

**SOUTH DAKOTA STATEWIDE FISHERIES SURVEY**  
**Sorum Dam, Perkins County**  
**UMO-Lake-25-000**  
**2015**

**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
frame net (std 3/4 in)	June 16, 2015	10 net-nights
std exp gill net (150 ft)	June 16, 2015	2 net-nights

## **Common Fish Species Present**

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Yellow Perch

Walleye

Largemouth Bass

Black Crappie

Black Bullhead

Northern Pike

Green Sunfish

Golden Shiner

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## 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).

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

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.

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

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

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.

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

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		Quality		Preferred		Memorable		Trophy	
	(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		Quality		Preferred		Memorable		Trophy	
	(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).

Gear	Species	Abundance		Stock Density Indices			Condition		
		CPUE	CI-80	PSD	CI-80	PSD-P	CI-80	Wr	CI-80
frame net (std 3/4 in)	Black Bullhead	68.6	21.2	89	2	0	91	1	
	Black Crappie	10.6	3.5	100		17	5	100	1
	Green Sunfish	4.1	2.7	98		0	115	3	
	Largemouth Bass	0.0	0.0	0		0			
	Northern Pike	0.6	0.4	0		0	92	1	
	Yellow Perch	55.0	34.2	95	1	9	2	88	1
std exp gill net (150 ft)	Black Bullhead	74.0	227.8	87	4	0	94	1	
	Black Crappie	0.5	1.5	100		0	99		
	Golden Shiner	0.0	0.0						
	Green Sunfish	0.5	1.5	100		0	107		
	Northern Pike	6.5	1.5	0		0	93	2	
	Walleye	0.5	1.5	100		0	102		
	Yellow Perch	69.5	20.0	81	5	3	91	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	CPUE										Avg	
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
boat shocker (night)	Largemouth Bass										10.8		10.8
	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		84.0
	Black Crappie						5.0	18.4		25.0	10.6		14.8
	Golden Shiner									0.0			0.0
	Green Sunfish						83.8	12.6		2.0	4.1		25.6
	Largemouth Bass								1.2	0.1	0.0		0.4
	Northern Pike											0.6	0.6
	Walleye							1.3	5.4		0.1		2.3
	Yellow Perch							250.0	22.0		52.1	55.0	
std exp gill net	Black Bullhead					1.5							1.5
	Black Crappie					0.0							0.0
	Golden Shiner					0.0							0.0
	Green Sunfish					1.0							1.0
	Walleye					0.0							0.0
	Yellow Perch					131.0							131.0
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.

Gear	Species	Index	Year											
			2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
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	
		PSD-P						0	0			0	17	
		Wr						108	105			109	100	
	Northern Pike	PSD											0	
		PSD-P											0	
		Wr											92	
	Walleye	PSD							0	37			0	
		PSD-P							0	0			0	
		Wr							91	82			87	
	Yellow Perch	PSD							57	62			86	95
		PSD-P							0	0			0	9
		Wr							92	89			88	88
std exp gill net	Black Crappie	PSD					0							
		PSD-P					0							
	Walleye	PSD					0							
		PSD-P					0							
	Yellow Perch	PSD					1							
		PSD-P					0							

Gear	Species	Index	Year											
			2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
std exp gill net	Yellow Perch	Wr					109							
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	



## Back-Calculated Lengths

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

Species: Black Crappie

Year Class	Age	N	Mean back-calculated length (SE) at age											
			1	2	3	4	5	6	7	8	9	10		
2014	1	1	98											
2011	4	13	83 (2.5)	144 (2.5)	190 (2.5)	235 (2.8)								
2010	5	7	76 (3.5)	148 (7)	187 (9.4)	214 (8)	247 (6)							
2009	6	3	82 (6.4)	165 (6.6)	196 (7)	216 (7)	235 (6.6)	257 (3.5)						
Weighted Mean		24	81	148	190	226	243	257						
Year Class	Age	N	11	12	13	14	15	16	17	18	19	20		
2014	1	1												
2011	4	13												
2010	5	7												
2009	6	3												
Weighted Mean		24												

## 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: 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

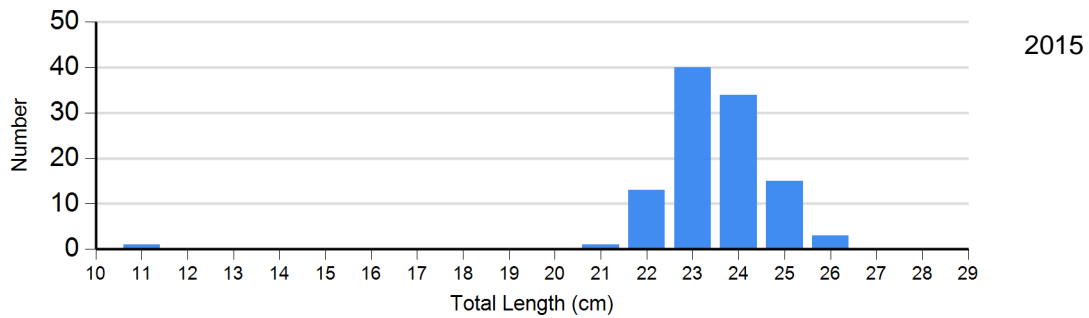
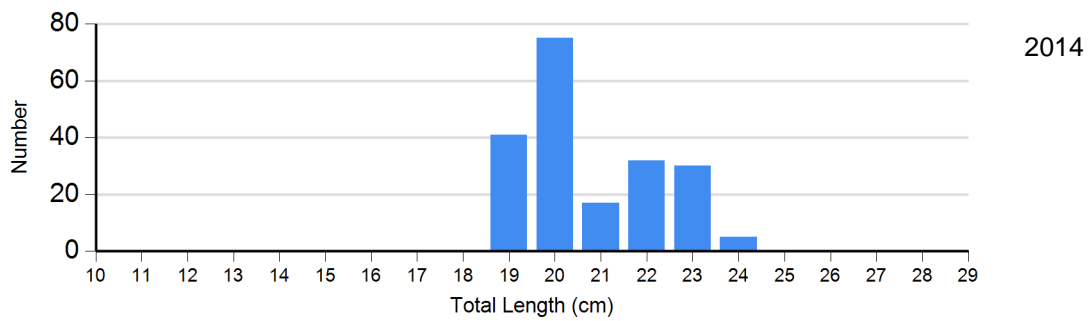
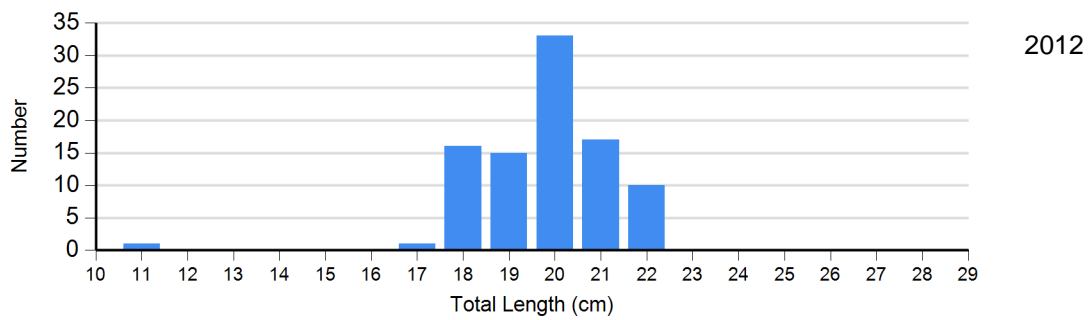
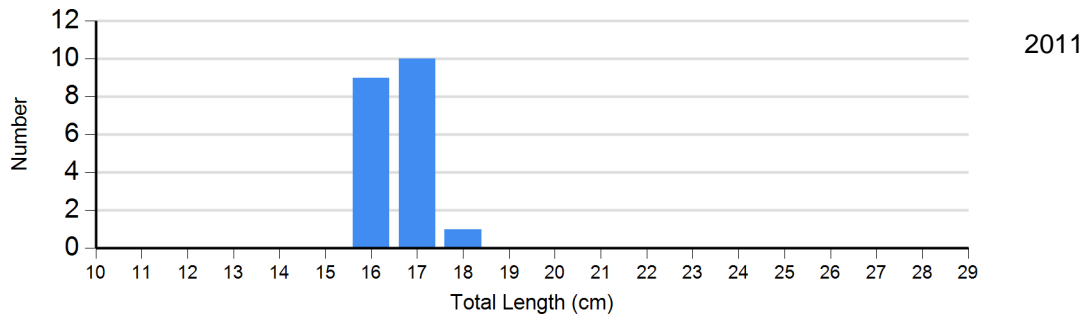
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

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	2011	20	108 (1.6)	0		0		0	
	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	
Northern Pike Gill Net	2015	13	93 (1.4)	0		0		0	
Walleye Gill Net	2011	6	95 (4.4)	0		0		0	
	2012	4	83 (2.2)	0		0		0	
	2015	0		1	102	0		0	
Yellow Perch Gill Net	2011	69	97 (1.0)	19	88 (1.1)	1	71	0	
	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	

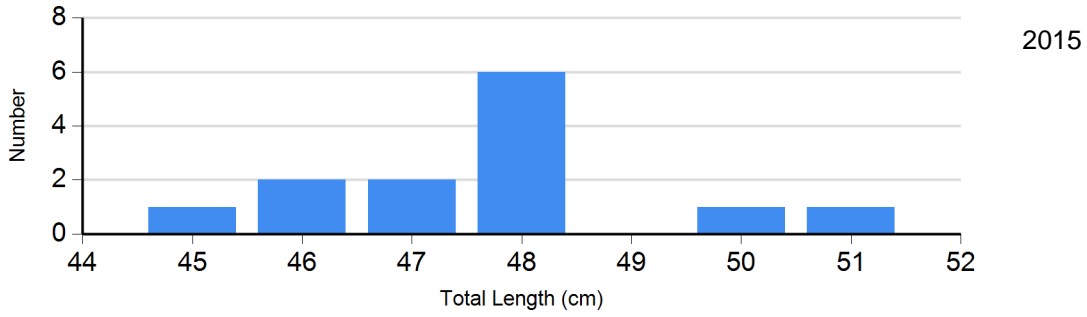
## Length Frequency Distribution

Length frequency histogram of species sampled by year.

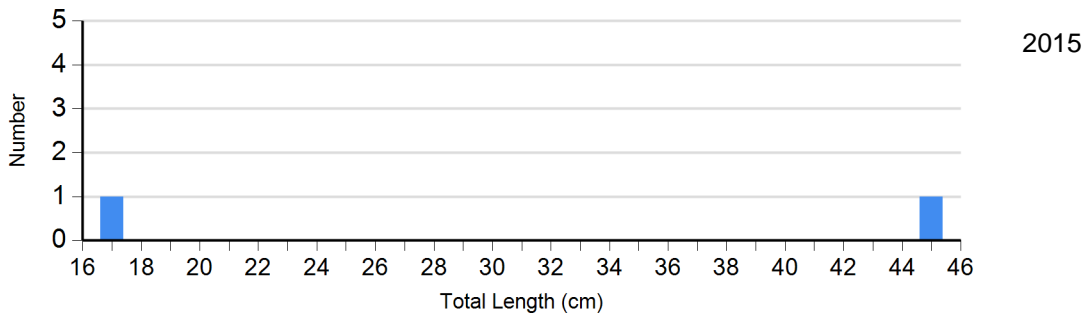
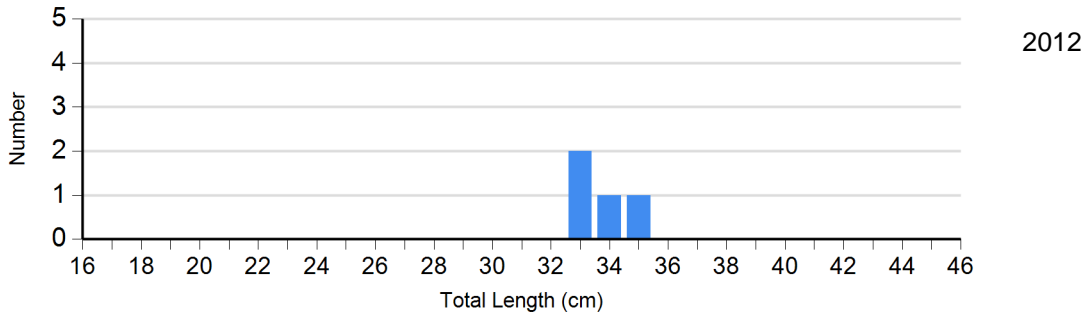
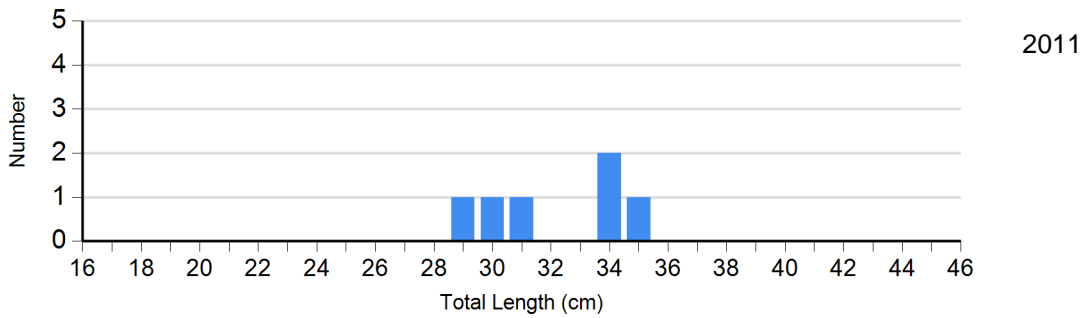
Species: Black Crappie  
Gear: frame net (std 3/4 in)



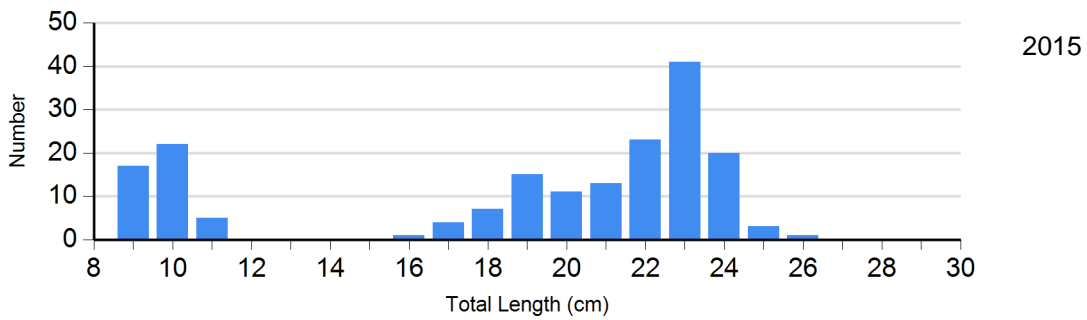
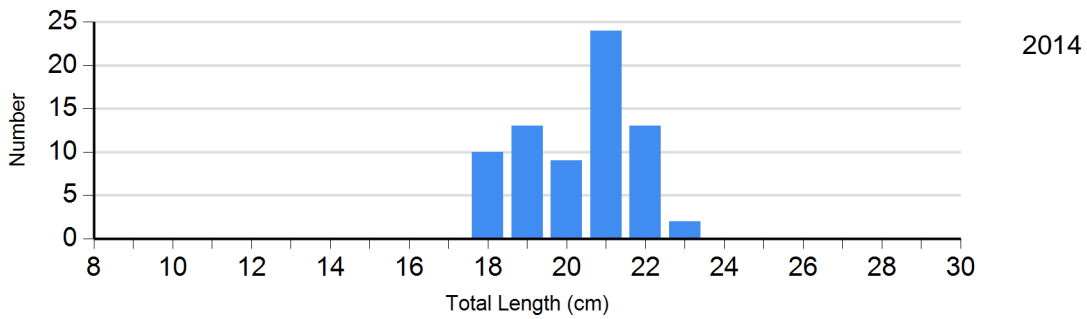
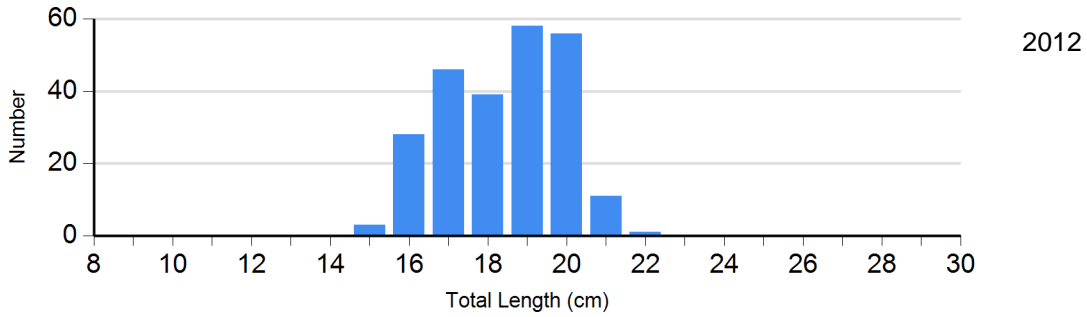
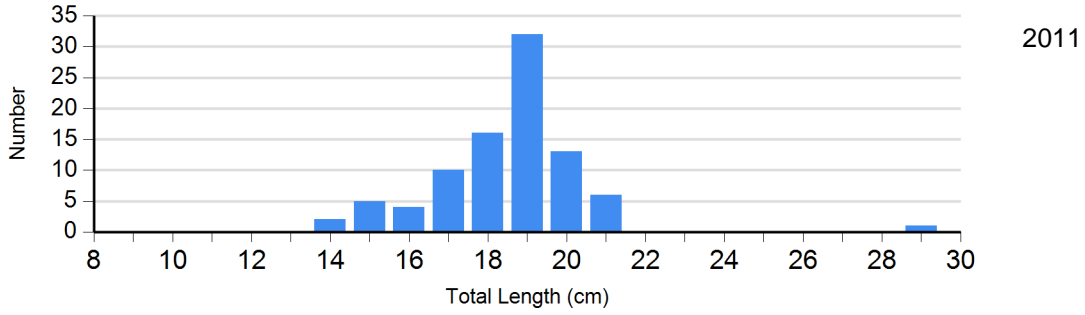
Species: Northern Pike  
Gear: std exp gill net (150 ft)



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



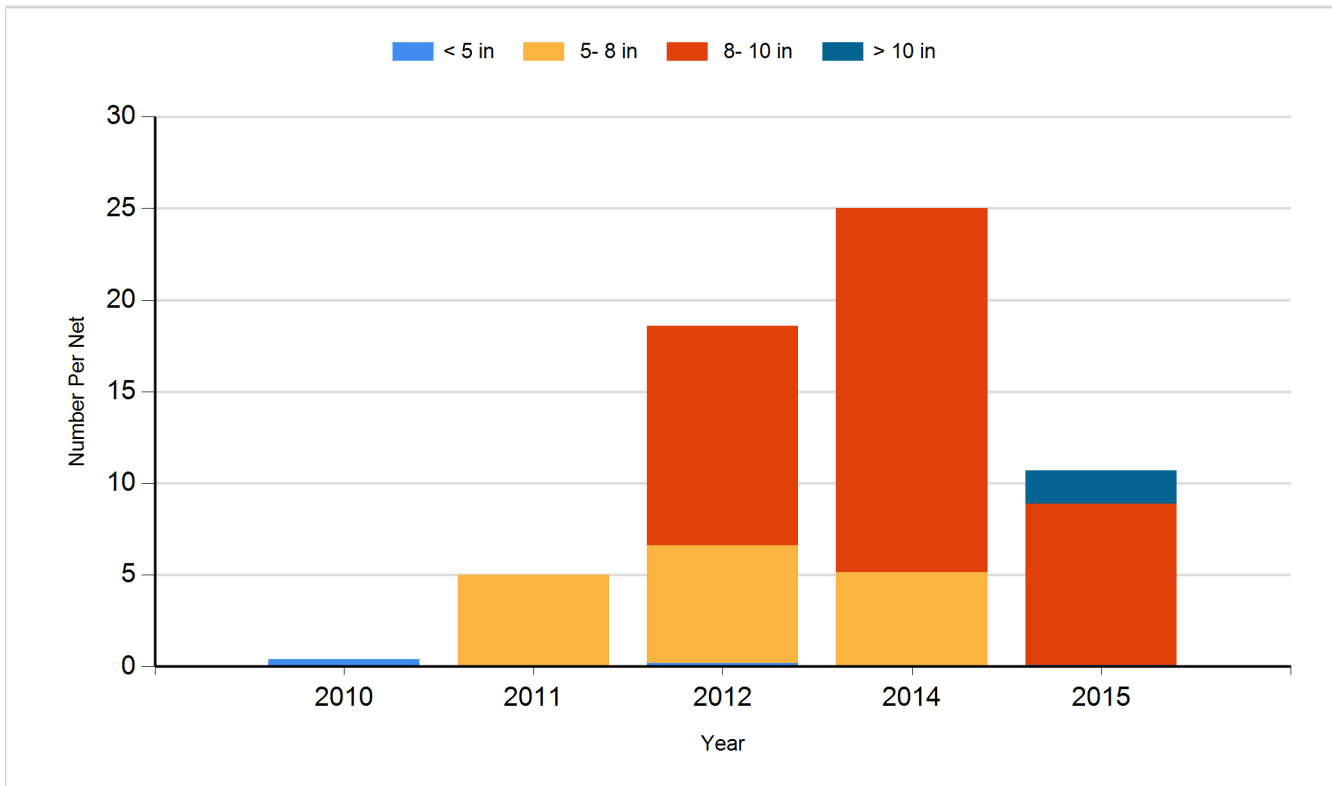
Species: Yellow Perch  
Gear: std exp gill net (150 ft)



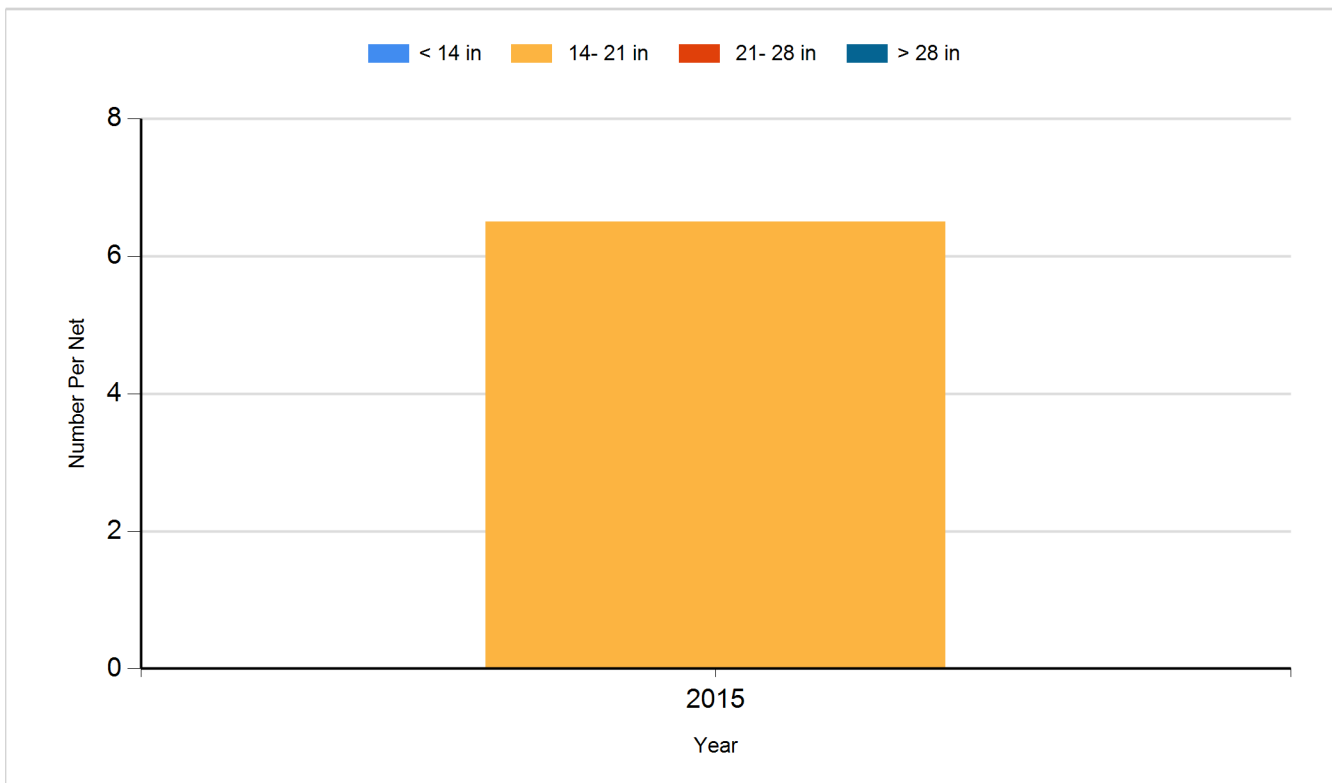
## Historic Fish Sizes and Relative Abundance

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

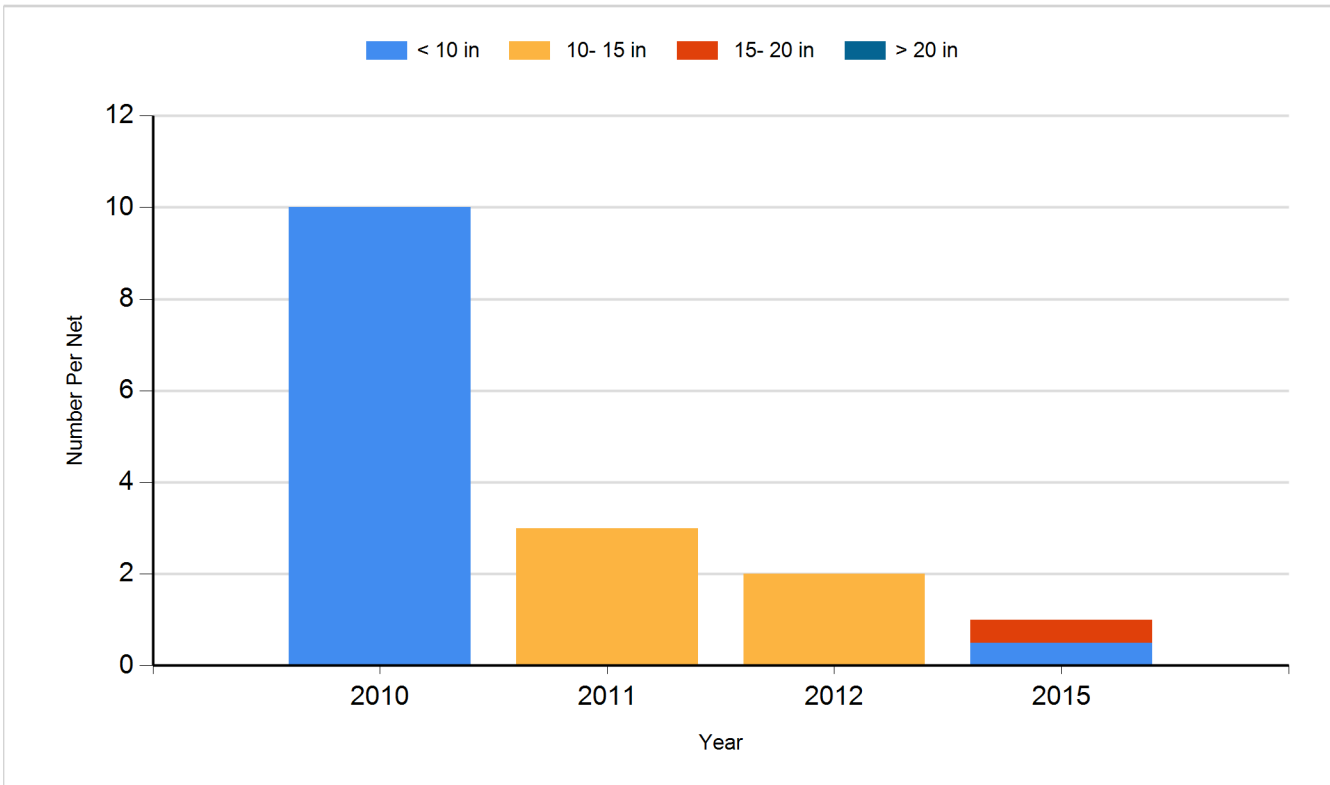
Species: Black Crappie  
Gear: Frame Net



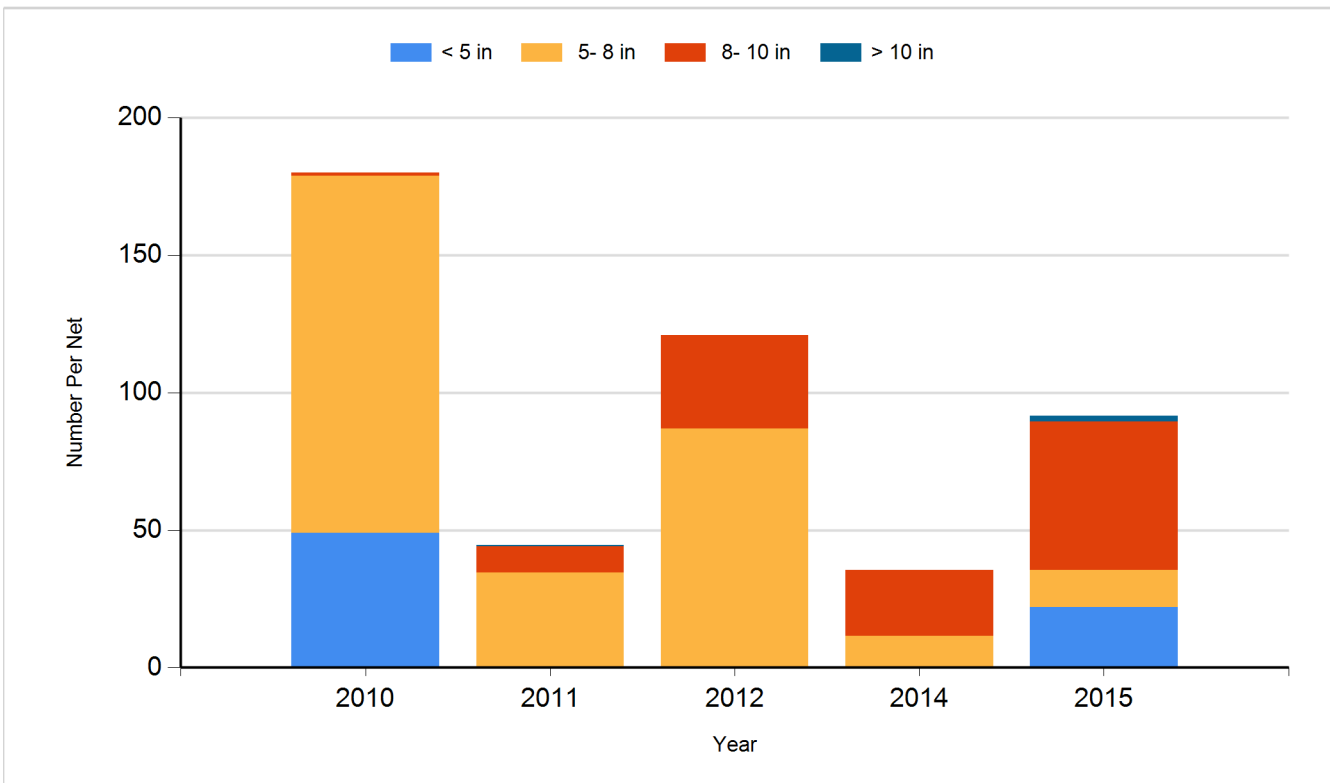
Species: Northern Pike  
Gear: Gill Net



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