SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Old Wall, Pennington County
MCE-Lake-214-000
2016

Lake Information

Name:　　　Old Wall

County:　　　Pennington

Surface Area:　　13 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (night)	September 12, 2016	2400 seconds
frame net (std 3/4 in)	July 16, 2016	8 net-nights

Common Fish Species Present

Bluegill

Largemouth Bass

Black Bullhead

Yellow Perch

Black Crappie

Golden Shiner

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).

$$CPUE = \frac{number\ of\ fish}{effort}$$

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.

$$PSD = \left(\frac{number\ of\ fish \geq quality\ length}{number\ of\ fish \geq stock\ length}\right) \times 100$$

$$PSD - P = \left(\frac{number\ of\ fish \geq preferred\ length}{number\ of\ fish \geq stock\ length}\right) \times 100$$

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.

$$Wr = \left(\frac{W}{Ws}\right) \times 100$$

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).

Species Name	Stock (in)	Stock (cm)	Quality (in)	Quality (cm)	Preferred (in)	Preferred (cm)	Memorable (in)	Memorable (cm)	Trophy (in)	Trophy (cm)
Bigmouth Buffalo	11	28	18	46	24	61	30	76	37	94
Black Bullhead	6	15	9	23	12	30	15	38	18	46
Black Crappie	5	13	8	20	10	25	12	30	15	38

Species Name	Stock (in)	Stock (cm)	Quality (in)	Quality (cm)	Preferred (in)	Preferred (cm)	Memorable (in)	Memorable (cm)	Trophy (in)	Trophy (cm)
Blue Catfish	12	30	20	51	30	76	35	89	45	114
Bluegill	3	8	6	15	8	20	10	25	12	30
Bluegill X Gr. Sunfish Hybrid	3	8	6	15	8	20	10	25	12	30
Brown Bullhead	5	13	8	20	11	28	14	36	17	43
Burbot	8	20	15	38	21	53	26	67	32	82
Channel Catfish	11	28	16	41	24	61	28	71	36	91
Common Carp	11	28	16	41	21	53	26	66	33	84
Flathead Catfish	14	35	20	51	28	71	34	86	40	102
Freshwater Drum	8	20	12	30	15	38	20	51	25	63
Gizzard Shad	7	18	11	28						
Green Sunfish	3	8	6	15	8	20	10	25	12	30
Lake Herring	5	13	8	20	11	28	14	35	17	43
Largemouth Bass	8	20	12	30	15	38	20	51	25	63
Longnose Gar	16	41	27	69	36	91	45	114	55	140
Muskellunge	20	51	30	76	38	97	42	107	50	127
Northern Pike	14	35	21	53	28	71	34	86	44	112
Paddlefish	16	41	26	66	33	84	41	104	51	130
Pumpkinseed	3	8	6	15	8	20	10	25	12	30
Redear Sunfish	4	10	7	18	9	23	11	28	13	33
River Carpsucker	7	18	11	28	14	36	18	46	22	56
Rock Bass	4	10	7	18	9	23	11	28	13	33
Rudd	6	15	10	25	12	30	15	38	19	48
Sauger	8	20	12	30	15	38	20	51	25	63
Saugeye	9	23	14	35	18	46	22	56	27	69
Shorthead Redhorse	6	15	10	25	13	33	16	41	20	51
Smallmouth Bass	7	18	11	28	14	35	17	43	20	51
Smallmouth Buffalo	11	28	18	46	24	61	30	76	37	94
Spotted Bass	7	18	11	28	14	35	17	43	20	51
Striped Bass	12	30	20	51	30	76	35	89	45	114
Striped Bass Hybrid (wiper)	8	20	12	30	15	38	20	51	25	63
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
White Perch	5	13	8	20	10	25	12	30	15	38
White Sucker	6	15	10	25	13	33	16	41	20	51
Yellow Bass	4	10	7	18	9	23	11	28	13	33
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).

Gear	Species	Abundance		Stock Density Indices				Condition	
		CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
boat shocker (night)	Largemouth Bass	112.5	15.7	56	8	27	7	99	1
frame net (std 3/4 in)	Black Bullhead	10.5	4.0	98		96		95	1
	Black Crappie	7.0	2.2	5		5		116	3
	Bluegill	114.3	37.5	76	2	0		106	1
	Golden Shiner	0.0	0.0						
	Largemouth Bass	0.3	0.2	50		50		106	7
	Yellow Perch	10.1	4.0	95		51	8	89	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.

Gear	Species											
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Avg
boat shocker (night)	Largemouth Bass										112.5	112.5
frame net (std 3/4 in)	Black Bullhead					48.0				33.8	10.5	30.8
	Black Crappie									0.5	7.0	3.8
	Bluegill					49.8				9.3	114.3	57.8
	Golden Shiner					0.0				0.0	0.0	0.0
	Largemouth Bass					0.3					0.3	0.3
	Yellow Perch					5.8				18.5	10.1	11.5
std exp gill net (150 ft)	Black Bullhead					54.0						54.0
	Bluegill					1.0						1.0
	Golden Shiner					0.0						0.0
	Largemouth Bass					1.0						1.0
	Yellow Perch					14.0						14.0

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.

Gear	Species	Index	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
frame net (std 3/4 in)	Black Crappie	PSD									100	5
		PSD-P									0	5
		Wr									104	116
	Yellow Perch	PSD					39				96	95
		PSD-P					4				32	51
		Wr					81				93	89
std exp gill net (150 ft)	Yellow Perch	PSD					36					
		PSD-P					0					
		Wr					86					

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).
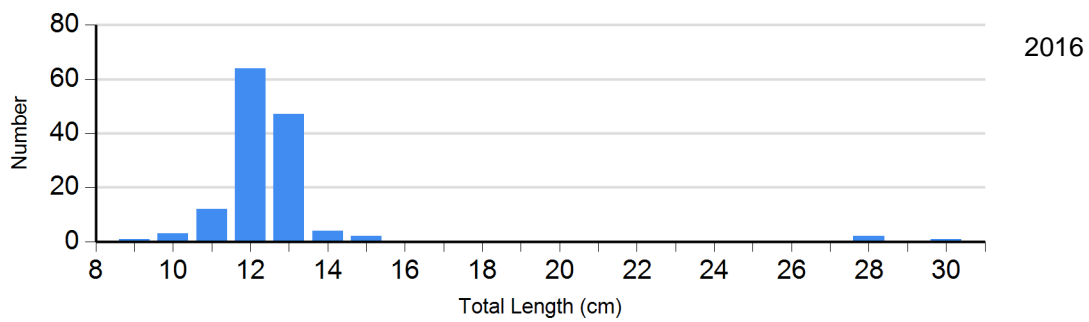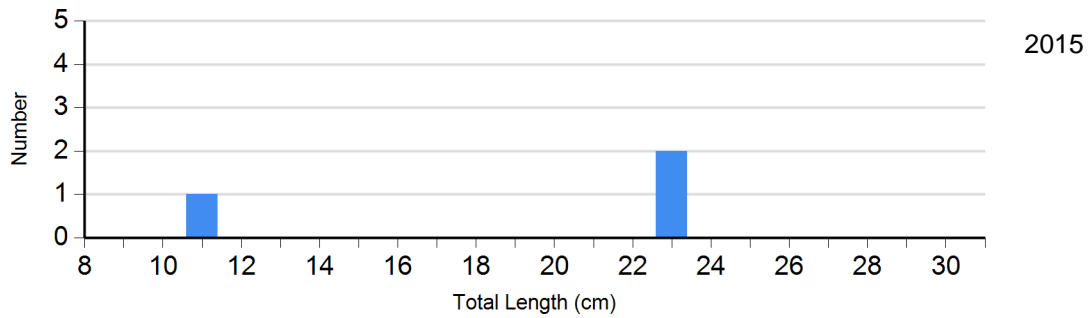
Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2015	0		2	104 (1.2)	0		0	
	2016	53	121 (1.4)	0		2	93 (1.2)	1	91

Length Frequency Distribution

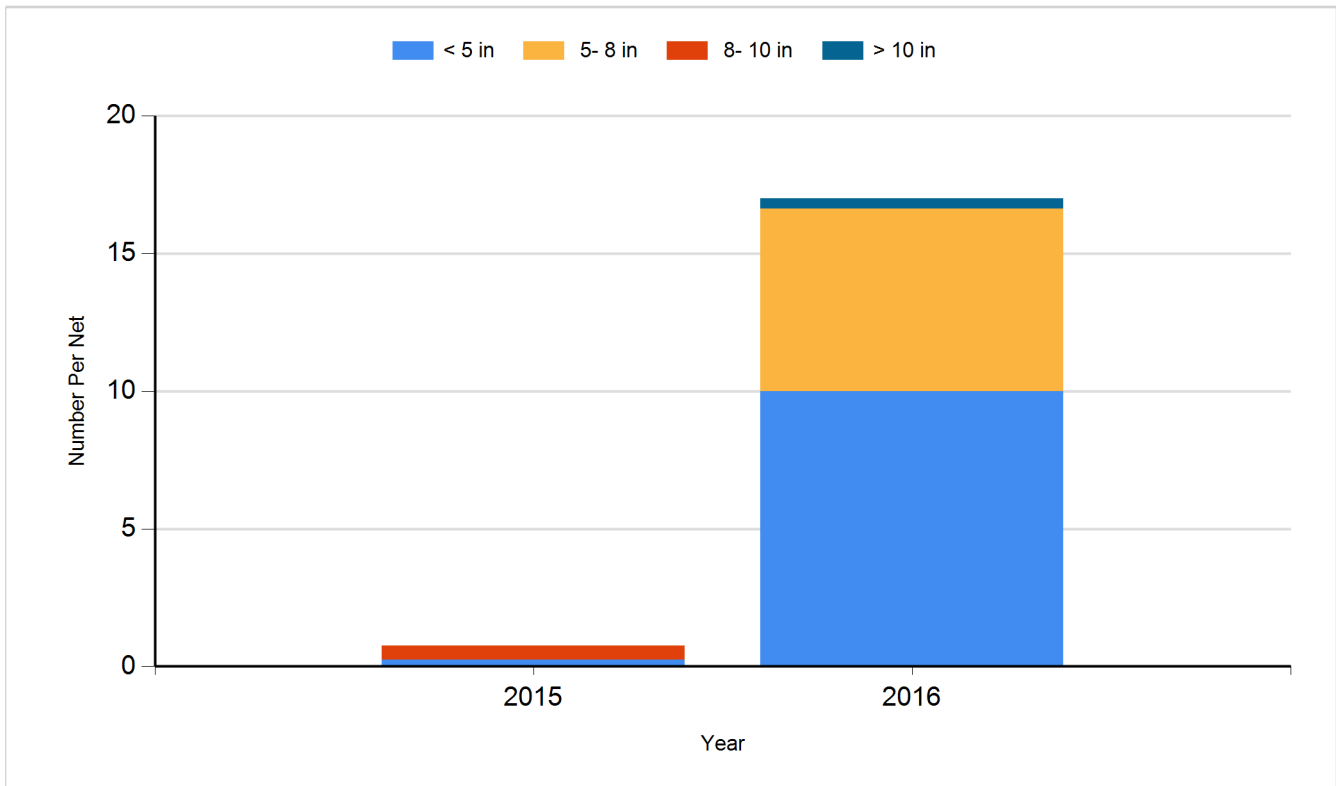Length frequency histogram of species sampled by year.

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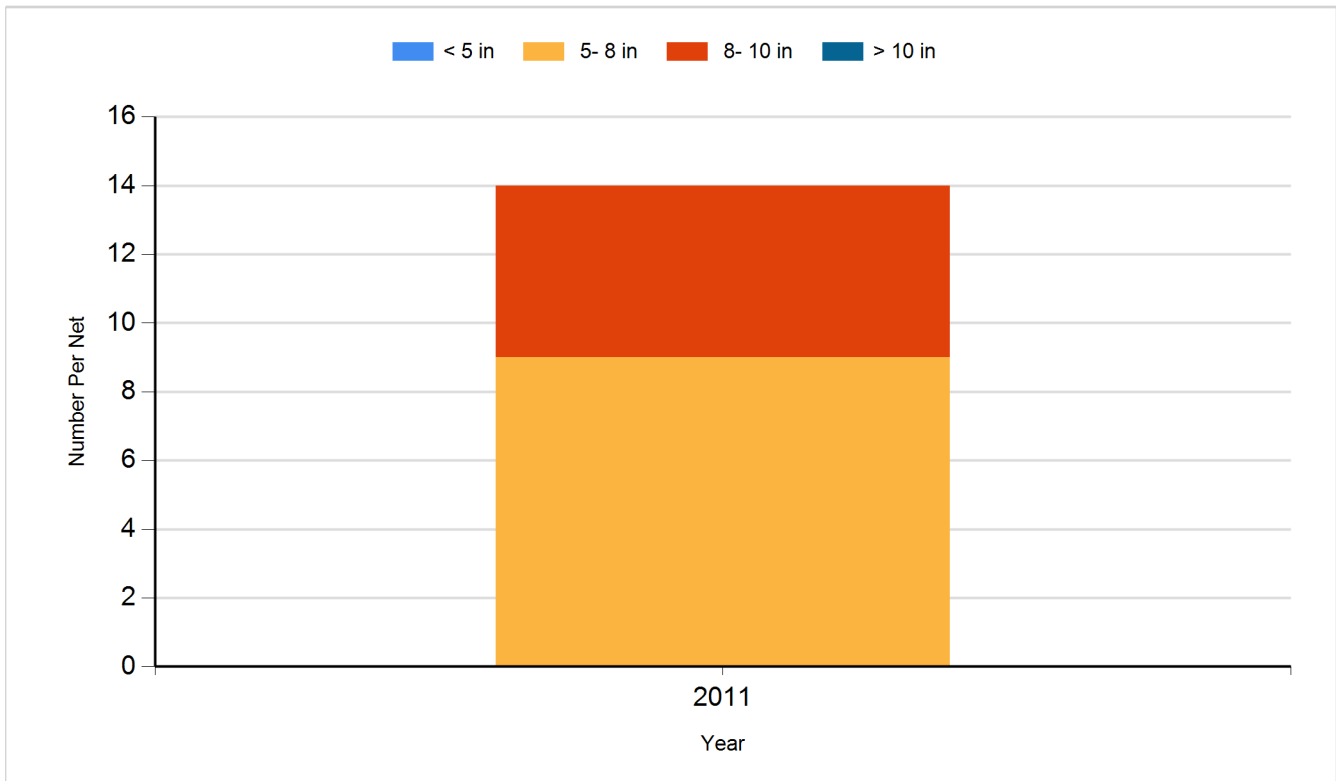Gear: frame net (std 3/4 in)

2015

2016

Historic Fish Sizes and Relative Abundance

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

Species: Black Crappie
Gear: Frame Net

Species: Yellow Perch
Gear: Gill Net

Fish Stocking

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

Year	Species	Size	Number
2005	Largemouth Bass	Fingerling	3,000
2006	Yellow Perch	Adult	138
2007	Largemouth Bass	Adult	100
2008	Bluegill	Fingerling	6,000
2011	Largemouth Bass	Fingerling	5,000