SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Lewis and Clark - Fort Randall Reach, Charles Mix County
LCL-Lake-73-002
2024

Lake Information

Name: Lewis and Clark - Fort Randall Reach

County: Charles Mix

Surface Area: 8,503 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (night)	Oct 31, 2024	3600 seconds
fall night EF-WAE	Oct 31, 2024	4200 seconds

Common Fish Species Present

Walleye

Smallmouth Bass

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 (night)	Smallmouth Bass	51	8.0	10.0	50		25		106	4

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
boat shocker (night)	Smallmouth Bass	33.0	49.0	43.0	49.0		37.0	15.0	22.0	30.0	8.0	31.78
fall night EF-WAE*	Sauger						0.0	0.0	0.6	0.0	0.0	0.12
	Saugeye						0.0	1.2	0.0	0.0	0.0	0.24
	Walleye						47.3	10.8	48.9	46.2	57.8	42.20

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
boat shocker (night)	Smallmouth Bass	PSD	24	27	26	63		30	27	64	47	50
		PSD-P	12	6	7	16		11	13	32	13	25
		Wr	93	100	100	109		101	99	107	92	106

Back-Calculated Lengths

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

Species: Smallmouth Bass

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2023	1	13	97 (3.1)									
2022	2	2	82 (6.1)	117 (8.5)								
2021	3	3	99 (9.2)	157 (15.8)	191 (10.9)							
2020	4	1	72	121	180	209						
2018	6	2	75 (7.2)	144 (.1)	199 (8.1)	259 (35)	303 (43.7)	326 (39.4)				
2017	7	1	77	178	284	339	370	406	420			
Weighted Mean		22	92	144	205	267	325	353	420			

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2023	1	13										
2022	2	2										
2021	3	3										
2020	4	1										
2018	6	2										
2017	7	1										
Weighted Mean		22										

Length at Capture

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

Species: Smallmouth Bass

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2024	22	113 (13)	130 (2)	204 (3)	224 (1)		346 (2)	437 (1)			
2023	75	113 (43)	197 (7)	262 (11)	294 (9)	374 (4)	376 (1)				
2022	41	122 (19)	203 (5)	292 (7)	348 (4)	383 (6)					
2021	51	115 (29)	171 (10)	220 (7)	274 (2)	347 (2)	422 (1)				
2020	57	164 (25)	204 (16)	288 (9)	345 (6)	423 (1)					
2018	49	231 (9)	281 (25)	338 (7)	383 (6)	414 (2)					
2016	68	186 (38)	261 (17)	282 (9)	313 (2)		452 (2)		496 (1)		
2015	67	160 (45)	239 (13)	299 (4)	367 (4)	437 (1)					

Fish Condition

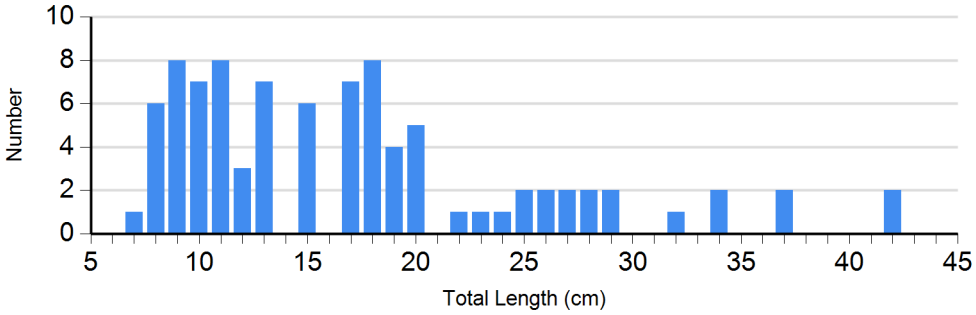
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Smallmouth Bass Electro Fishing	2020	26	105 (1.8)	7	93 (1.7)	4	90 (2.9)	0	
	2021	11	99 (2.3)	2	92 (3.9)	2	104 (1.6)	0	
	2022	8	107 (3.1)	7	103 (2.8)	7	110 (2.4)	0	
	2023	16	95 (1.9)	10	86 (5.3)	4	92 (2.7)	0	
	2024	4	110 (4.4)	2	102 (3.2)	1	97	1	108

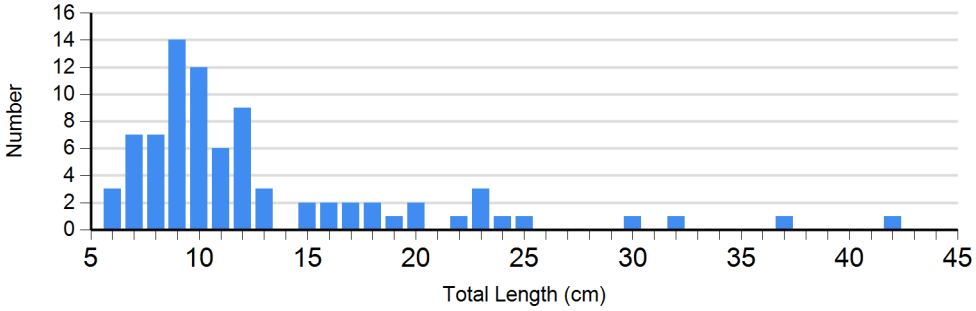
Length Frequency Distribution

Length frequency histogram of species sampled by year.

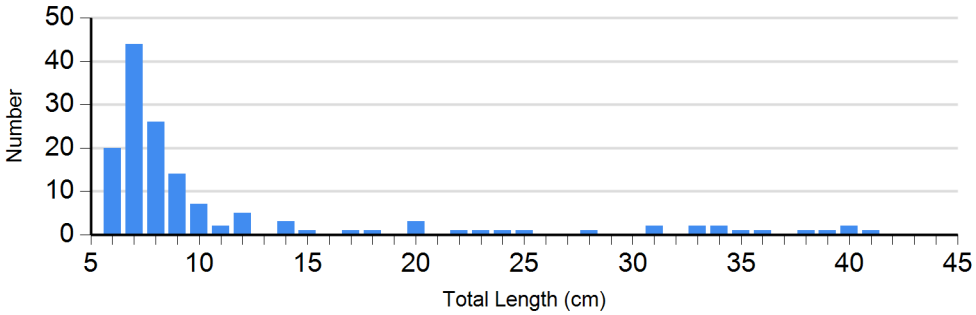
Species: Smallmouth Bass
Gear: boat shocker (night)



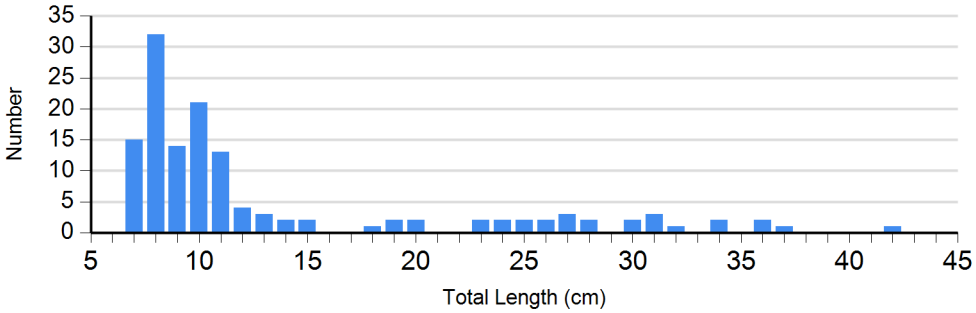
2020



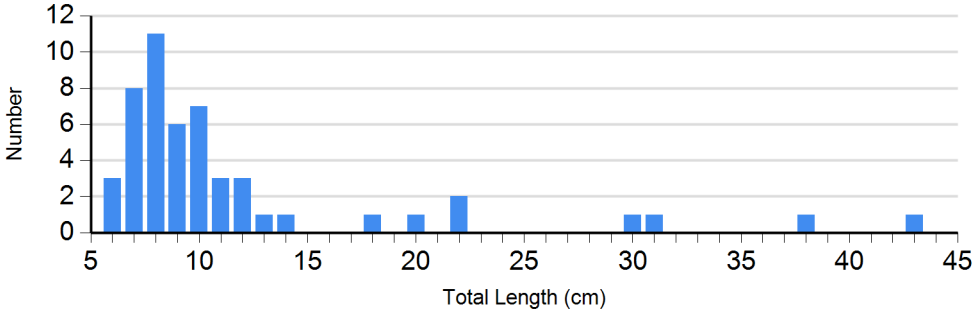
2021



2022



2023

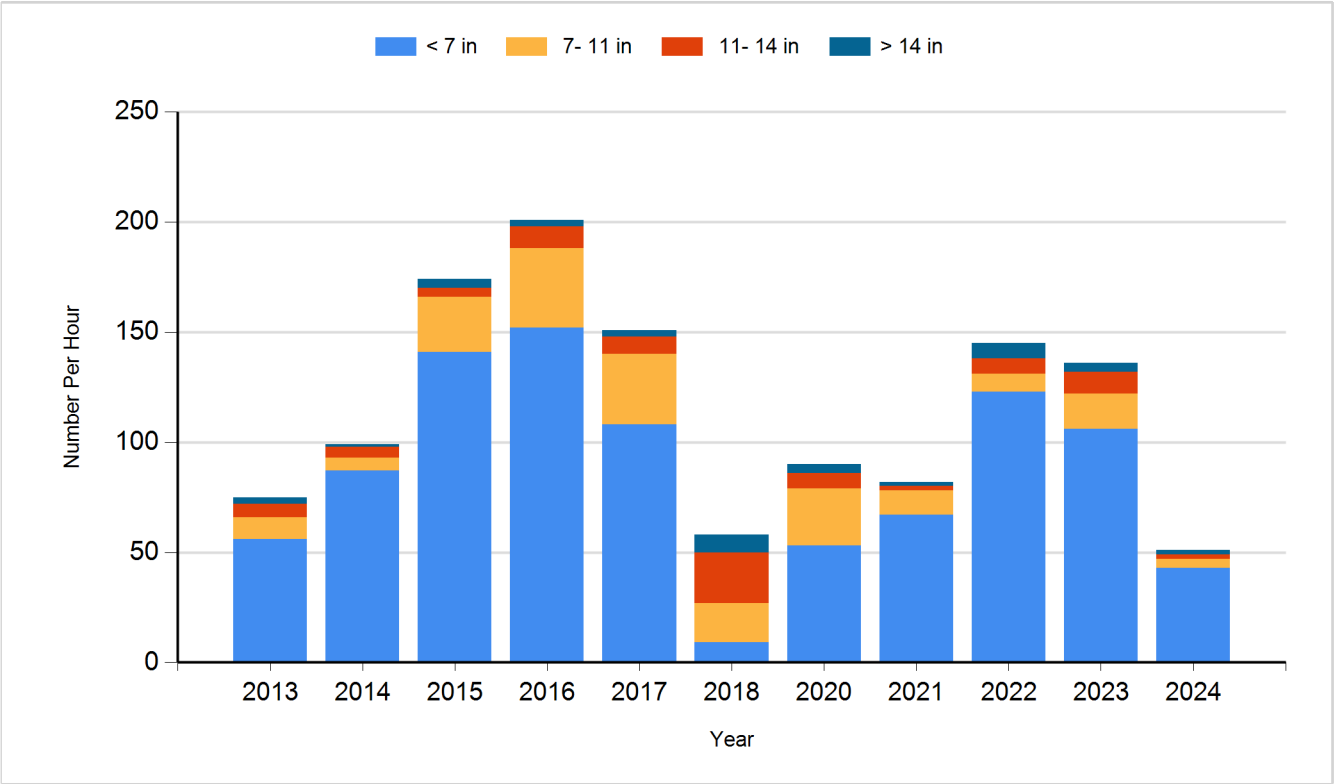


2024

Historic Fish Sizes and Relative Abundance

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

Species: Smallmouth Bass
Gear: boat shocker (night)



Fish Stocking

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

Year	Species	Size	Number
2013	Brown Trout (Plymouth Rock)	Catchable	4,765
2013	Rainbow Trout (McConaugRainbow Trout	Catchable 11"	5,000
2013	Rainbow Trout (Shasta)	Catchable	5,000
2014	Brown Trout (Plymouth Rock)	Catchable	6,399
2014	Pallid Sturgeon	Juvenile	102
2014	Rainbow Trout (Shasta)	Catchable	7,946
2015	Rainbow Trout (Shasta)	Catchable	10,000
2016	Rainbow Trout (Shasta)	Catchable	8,283
2017	Rainbow Trout (Shasta)	Catchable	10,000
2018	Rainbow Trout (Shasta)	Catchable	10,000
2018	Walleye		42,000
2018	Walleye	Fingerling	227,606
2019	Rainbow Trout (Shasta)	Catchable 11"	10,000
2020	Rainbow Trout (Arlee)	Catchable 11"	5,000
2020	Walleye	Fingerling	157,000
2021	Rainbow Trout (Arlee)	Catchable 11"	10,081
2022	Rainbow Trout (Shasta)	Adult	7,352
2023	Rainbow Trout (Shasta)	Adult	10,602
2024	Rainbow Trout	Adult	8,196