemouth Bass Electro Fishing	2020	146	103 (0.9)	4	123 (2.1)	7	126 (5.5)	0	

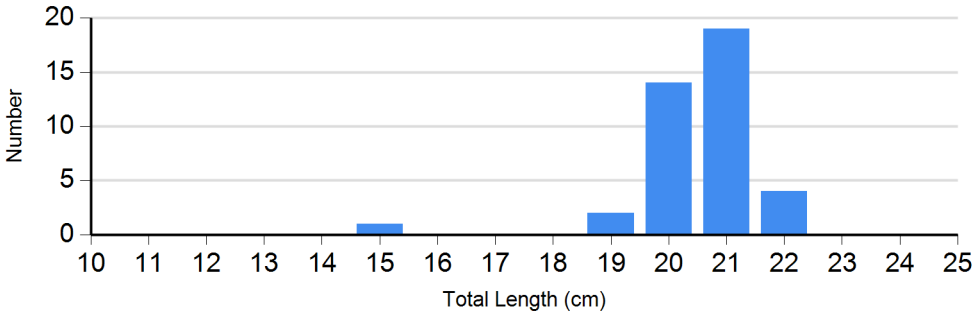
Length Frequency Distribution

Length frequency histogram of species sampled by year.

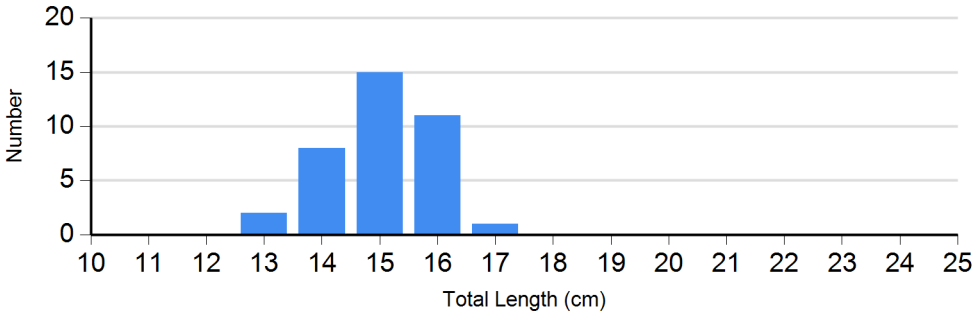
Species: Bluegill
Gear: frame net (std 3/4 in)



2018

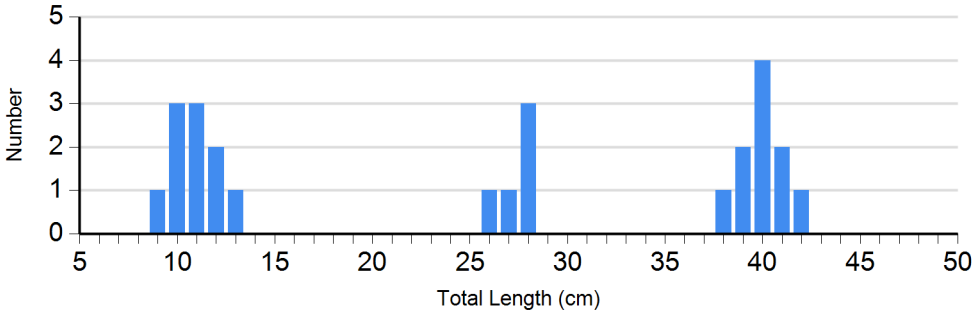


2020

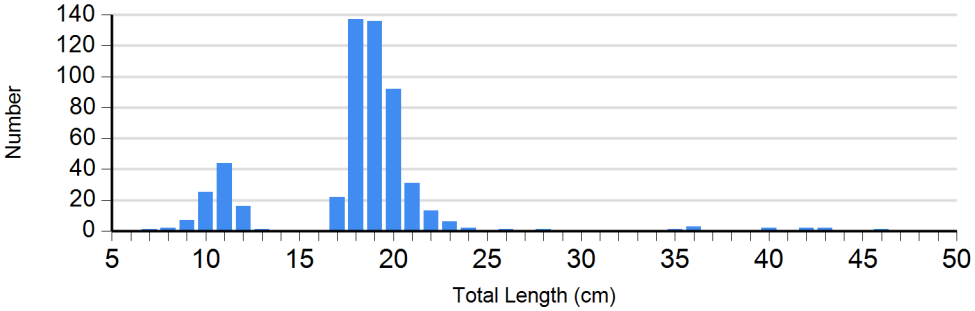


2023

Species: Largemouth Bass
Gear: boat shocker (night)



2018

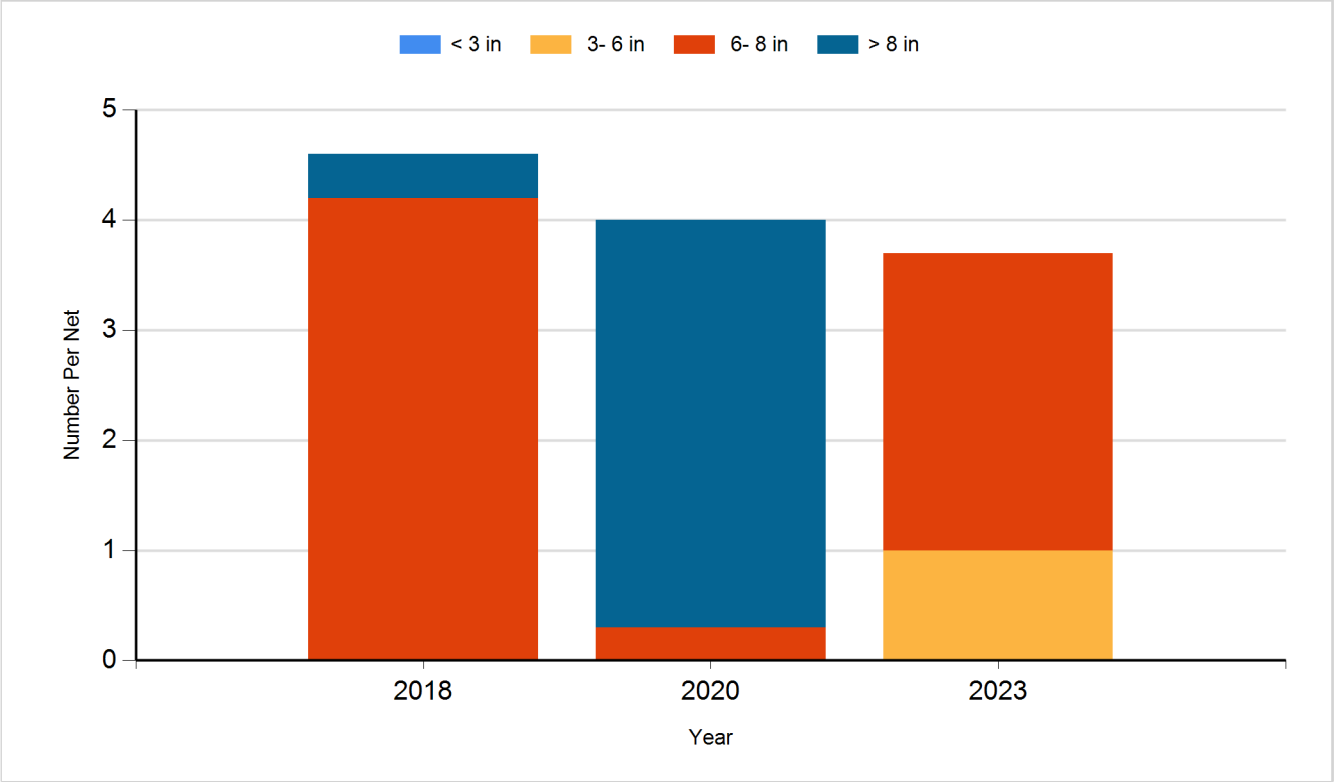

Number
140
120
100
80
60
40
20
0
5
10
15
20
25
30
35
40
45
50
Total Length (cm)

2020

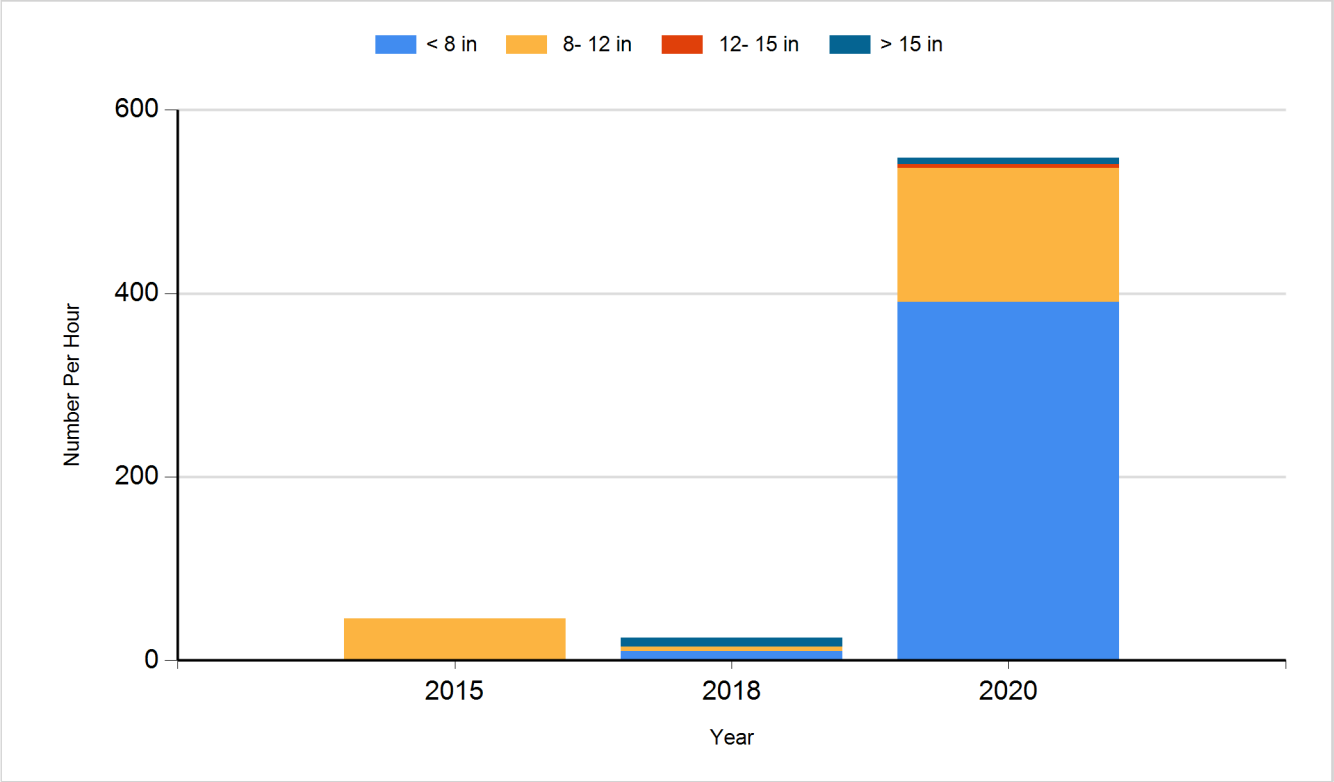
Historic Fish Sizes and Relative Abundance

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

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



Species: Largemouth Bass
Gear: boat shocker (night)



Fish Stocking

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

Year	Species	Size	Number
2013	Largemouth Bass	Fingerling	1,750
2014	Bluegill	Adult	250
2014	Largemouth Bass	Fingerling	1,260
2014	Largemouth Bass	Large Fingerling	1,000
2015	Bluegill	Adult	450
2015	Largemouth Bass	Juvenile	292
2016	Largemouth Bass	Adult	148
2023	Channel Catfish	Adult	50