SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Opal, Meade County
CHE-Lake-200-000
2017

Lake Information

Name: Opal

County: Meade

Surface Area: 25 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (night)	June 01, 2017	1800 seconds
std frame net (3/8 inch)	June 15, 2017	4 net-nights

Common Fish Species Present

Yellow Perch

Northern Pike

Largemouth Bass

Bluegill

Black Bullhead

Green Sunfish

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.

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

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

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.

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

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)
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	60.0	68.2	70	13	20	12	112	2
std frame net (3/8 inch)	Black Bullhead	8.5	6.2	0		0		79	2
	Bluegill	2.0	1.2	50		25		112	5
	Green Sunfish	0.3	0.4	0		0		89	
	Largemouth Bass	0.0	0.0	0		0			
	Northern Pike	0.8	0.8	100		0		82	2
	Yellow Perch	0.8	0.8	0		0		90	10

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	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg
boat shocker (night)	Largemouth Bass										60.0	60.0
frame net (1/2 inch)	Black Bullhead			4.5								4.5
	Bluegill			0.5								0.5
	Northern Pike			0.5								0.5
	Yellow Perch			0.3								0.3
frame net (std 3/4 in)	Black Bullhead				23.9		179.0	25.1	764.8	131.8		224.9
	Bluegill				0.6		11.5	2.1	0.2	11.3		5.1
	Green Sunfish								0.2	0.3		0.3
	Largemouth Bass									0.0		0.0
	Northern Pike				1.4		2.5	0.9	2.0	0.3		1.4
	Yellow Perch							0.4	0.8	3.8		1.7
std exp gill net	Black Bullhead			2.0			43.0					22.5
	Northern Pike			5.0			9.0					7.0
	Yellow Perch			0.0								0.0
std exp gill net (150 ft)	Black Bullhead				32.5			0.5	57.5			30.2
	Green Sunfish								0.5			0.5
	Northern Pike				11.5			0.5	1.5			4.5
	Yellow Perch							0.5	6.5			3.5
std frame net (3/8 inch)	Black Bullhead										8.5	8.5
	Bluegill										2.0	2.0
	Green Sunfish										0.3	0.3
	Largemouth Bass										0.0	0.0
	Northern Pike										0.8	0.8
	Yellow Perch										0.8	0.8

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	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
frame net (1/2 inch)	Northern Pike	PSD			50							
		PSD-P			0							
		Wr			86							
	Yellow Perch	PSD			100							
		PSD-P			100							
		Wr			104							
frame net (std 3/4 in)	Northern Pike	PSD					27		60	100	80	0
		PSD-P					9		20	67	50	0
		Wr					83		84	83	101	91
	Yellow Perch	PSD								0	0	61
		PSD-P								0	0	0
		Wr								80	104	97
std exp gill net	Northern Pike	PSD				40		89				
		PSD-P				0		78				
		Wr				92		92				
	Yellow Perch	PSD				0						
		PSD-P				0						
std exp gill net (150 ft)	Northern Pike	PSD					57			100	100	
		PSD-P					17			100	67	
		Wr					89			76	94	
	Yellow Perch	PSD								0	8	
		PSD-P								0	0	
		Wr								93	97	
std frame net (3/8 inch)	Northern Pike	PSD										100
		PSD-P										0
		Wr										82
	Yellow Perch	PSD										0
		PSD-P										0
		Wr										90

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)
Northern Pike Gill Net	2013	2	82 (0.0)	2	70 (0.0)	10	97 (2.9)	4	95 (0.0)
	2014	0		0		2	76 (0.0)	0	
	2015	0		2	97 (0.0)	2	97 (0.0)	2	88 (0.0)
Yellow Perch Gill Net	2014	2	93 (0.0)	0		0		0	
	2015	24	98 (2.9)	2	94 (0.0)	0		0	

Length Frequency Distribution

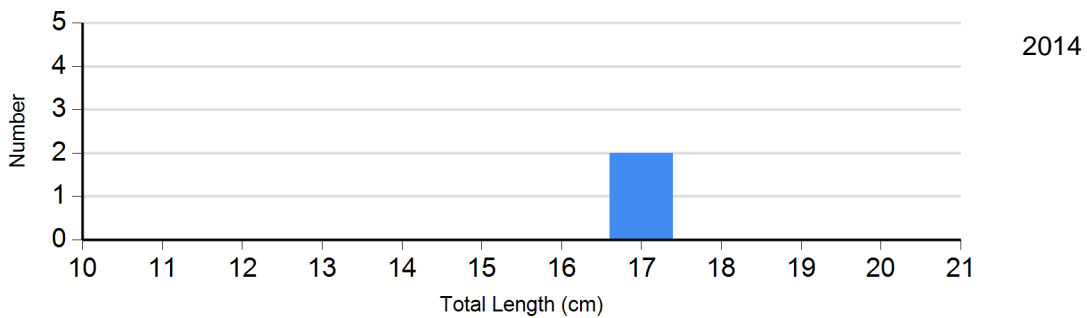Length frequency histogram of species sampled by year.
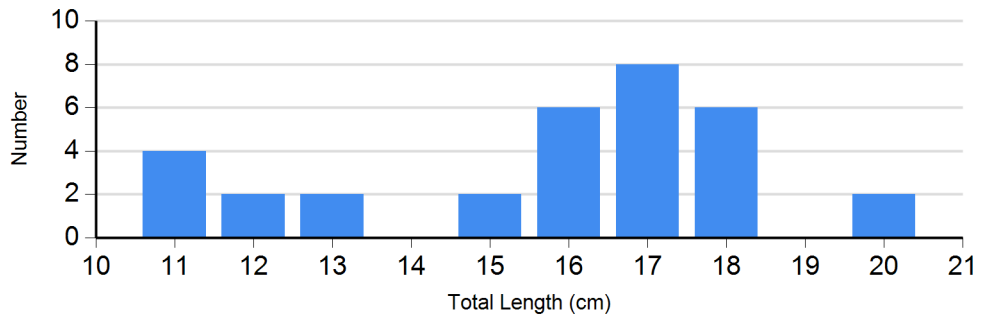
Species: Northern Pike
Gear: std exp gill net

2013

Species: Northern Pike
Gear: std exp gill net (150 ft)

2014
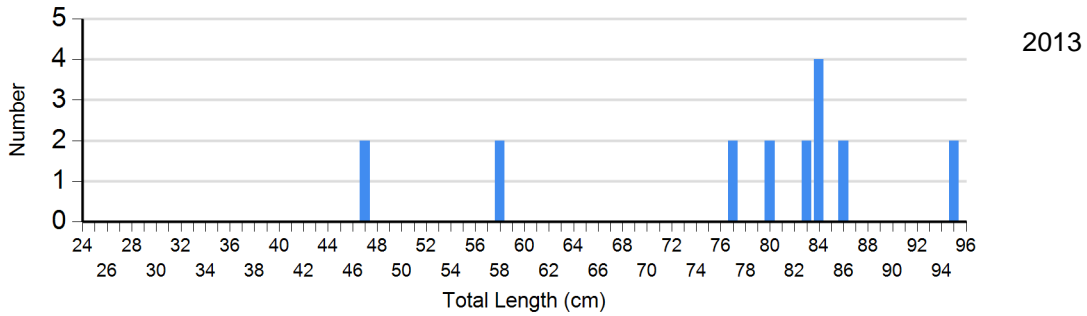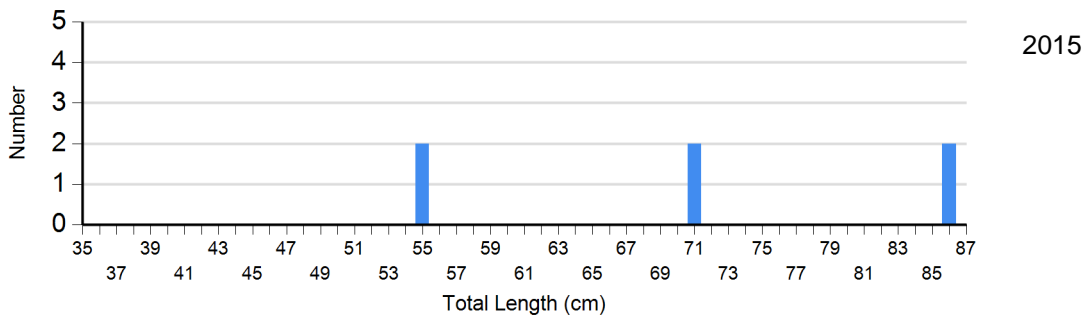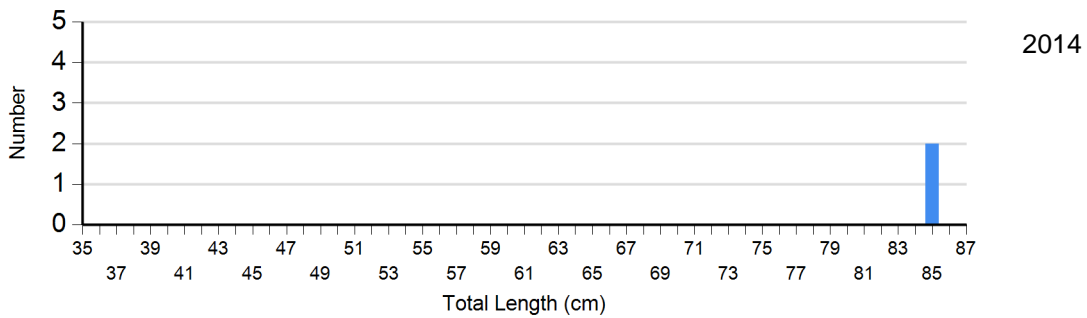
2015

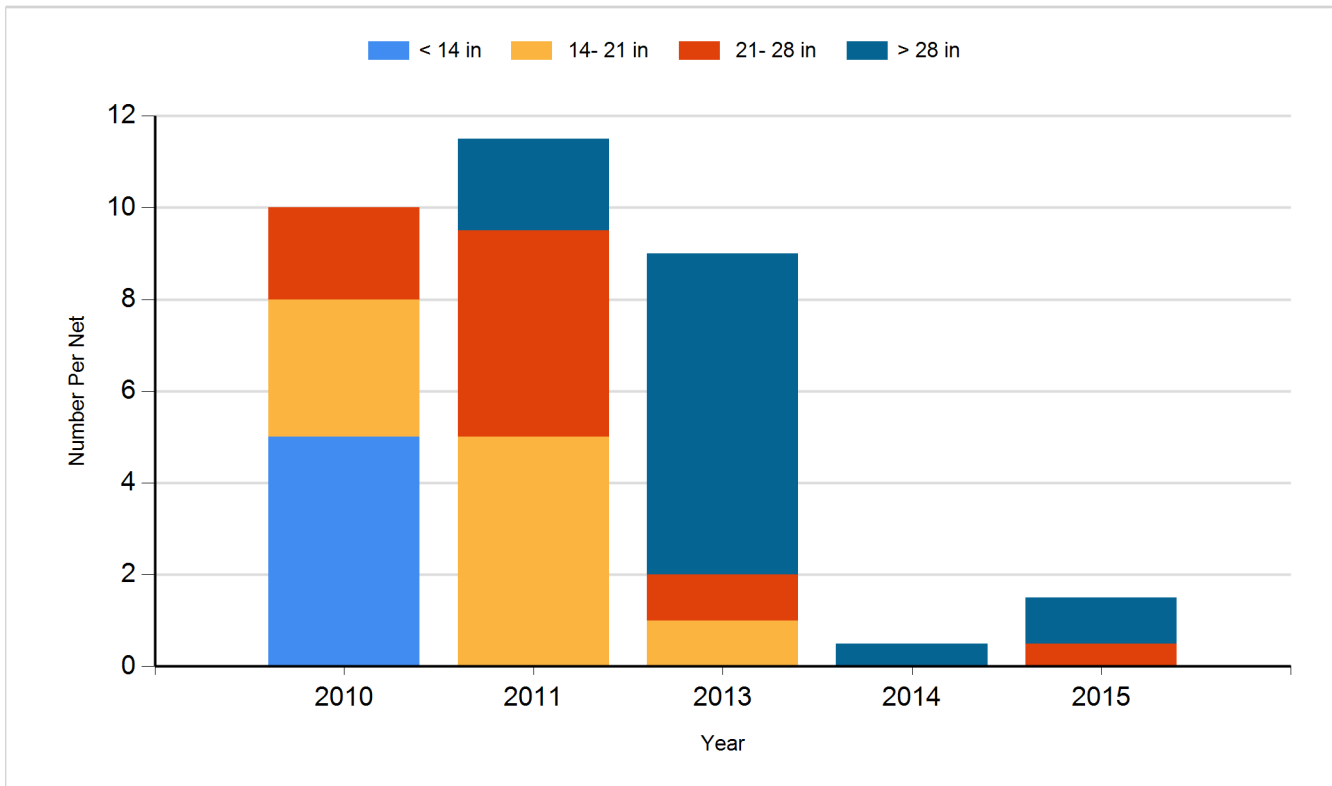Species: Yellow Perch
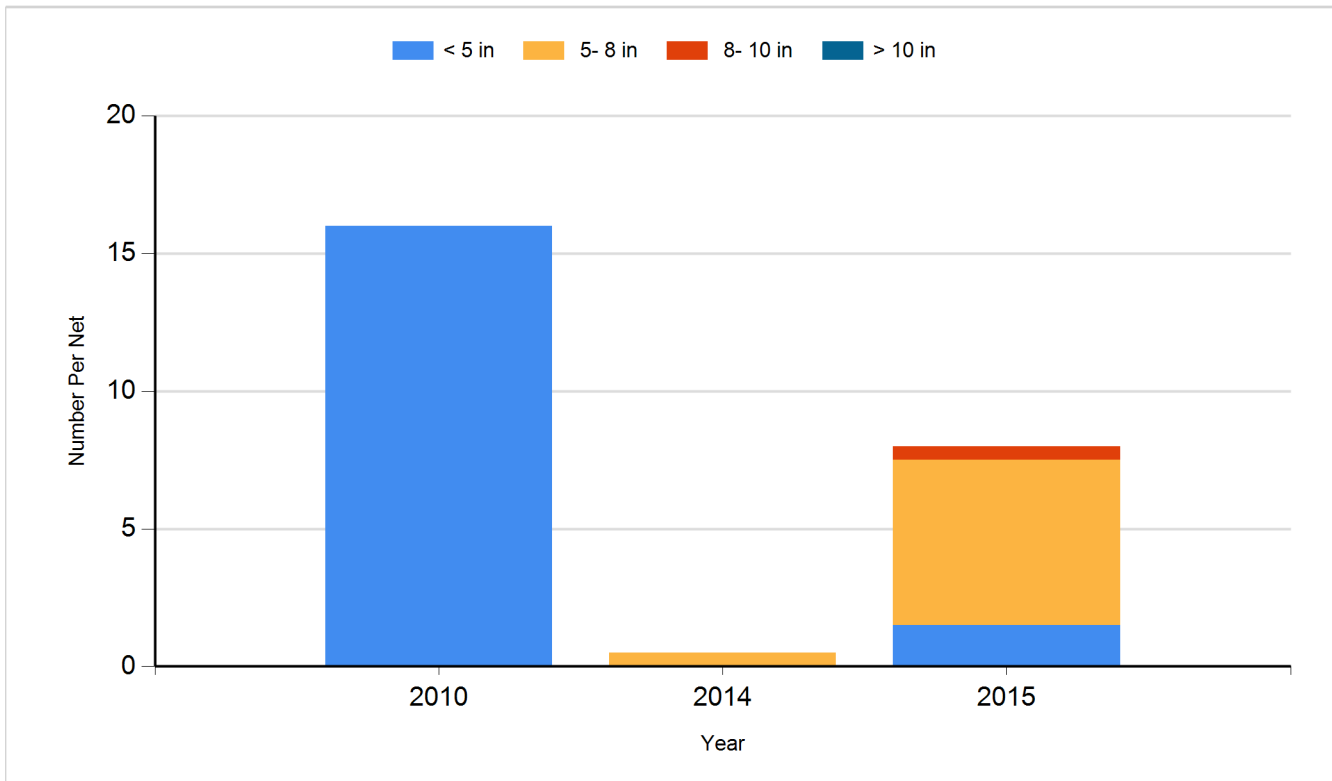Gear: std exp gill net (150 ft)

2014

Historic Fish Sizes and Relative Abundance

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

Species: Northern Pike
Gear: Gill Net

Species: Yellow Perch
Gear: Gill Net

Fish Stocking

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

Year	Species	Size	Number
2008	Bluegill	Adult	20
2008	Bluegill	Fingerling	10,000
2008	Bluegill	Juvenile	200
2008	Northern Pike	Fry	192,500
2008	Yellow Perch	Adult	200
2010	Yellow Perch	Adult	200
2011	Golden Shiner	Adult	45
2011	Yellow Perch	Adult	450
2012	Bluegill	Adult	250
2012	Yellow Perch	Adult	275
2013	Yellow Perch	Adult	600
2014	Bluegill	Adult	125
2014	Largemouth Bass	Adult	211
2014	Largemouth Bass	Juvenile	200
2014	Yellow Perch	Adult	530
2015	Northern Pike	Adult	50
2015	Yellow Perch	Adult	320
2016	Northern Pike	Adult	30