SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Sorum Dam, Perkins County
UMO-Lake-25-000
2016

Lake Information

Name: Sorum Dam

County: Perkins

Surface Area: 110 Acres

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (night)	June 06, 2016	2400 seconds
frame net (std 3/4 in)	June 13, 2016	5 net-nights
std exp gill net	June 13, 2016	2 net-nights

Common Fish Species Present

Yellow Perch

Walleye

Largemouth Bass

Black Crappie

Black Bullhead

Northern Pike

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.

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

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

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)
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

	Stock		Quality		Preferred		Memorable		Trophy	
Species Name	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(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).

		Abundance		Stock Density Indices				Condition	
Gear	Species	CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
boat shocker (night)	Largemouth Bass	148.5	38.8	4		2		113	1
frame net (std 3/4 in)	Black Bullhead	170.2	27.5	85	2	0			
	Black Crappie	3.4	1.9	94		82		99	2
	Green Sunfish	0.2	0.3	100		0		110	
	Northern Pike	4.4	3.1	95		14		82	3
	Yellow Perch	27.8	12.1	84	4	12	4	82	1
std exp gill net	Black Bullhead	227.0	227.8	84	2	0		95	1
	Black Crappie	1.0	0.0	0		0		109	5
	Northern Pike	2.5	1.5	100		20		88	0
	Walleye	3.0	0.0	17		17		96	2
	Yellow Perch	28.0	15.4	57	10	7		87	2

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	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Avg
boat shocker (night)	Largemouth Bass								10.8		148.5	79.7
	Walleye								2.4			2.4
boat shocker (night, AC	Largemouth Bass				28.0	32.9						30.5
	Walleye				171.0	39.2						105.1
frame net (1/2 inch)	Black Bullhead				33.6							33.6
	Black Crappie				0.0							0.0
	Golden Shiner				0.0							0.0
	Green Sunfish				91.2							91.2
	Largemouth Bass				0.0							0.0
	Walleye				0.0							0.0
	Yellow Perch				156.4							156.4
frame net (std 3/4 in)	Black Bullhead					209.8	21.4		36.1	68.6	170.2	101.2
	Black Crappie					5.0	18.4		25.0	10.6	3.4	12.5
	Golden Shiner								0.0			0.0
	Green Sunfish					83.8	12.6		2.0	4.1	0.2	20.5
	Largemouth Bass						1.2		0.1	0.0		0.4
	Northern Pike									0.6	4.4	2.5
	Walleye					1.3	5.4		0.1			2.3
	Yellow Perch					250.0	22.0		52.1	55.0	27.8	81.4
std exp gill net	Black Bullhead				1.5						227.0	114.3
	Black Crappie				0.0						1.0	0.5
	Golden Shiner				0.0							0.0
	Green Sunfish				1.0							1.0
	Northern Pike										2.5	2.5
	Walleye				0.0						3.0	1.5
	Yellow Perch				131.0						28.0	79.5
std exp gill net (150 ft)	Black Bullhead					187.5	39.5		9.0	74.0		77.5
	Black Crappie					0.5				0.5		0.5
	Golden Shiner					0.0				0.0		0.0
	Green Sunfish					1.0				0.5		0.8
	Northern Pike									6.5		6.5
	Walleye					3.0	2.0			0.5		1.8
	Yellow Perch					44.5	121.0		35.5	69.5		67.6

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	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
boat shocker (night)	Walleye	PSD								100		
		PSD-P								0		
		Wr								96		
boat shocker (night, AC	Walleye	PSD				0	14					
		PSD-P				0	0					
		Wr				82	90					
frame net (1/2 inch)	Black Crappie	PSD				0						
		PSD-P				0						
	Walleye	PSD				0						
		PSD-P				0						
	Yellow Perch	PSD				1						
		PSD-P				0						
frame net (std 3/4 in)	Black Crappie	PSD					0	65		80	100	94
		PSD-P					0	0		0	17	82
		Wr					108	105		109	100	99
	Northern Pike	PSD									0	95
		PSD-P									0	14
		Wr									92	82
	Walleye	PSD					0	37		0		
		PSD-P					0	0		0		
		Wr					91	82		87		
	Yellow Perch	PSD					57	62		86	95	84
		PSD-P					0	0		0	9	12
		Wr					92	89		88	88	82
std exp gill net	Black Crappie	PSD				0						0
		PSD-P				0						0
		Wr										109
	Northern Pike	PSD										100
		PSD-P										20
		Wr										88

			Year									
Gear	Species	Index	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
std exp gill net	Walleye	PSD				0						17
		PSD-P				0						17
		Wr										96
	Yellow Perch	PSD				1						57
		PSD-P				0						7
		Wr				109						87
std exp gill net (150 ft)	Black Crappie	PSD					0				100	
		PSD-P					0				0	
		Wr					110				99	
	Northern Pike	PSD									0	
		PSD-P									0	
		Wr									93	
	Walleye	PSD					0	0			100	
		PSD-P					0	0			0	
		Wr					95	83			102	
	Yellow Perch	PSD					22	28		68	81	
		PSD-P					1	0		0	3	
		Wr					95	93		93	91	

Length at Capture

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

Species: Black Crappie

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2015	107	114 (1)			237 (67)	242 (31)	255 (9)				

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2016	6		334 (5)				511 (1)				

Species: Yellow Perch

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2014	71					207 (71)					

Fish Condition

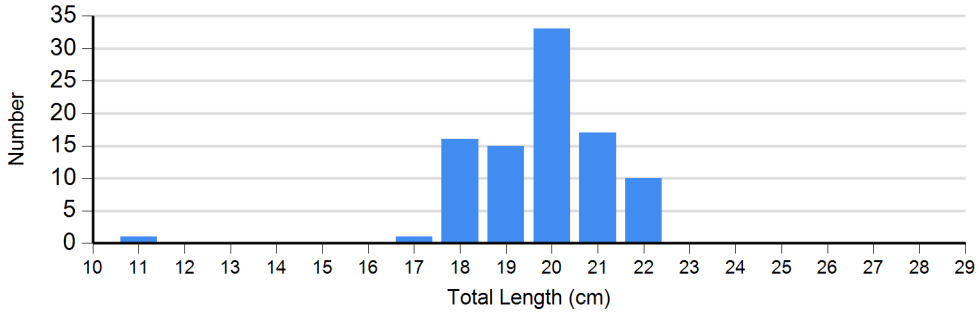
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		Length Groups							
		S-Q		Q-P		P-M		M	
Species	Year	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Black Crappie Frame Net	2012	32	108 (1.1)	60	103 (0.4)	0		0	
	2014	41	114 (1.0)	159	108 (0.6)	0		0	
	2015	0		88	100 (0.6)	18	101 (1.0)	0	
	2016	1	106	2	104 (0.5)	14	98 (1.4)	0	
Northern Pike Gill Net	2015	13	93 (1.4)	0		0		0	
	2016	0		4	89 (0.4)	1	88	0	
Walleye Gill Net	2012	4	83 (2.2)	0		0		0	
	2015	0		1	102	0		0	
	2016	5	96 (1.7)	0		1	95	0	
Yellow Perch Gill Net	2012	174	97 (0.5)	68	88 (0.7)	0		0	
	2014	23	101 (1.7)	48	89 (1.0)	0		0	
	2015	27	97 (1.4)	108	90 (0.8)	4	97 (3.0)	0	
	2016	24	93 (1.5)	28	83 (1.5)	4	84 (4.7)	0	

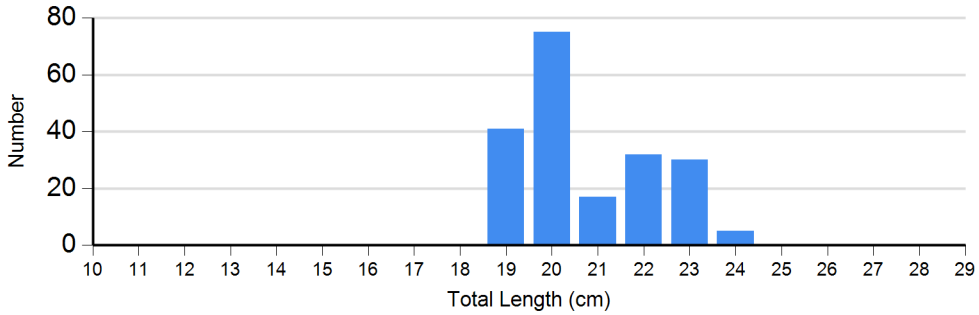
Length Frequency Distribution

Length frequency histogram of species sampled by year.

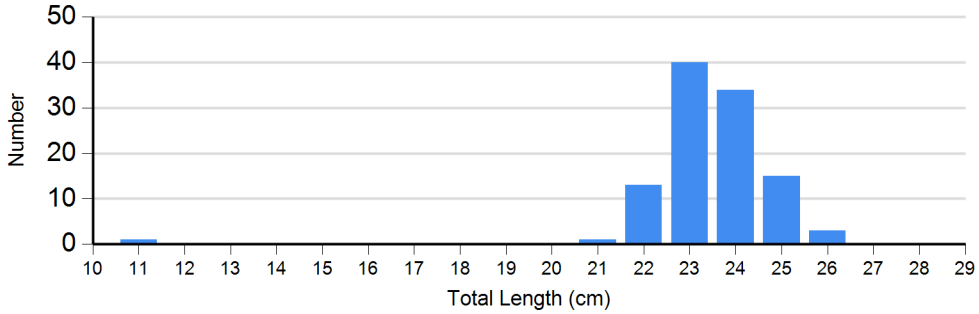
Species: Black Crappie
Gear: frame net (std 3/4 in)



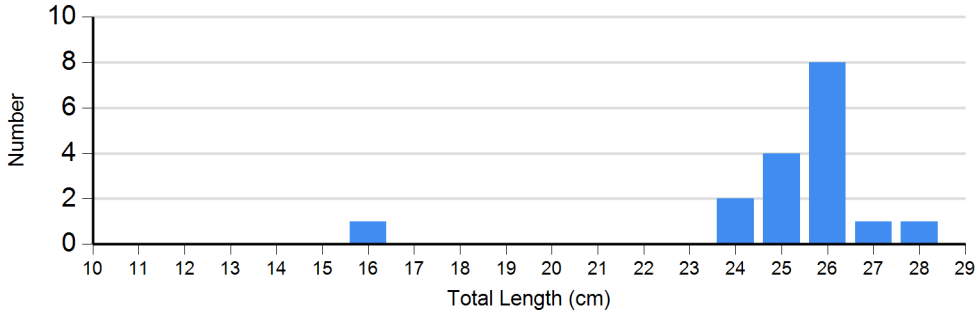
2012



2014

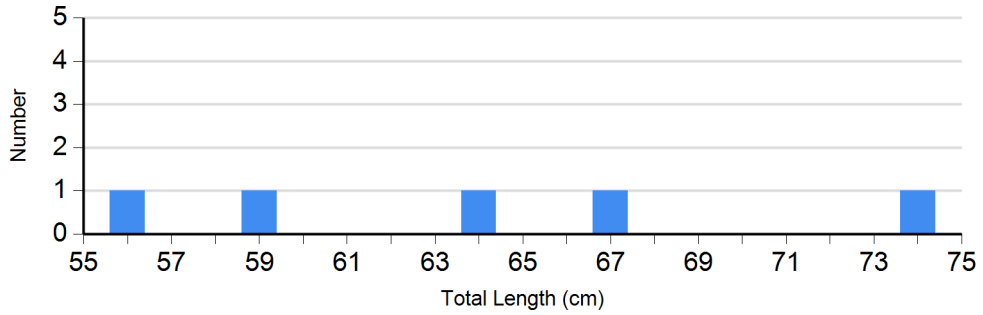


2015



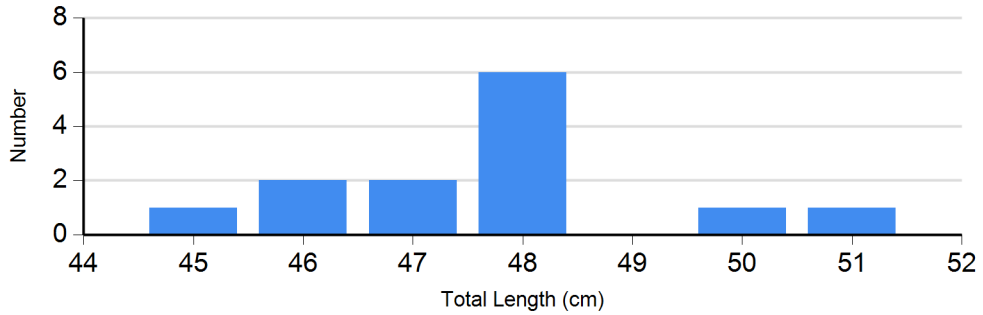
2016

Species: Northern Pike
Gear: std exp gill net



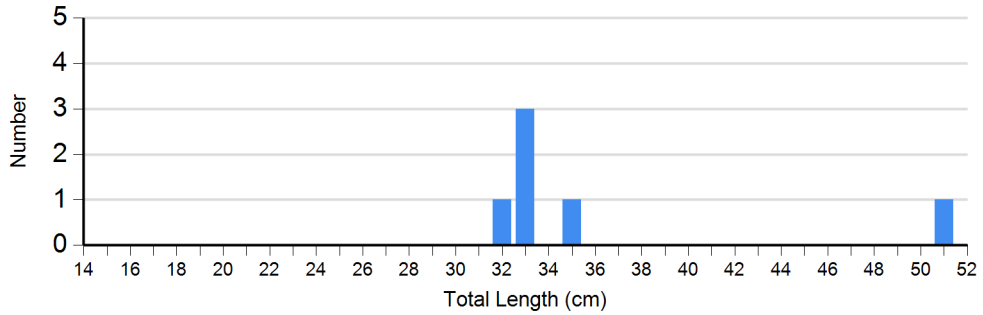
2016

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



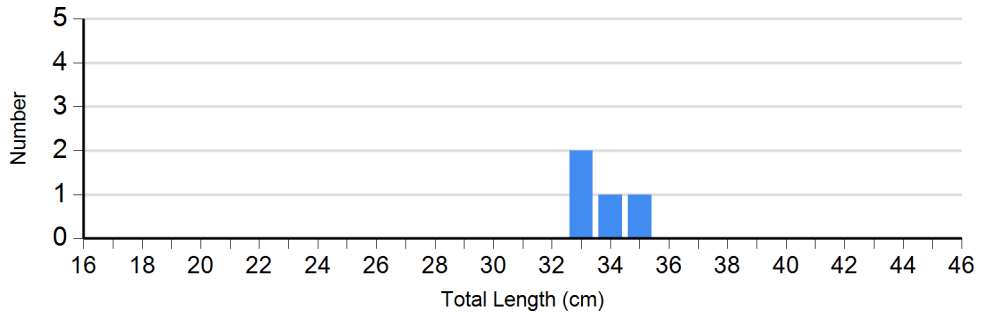
2015

Species: Walleye
Gear: std exp gill net

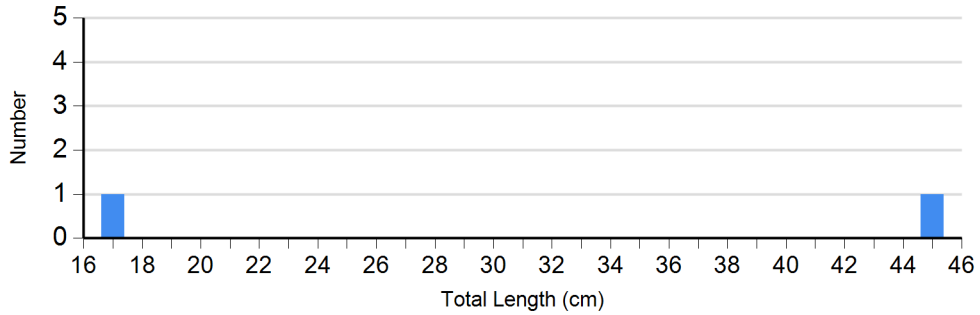


2016

Species: Walleye
Gear: std exp gill net (150 ft)

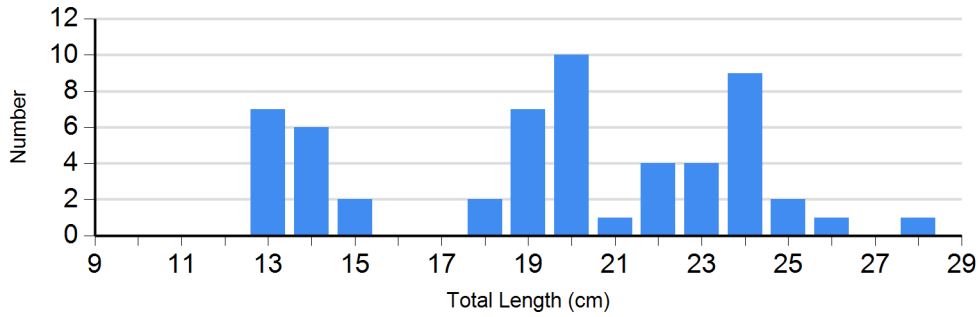


2012



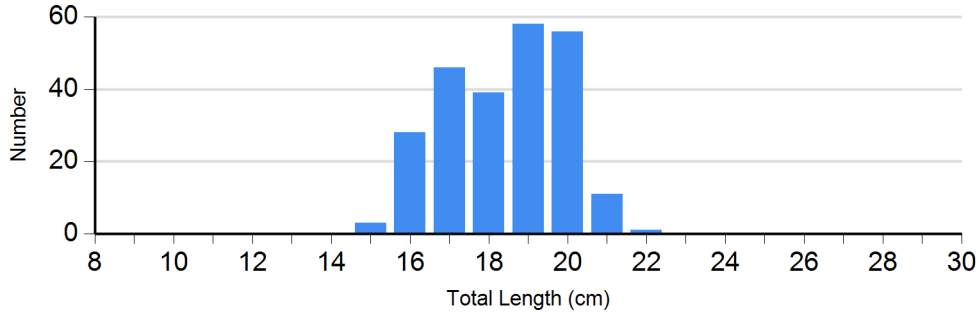
2015

Species: Yellow Perch
Gear: std exp gill net

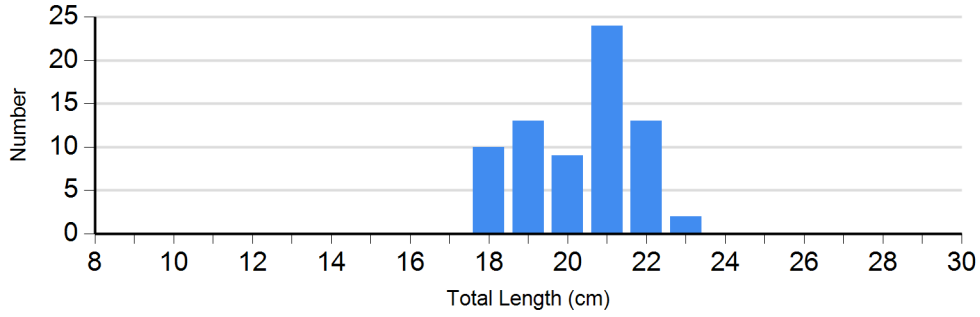


2016

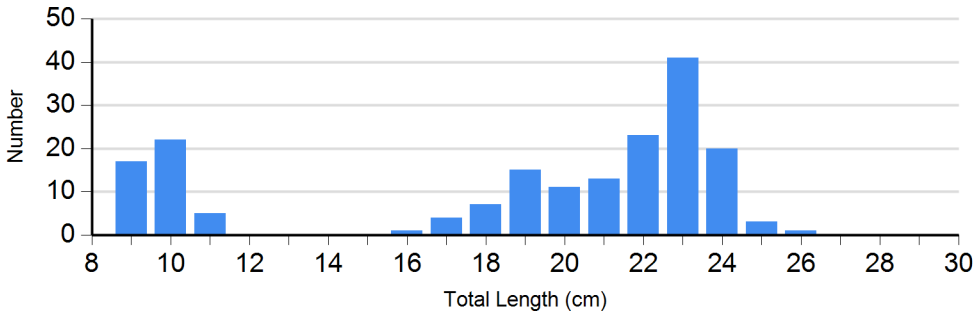
Species: Yellow Perch
Gear: std exp gill net (150 ft)



2012



2014

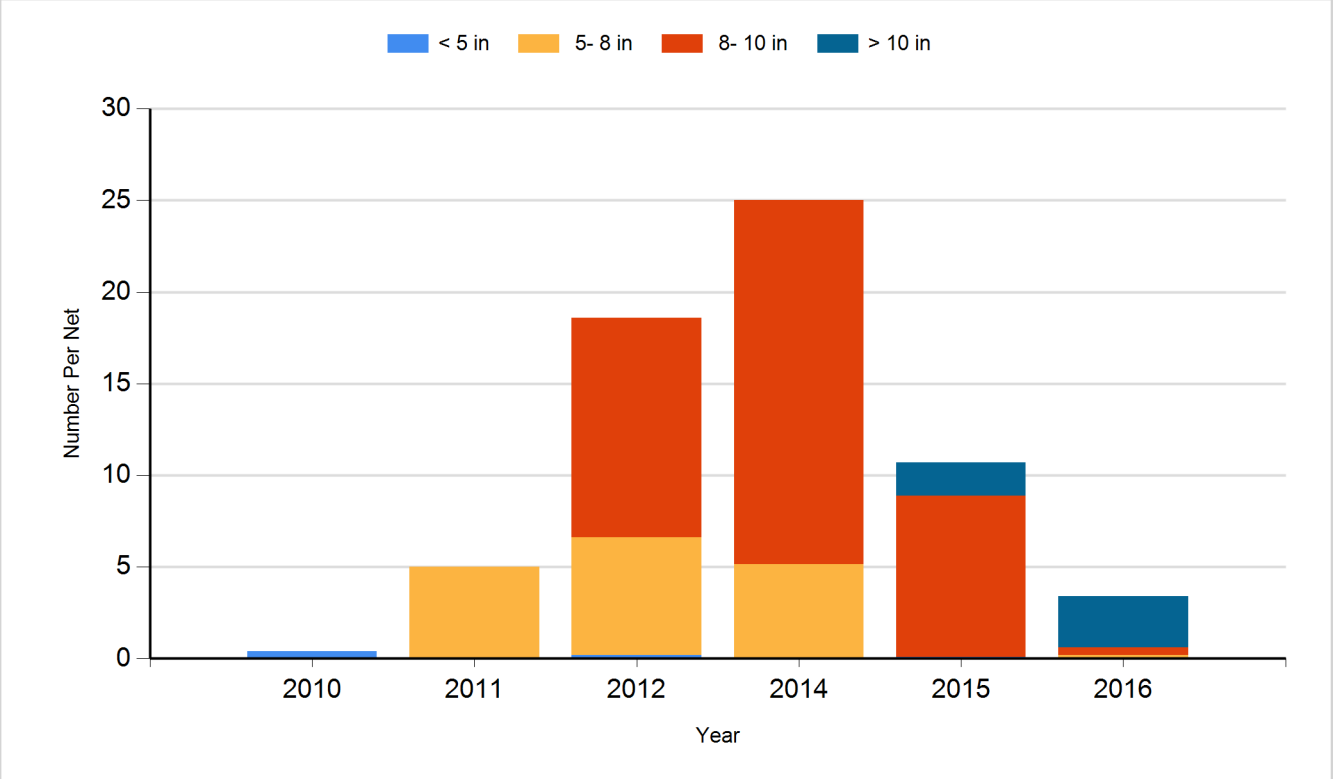

50
40
30
20
10
0
Number
8
10
12
14
16
18
20
22
24
26
28
30
Total Length (cm)

2015

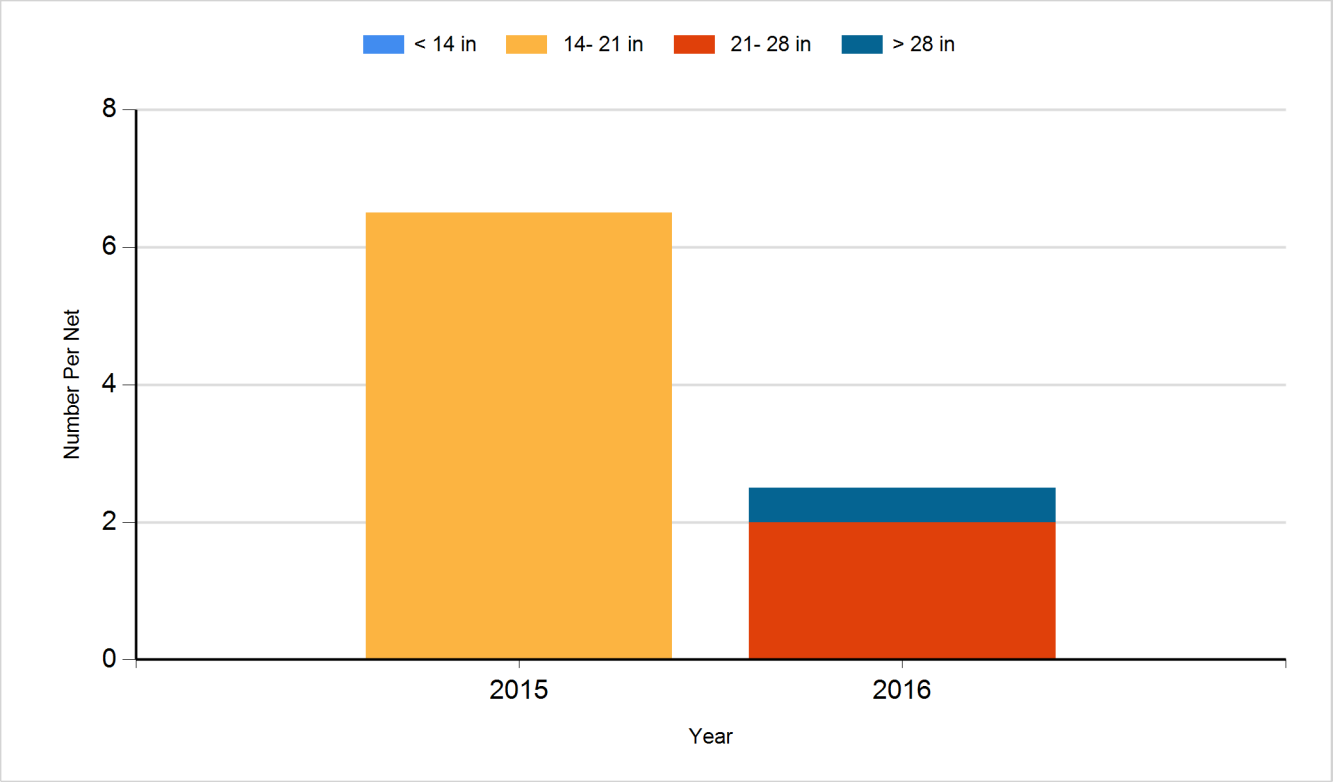
Historic Fish Sizes and Relative Abundance

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

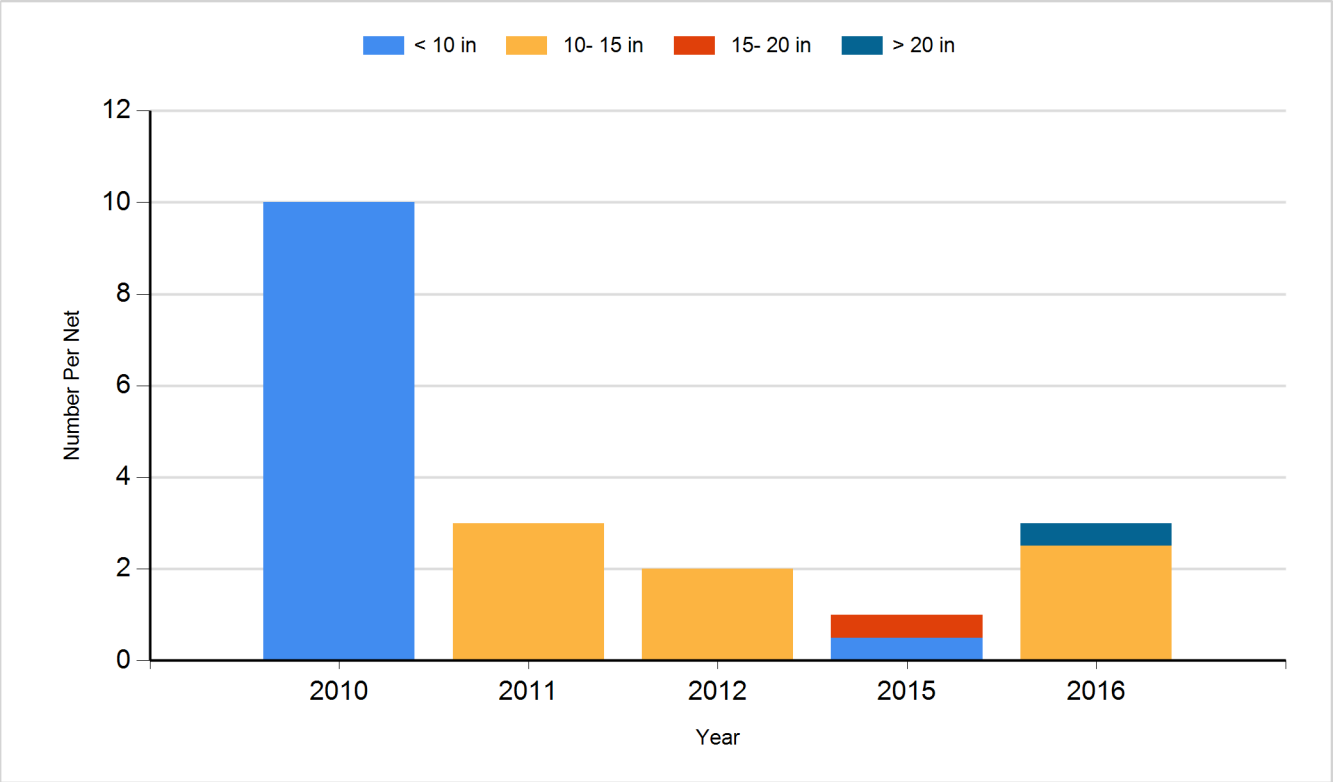
Species: Black Crappie
Gear: Frame Net



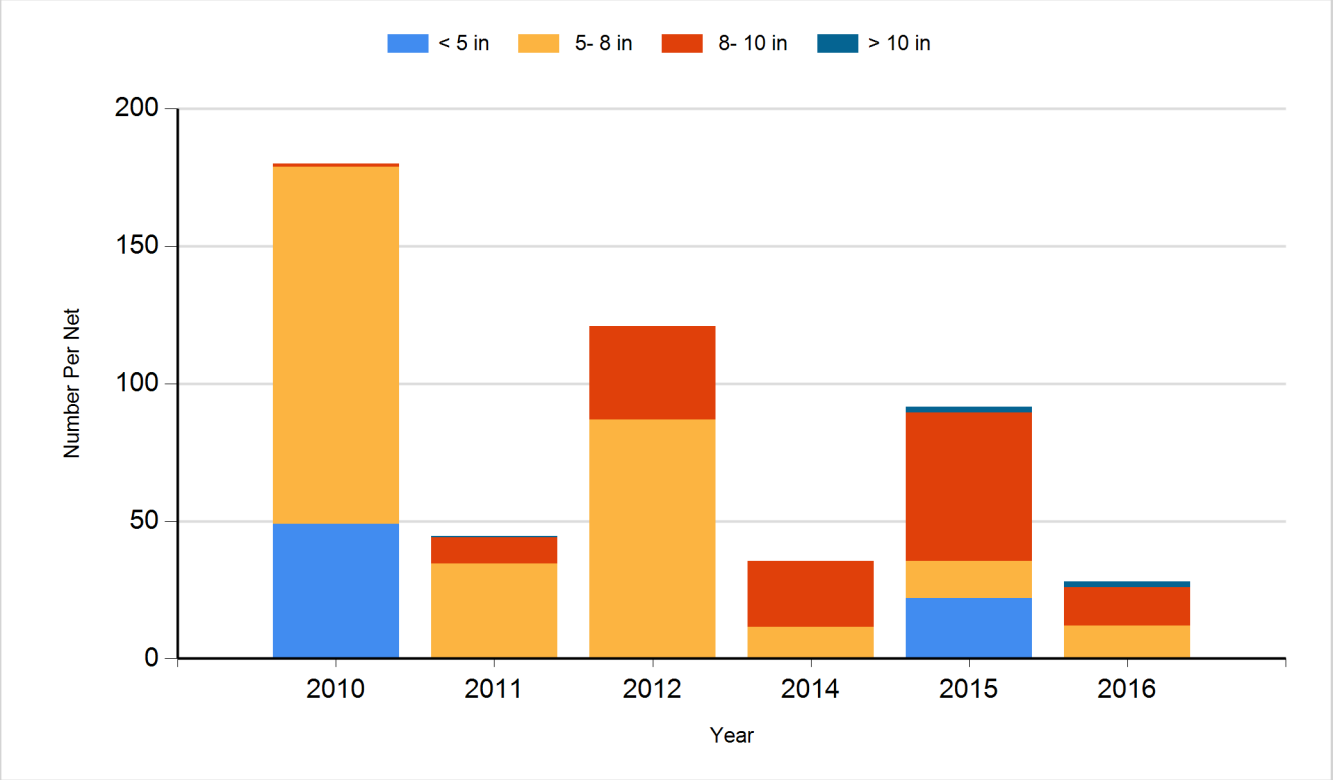
Species: Northern Pike
Gear: Gill Net



Species: Walleye
Gear: Gill 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	1,500
2009	Black Crappie	Adult	200
2009	Largemouth Bass	Fingerling	7,320
2009	Walleye	Fingerling	43,800
2009	Yellow Perch	Adult	550
2010	Golden Shiner	Adult	250
2010	Walleye	Small Fingerling	9,000
2010	Yellow Perch	Adult	490
2012	Largemouth Bass	Adult	240
2012	Largemouth Bass	Fingerling	20,150
2014	Walleye	Large Fingerling	1,593
2015	Largemouth Bass	Juvenile	870