SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Lewis and Clark - Delta, Bon Homme County
LCL-Lake-73-003
2022

Lake Information

Name: Lewis and Clark - Delta

County: Bon Homme

Surface Area: 20,992 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (day)	May 23, 2022	5158 seconds
boat shocker (day)	May 24, 2022	711 seconds
fall night EF-WAE	Oct 20, 2022	3600 seconds
small seine	Aug 02, 2022	11 hauls

Common Fish Species Present

Sauger

Walleye

Largemouth 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 (day)	Largemouth Bass	36	11.5	5.5	67	17	24	15	114	2
small seine*	Walleye	1	0.1	0.1						

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	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Avg
boat shocker (day)	Largemouth Bass	1.4	11.2	6.4	9.2	2.2	11.6	6.0	2.5	7.5	11.5	6.95
	Smallmouth Bass	1.0	0.2	3.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.51
fall night EF-WAE*	Sauger									6.0	41.0	23.50
	Walleye									4.0	39.0	21.50
small seine*	Bigmouth Buffalo	0.1	0.2	0.0	0.0	0.0		0.0	0.0		0.0	0.04
	Bigmouth Shiner	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.00
	Black Crappie	0.8	1.5	0.0	0.4	0.0		0.0	0.0		0.0	0.34
	Bluegill	0.1	0.0	0.4	0.5	0.1		0.0	0.0		0.0	0.14
	Bluntnose Minnow	0.0	0.0	0.0	0.5	0.0		0.0	0.0		0.0	0.06
	Brassy Minnow	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.00
	Channel Catfish	0.0	0.0	0.1	0.1	0.0		0.0	0.0		0.0	0.03
	Common Carp	0.1	0.0	0.0	0.1	0.3		0.0	0.0		0.0	0.06
	Emerald Shiner	0.1	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.01
	Fathead Minnow	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.00
	Gizzard Shad	0.4	0.0	0.0	0.4	0.0		0.0	0.0		0.0	0.10
	Goldeye	0.1	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.01
	Grass Pickerel	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.00
	Johnny Darter	0.3	0.1	0.1	0.7	0.0		0.0	0.0		0.0	0.15
	Largemouth Bass	5.9	2.6	0.2	0.8	0.4		0.0	0.0		0.0	1.24
	Northern Pike	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.00
	Orangespotted Sunfish	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.00
	Red Shiner	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.00
	River Carpsucker	18.6	2.0	2.5	15.3	5.6		0.0	0.0		0.0	5.50
	Rock Bass	0.1	0.0	0.0	0.0	0.1		0.0	0.0		0.0	0.03
	Sand Shiner	0.5	1.5	0.0	0.0	0.0		0.0	0.0		0.0	0.25
	Sauger	0.1	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.01
	Shorthead Redhorse	0.0	0.0	0.0	0.3	0.1		0.0	0.0		0.0	0.05
	Smallmouth Bass	0.0	0.1	0.2	0.3	0.3		0.0	0.0		0.0	0.11
	Smallmouth Buffalo	0.1	0.0	0.0	0.2	0.0		0.0	0.0		0.0	0.04
	Spotfin Shiner	3.5	4.6	5.8	10.0	3.7		0.0	0.0		0.0	3.45
	Spottail Shiner	0.0	0.0	0.0	0.6	0.0		0.0	0.0		0.0	0.08
	Walleye	0.2	0.0	0.0	0.0	0.0		0.1	0.0		0.1	0.05
	White Bass	0.0	0.0	0.0	0.4	0.0		0.0	0.0		0.0	0.05
	White Crappie	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.00

		CPUE										
Gear	Species	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Avg
small seine*	White Sucker	0.0	0.0	0.0	0.1	0.0		0.0	0.0		0.0	0.01
	Yellow Perch	0.1	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.01

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	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
boat shocker (day)	Largemouth Bass	PSD	100	100	71	62	38	63	73	33	71	67
		PSD-P	50	62	57	52	0	37	13	0	33	24
		Wr	93	106	102	103	130	100	109	100	108	114

Back-Calculated Lengths

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

Species: Largemouth Bass

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2021	1	7	101 (5.3)									
2020	2	5	82 (3.3)	175 (17)								
2019	3	4	76 (6.6)	156 (15.4)	237 (24.9)							
2018	4	5	91 (10.6)	186 (27)	270 (13.1)	310 (9.2)						
2017	5	3	77 (1.1)	150 (29.1)	261 (19.8)	324 (26.5)	354 (30.3)					
2016	6	2	81 (6.4)	143 (23.3)	235 (35.4)	335 (13.4)	378 (15.3)	405 (5.5)				
2015	7	2	88 (7.7)	186 (36.5)	245 (56.4)	305 (60.8)	373 (32.8)	413 (26.3)	434 (25.8)			
Weighted Mean		28	87	168	253	317	366	409	434			

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2021	1	7										
2020	2	5										
2019	3	4										
2018	4	5										
2017	5	3										
2016	6	2										
2015	7	2										
Weighted Mean		28										

Length at Capture

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

Species: Largemouth Bass

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2022	29	115 (8)	202 (5)	263 (4)	337 (5)	380 (3)	427 (2)	452 (2)			
2021	27	108 (4)	154 (2)	232 (5)	298 (1)	344 (5)	371 (4)	400 (4)	471 (2)		
2019	17		156 (2)	232 (2)	307 (3)	337 (6)	377 (3)		445 (1)		
2018	92	113 (13)	172 (25)	255 (11)	296 (14)	344 (8)	419 (5)	444 (13)	449 (2)	570 (1)	
2016	73	96 (48)	192 (7)	229 (3)	290 (3)	389 (2)	418 (2)	401 (1)	425 (6)	423 (1)	
2015	57	110 (32)	178 (5)	235 (4)	251 (1)	305 (2)	384 (2)	420 (3)	419 (6)	464 (2)	
2014	42	86 (5)			361 (7)	384 (11)	396 (12)	431 (6)	421 (1)		

Fish Condition

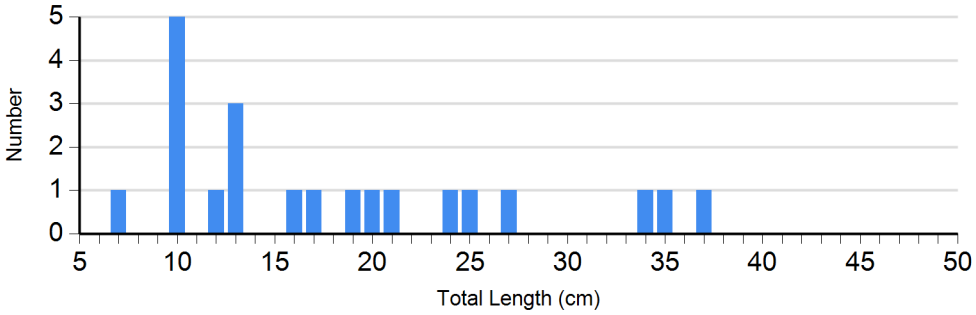
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Largemouth Bass Electro Fishing	2018	22	99 (2.0)	15	103 (1.8)	21	99 (2.8)	1	59
	2019	4	133 (22.9)	9	102 (3.0)	2	94 (2.1)	0	
	2020	2	98 (3.0)	1	105	0		0	
	2021	6	123 (2.3)	8	100 (2.5)	7	104 (3.5)	0	
	2022	7	115 (3.2)	9	115 (3.2)	5	111 (3.1)	0	

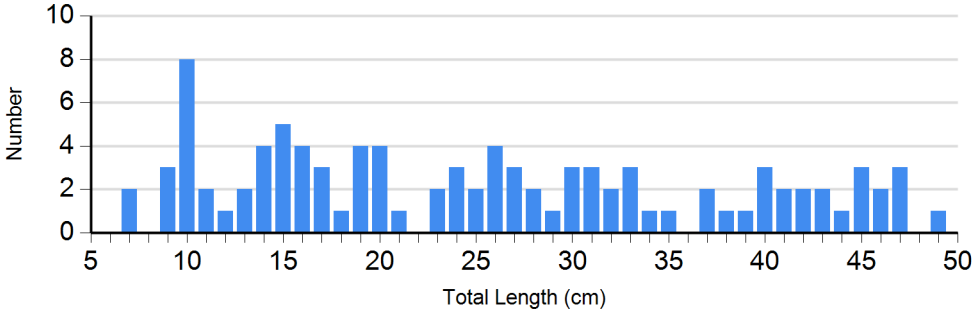
Length Frequency Distribution

Length frequency histogram of species sampled by year.

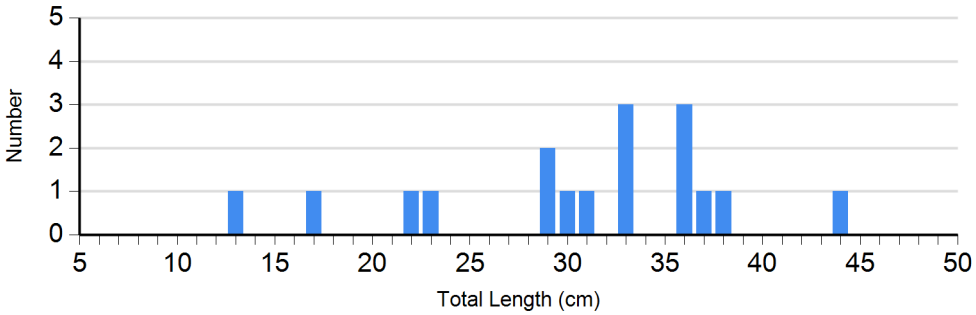
Species: Largemouth Bass
Gear: boat shocker (day)



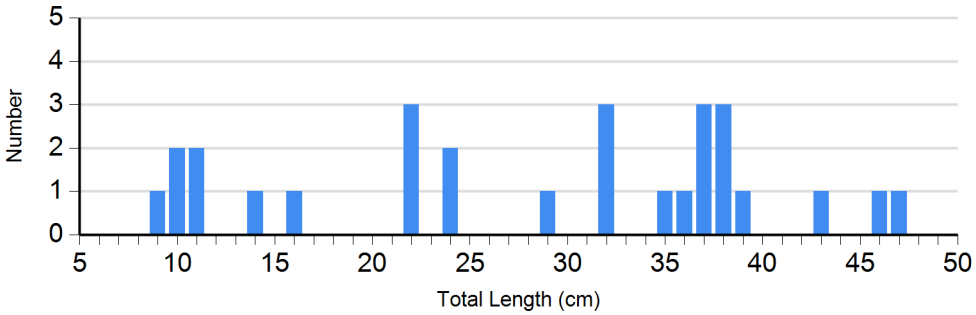
2017



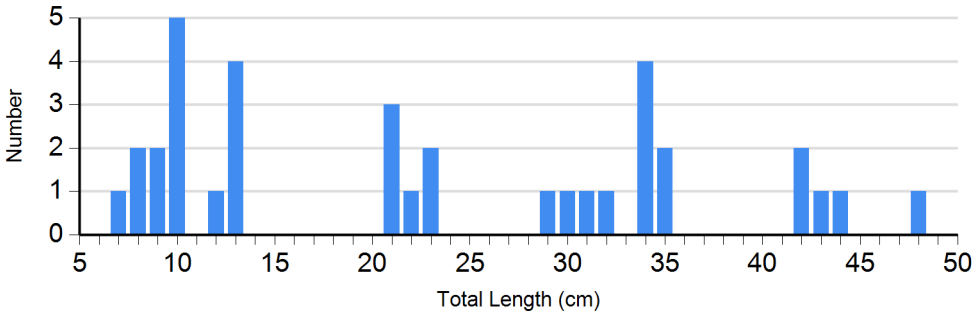
2018



2019



2021

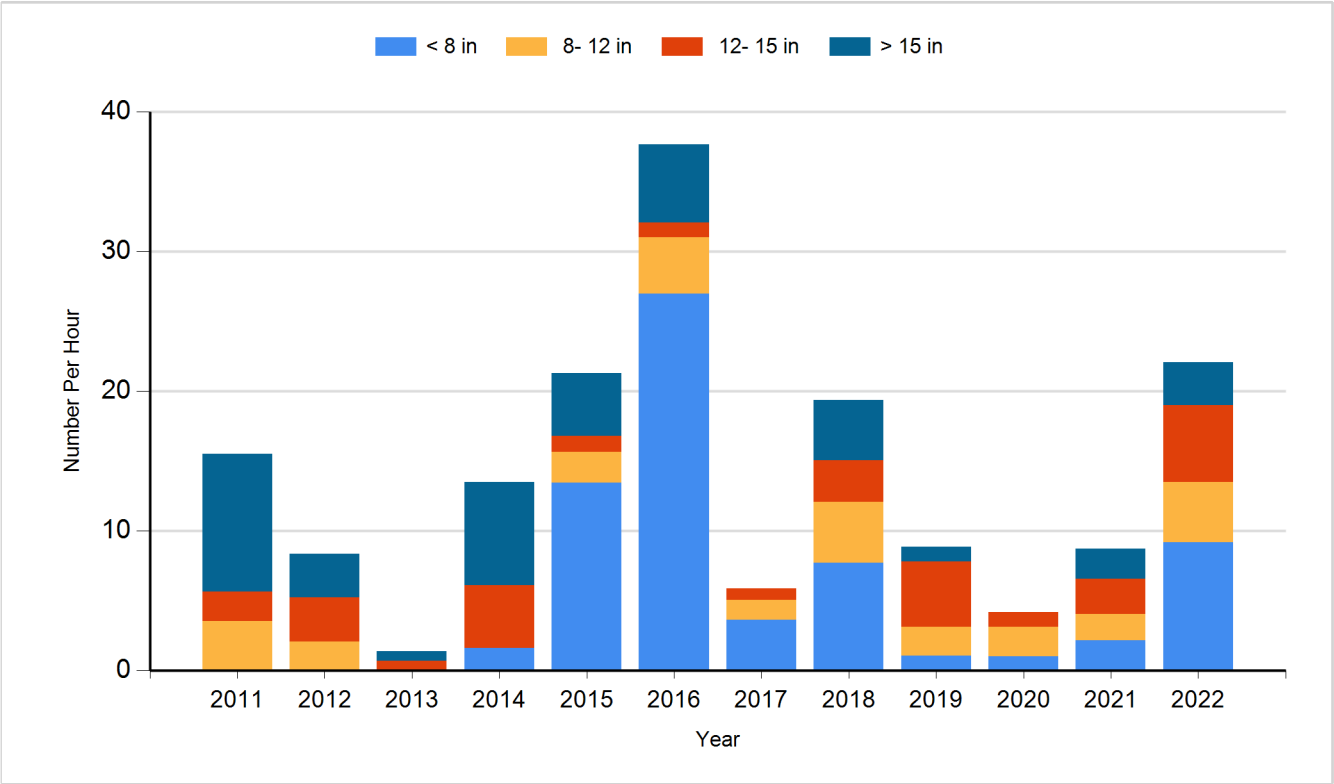


2022

Historic Fish Sizes and Relative Abundance

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

Species: Largemouth Bass
Gear: boat shocker (day)



Fish Stocking

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

Year	Species	Size	Number
2014	Walleye	Fry	14,107,500
2016	Walleye	Fry	13,449,865
2016	Walleye	Small Fingerling	1,426,655
2018	Walleye	Fingerling	473,237
2020	Walleye	Fingerling	796,360
2021	Walleye	Fingerling	893,684
2022	Walleye	Juvenile	2,101,511