SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Potts, Potter County
LLO-Lake-2378-000
2018

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
boat shocker (night)	Sep 17, 2018	3600 seconds
frame net (std 3/4 in)	Jul 10, 2018	5 net-nights
frame net (std 3/4 in)	Jul 11, 2018	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
boat shocker (night)	Largemouth Bass	25	15.0	5.0	67		67		110	2
frame net (std 3/4 in)	Black Bullhead	5460	485.8	102.7	1	0	1	0	82	1
	Bluegill	46	4.6	1.5	100		9		118	2
	Yellow Perch	132	13.2	7.5	67	6	5	3	88	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.

		CPUE										
Gear	Species	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Avg
boat shocker (night)	Largemouth Bass			87.0				45.0			15.0	49.0
frame net (std 3/4 in)	Black Bullhead			10.0		9.8		3.6			485.8	127.3
	Black Crappie			0.1								0.1
	Bluegill							0.1			4.6	2.4
	Yellow Perch			10.0				1.7			13.2	8.3

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	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
boat shocker (night)	Largemouth Bass	PSD			60				0			67
		PSD-P			8				0			67
		Wr			111				130			110
frame net (std 3/4 in)	Black Bullhead	PSD			0		96		6			1
		PSD-P			0		0		0			1
		Wr			79		95		87			82
	Bluegill	PSD							100			100
		PSD-P							0			9
		Wr							141			118
	Yellow Perch	PSD			46				47			67
		PSD-P			0				6			5
		Wr			94				95			88

Back-Calculated Lengths

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

Species: Bluegill

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2015	3	5	90 (6.6)	132 (4.5)	156 (1.8)							
2014	4	5	79 (3.7)	112 (2.2)	140 (1.3)	158 (.7)						
2013	5	5	74 (3.5)	104 (3.6)	128 (2.5)	151 (1.4)	166 (1.7)					
2012	6	7	69 (2.8)	97 (2.2)	120 (4.4)	143 (3.6)	163 (4.3)	182 (2.1)				
2011	7	2	76 (10.6)	103 (2.1)	120 (3.9)	133 (.7)	150 (2.2)	169 (3.8)	183 (5.1)			
2009	9	1	79	104	126	138	160	172	189	204	216	
Weighted Mean		25	77	109	133	148	162	178	185	204	216	

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2015	3	5										
2014	4	5										
2013	5	5										
2012	6	7										
2011	7	2										
2009	9	1										
Weighted Mean		25										

Species: Largemouth Bass

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2017	1	9	92 (2.9)									
2016	2	1	83	83								
2014	4	3	99 (5.3)	140 (5.4)	204 (11.4)	250 (8.8)						
2012	6	1	144	183	222	268	305	361				
2011	7	5	130 (8.9)	190 (18.9)	237 (22.4)	270 (22.6)	302 (24.3)	327 (23.7)	356 (25.9)			
2010	8	3	114 (8.8)	174 (23.6)	204 (21.4)	231 (25.9)	264 (26.9)	293 (36.5)	317 (41.2)	348 (47.2)		
2009	9	2	122 (14.7)	166 (20)	212 (15.3)	261 (9.2)	294 (9.5)	318 (8.7)	347 (15.6)	371 (12.6)	395 (8.2)	
Weighted Mean		24	108	166	218	256	290	319	343	357	395	

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2017	1	9										
2016	2	1										
2014	4	3										
2012	6	1										
2011	7	5										
2010	8	3										
2009	9	2										
Weighted Mean		24										

Species: Yellow Perch

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2017	1	1	95									
2016	2	15	116 (2)	168 (2.2)								
2015	3	7	121 (3.4)	162 (4.8)	188 (2.9)							
2014	4	5	118 (5)	150 (6.1)	182 (3.3)	203 (1.2)						
2013	5	3	116 (7.4)	161 (9)	187 (4.2)	212 (3.9)	238 (7.1)					
2012	6	7	101 (5.8)	136 (7.2)	164 (5.6)	185 (4.9)	204 (5.2)	224 (3.2)				
2011	7	3	112 (7.5)	147 (4)	174 (4.4)	192 (3)	219 (11.3)	238 (10.6)	258 (10.2)			
2010	8	2	112 (9)	145 (1.9)	177 (4.6)	199 (12.6)	216 (14.4)	232 (18.1)	249 (15.5)	264 (15.3)		
2006	12	1	108	108	151	151	174	174	201	201	216	216
Weighted Mean		44	114	155	177	194	213	225	246	243	216	216

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2017	1	1										
2016	2	15										
2015	3	7										
2014	4	5										
2013	5	3										
2012	6	7										
2011	7	3										
2010	8	2										
2006	12	1	238	238								
Weighted Mean		44	238	238								

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+
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+
2018	25	112 (9)	112 (1)		283 (3)		396 (1)	381 (6)	359 (3)	415 (2)	
2015	46	248 (46)									
2011	87	215 (4)		302 (76)		435 (2)	459 (3)	445 (1)		435 (2)	

Fish Condition

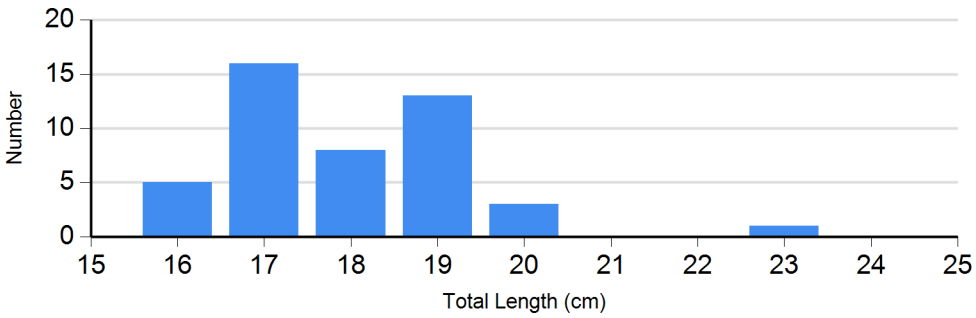
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2015	0		1	141	0		0	
	2018	0		42	117 (1.5)	4	120 (1.4)	0	
Largemouth Bass Electro Fishing	2015	45	130 (4.1)	0		0		0	
	2018	5	104 (2.3)	0		10	113 (2.1)	0	

Length Frequency Distribution

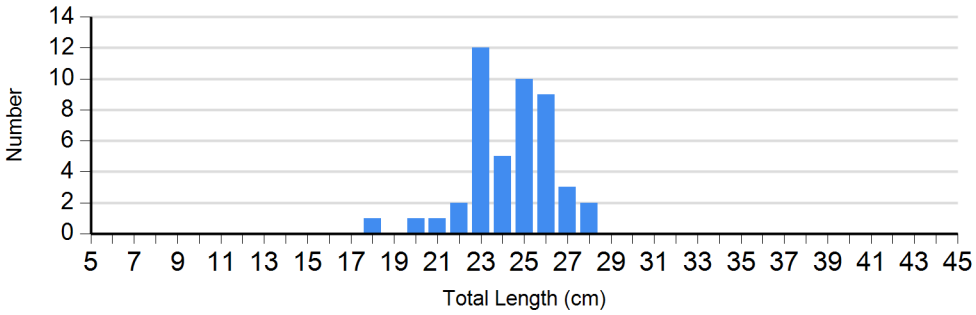
Length frequency histogram of species sampled by year.

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

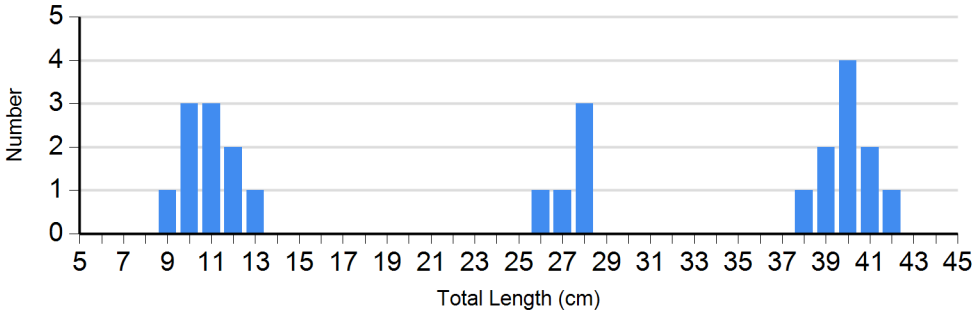


2018

Species: Largemouth Bass
Gear: boat shocker (night)



2015

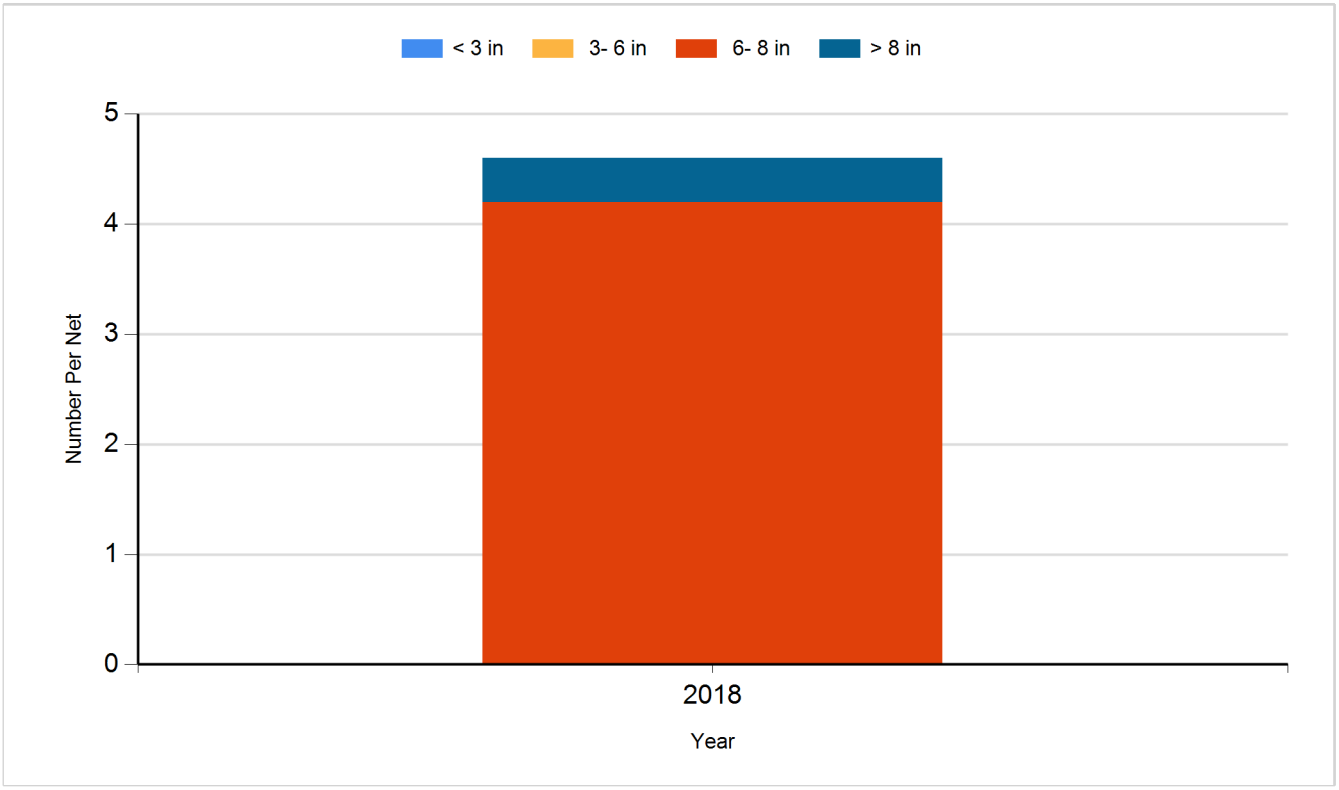


2018

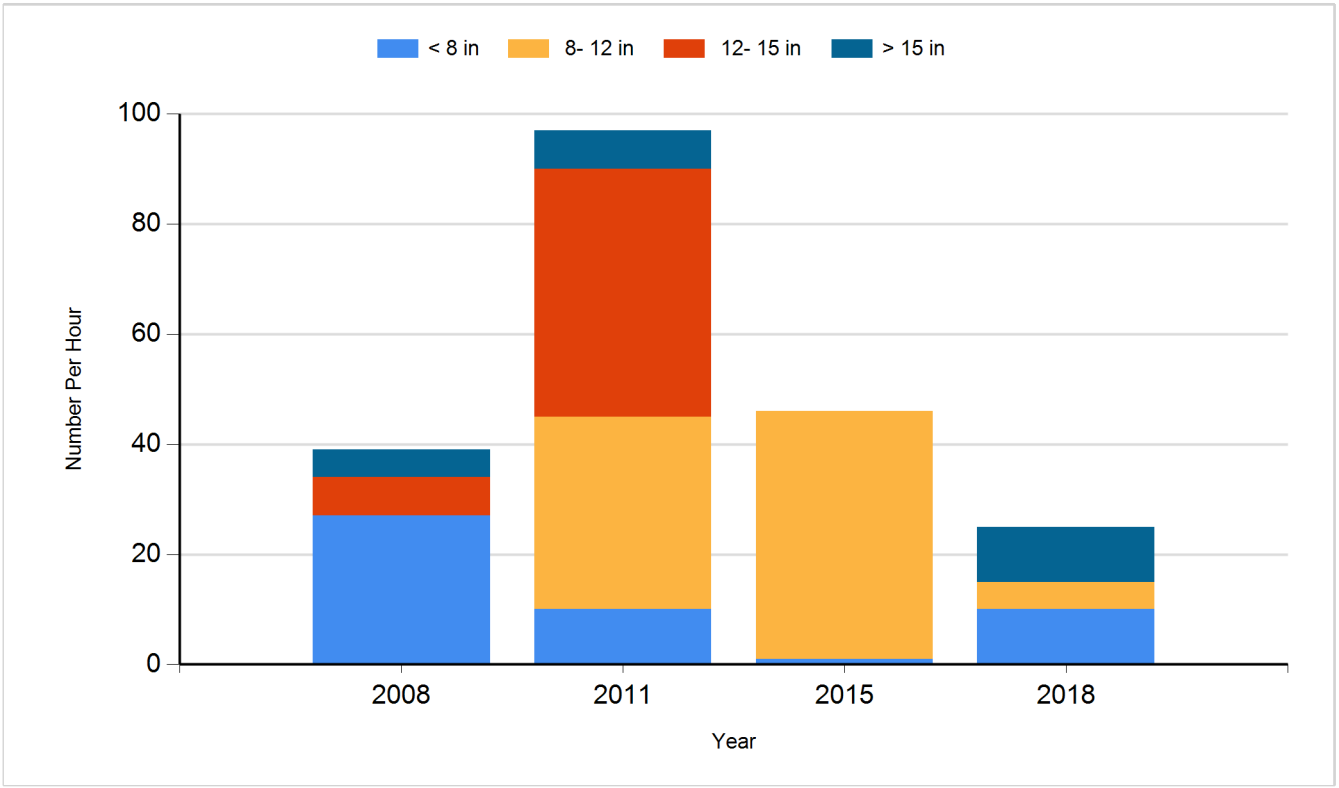
Historic Fish Sizes and Relative Abundance

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
2007	Largemouth Bass	Juvenile	185
2008	Black Crappie	Adult	56
2008	Largemouth Bass	Adult	50
2008	Largemouth Bass	Fingerling	2,720
2009	Largemouth Bass	Juvenile	490
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