

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Oakwood East, Brookings County
MBS-Lake-215-001
2017

Lake Information

Name:	Oakwood East	Maximum Depth:	9 Feet
County:	Brookings	Mean Depth:	6 Feet
Legal Description:	T111N-R51W-Sec. 4-5, 8-9, 16-27	OHWM Elevation:	1,627
Surface Area:	955 Acres	Outlet Elevation:	1,626

Surveys and Investigations

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

Gear	Date	Effort
AFS std gill net	August 09, 2017	6 net-nights

Common Fish Species Present

Walleye

Yellow Perch

White Sucker

Black Bullhead

Bigmouth Buffalo

Northern Pike

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
AFS std gill net	Bigmouth Buffalo	0.8	0.8	0		0			
	Black Bullhead	1.7	0.7	50	28	0			
	Northern Pike	0.3	0.3	100		0		86	1
	Walleye	25.3	1.1	89	4	11	4	91	1
	White Sucker	3.8	1.9	100		100			
	Yellow Perch	33.8	2.2	37	5	21	4	96	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
		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
AFS std gill net	Bigmouth Buffalo										0.8	0.8
	Black Bullhead										1.7	1.7
	Northern Pike										0.3	0.3
	Walleye										25.3	25.3
	White Sucker										3.8	3.8
	Yellow Perch										33.8	33.8
large frame net	Bigmouth Buffalo	1.0		0.5		2.2						1.2
	Black Bullhead	159.1		3.8		48.9						70.6
	Black Crappie			0.3								0.3
	Common Carp	2.0		2.8		3.2						2.7
	Green Sunfish					7.1						7.1
	Northern Pike	0.9		0.6		3.0						1.5
	Orangespotted Sunfish					0.0						0.0
	Tadpole Madtom					0.0						0.0
	Walleye			0.8		1.6						1.2
	White Sucker	9.6		0.9		7.4						6.0
	Yellow Bullhead	0.3				6.2						3.3
	Yellow Perch	5.1		5.2		7.6						6.0
std exp gill net	Bigmouth Buffalo	2.0		0.0	0.0	3.7		0.7	0.3	0.3		1.0
	Black Bullhead			0.7	2.0	35.3		0.3		6.7		9.0
	Common Carp	0.0		0.7		3.0		1.3	0.7			1.1
	Green Sunfish					0.7						0.7
	Northern Pike	3.7		0.3	4.7	2.7		1.3	4.0	2.0		2.7
	Orangespotted Sunfish					0.0		0.0		0.0		0.0
	Walleye	0.3		1.0	3.3	5.7		25.7	47.3	51.7		19.3
	White Sucker	9.3		4.3	1.3	12.7		7.7	7.3	2.3		6.4
	Yellow Bullhead				0.3	1.7						1.0
	Yellow Perch	55.0		5.3	13.7	61.3		32.7	5.0	89.7		37.5

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											
			2008	2009	2010	2011	2012	2013	2014	2015	2016	2017		
AFS std gill net	Northern Pike	PSD											100	
		PSD-P											0	
		Wr											86	
	Walleye	PSD												89
		PSD-P												11
		Wr												91
	Yellow Perch	PSD												37
		PSD-P												21
		Wr												96
large frame net	Black Crappie	PSD			0									
		PSD-P			0									
		Wr			100									
	Northern Pike	PSD	78		100		67							
		PSD-P	22		17		26							
		Wr	90		95		91							
	Walleye	PSD			100		86							
		PSD-P			0		7							
		Wr			87		100							
	Yellow Perch	PSD	4		4		53							
		PSD-P	0		2		9							
		Wr	98		100		99							
	std exp gill net	Northern Pike	PSD	36		100	71	38		100	92	67		
			PSD-P	0		0	14	0		75	42	0		
			Wr	86		91	97	95		88	87	81		
Walleye		PSD	0		100	10	76		25	25	70			
		PSD-P	0		0	10	0		1	0	0			
		Wr	93		95	103	95		93	87	78			
Yellow Perch		PSD	4		0	5	58		0	73	32			
		PSD-P	0		0	0	5		0	20	1			
		Wr	112		109	96	102		108	107	87			

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).

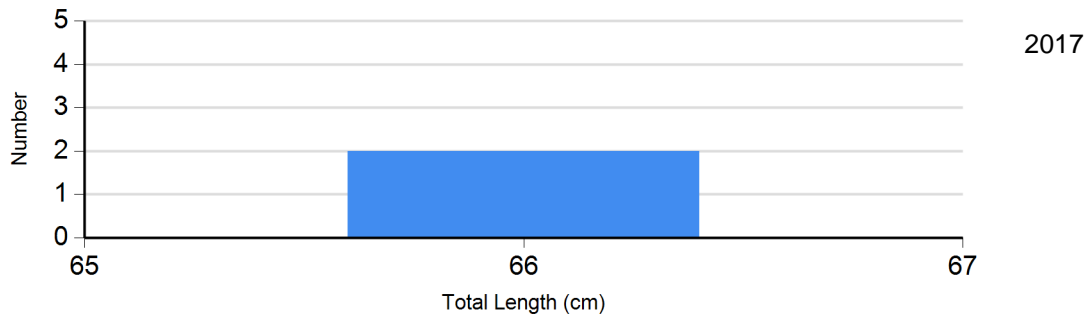
Species	Year	Length Groups							
		S-Q		Q-P		P-M		M	
		N	Wr (SE)	N	Wr (SE)	N	Wr (SE)	N	Wr (SE)
Northern Pike Gill Net	2014	0		1	91	3	87 (2.6)	0	
	2015	1	101	6	87 (2.4)	4	88 (3.6)	1	72
	2016	2	91 (12.6)	4	75 (2.7)	0		0	
	2017	0		2	86 (0.8)	0		0	
Walleye Gill Net	2014	58	92 (0.6)	18	97 (1.4)	1	96	0	
	2015	107	88 (0.6)	35	80 (3.2)	0		0	
	2016	46	80 (1.1)	109	78 (0.4)	0		0	
	2017	17	91 (0.9)	118	92 (0.6)	17	89 (1.0)	0	
Yellow Perch Gill Net	2014	98	108 (0.8)	0		0		0	
	2015	4	111 (2.7)	8	107 (2.6)	3	104 (2.0)	0	
	2016	184	89 (0.7)	83	85 (1.0)	2		0	
	2017	128	95 (0.7)	33	97 (1.0)	42	99 (0.9)	0	

Length Frequency Distribution

Length frequency histogram of species sampled by year.

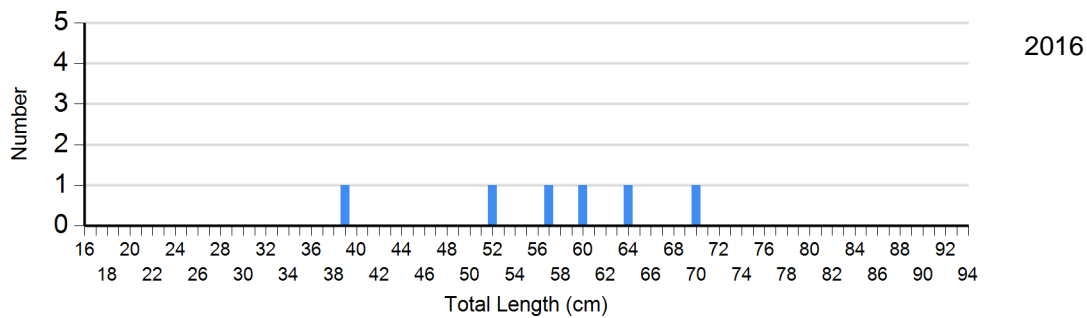
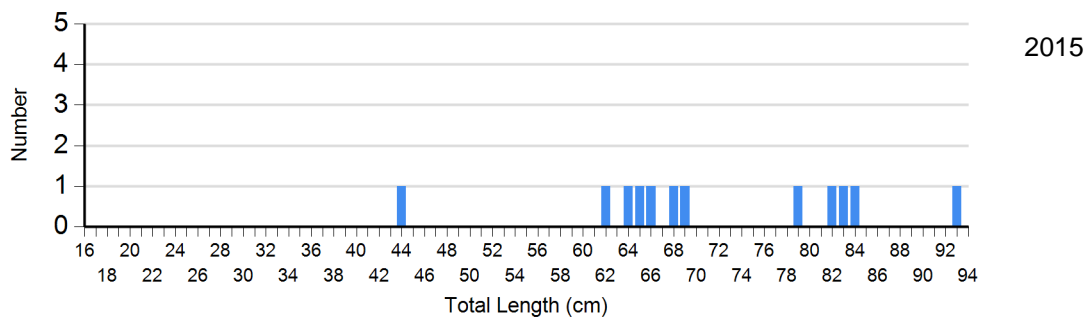
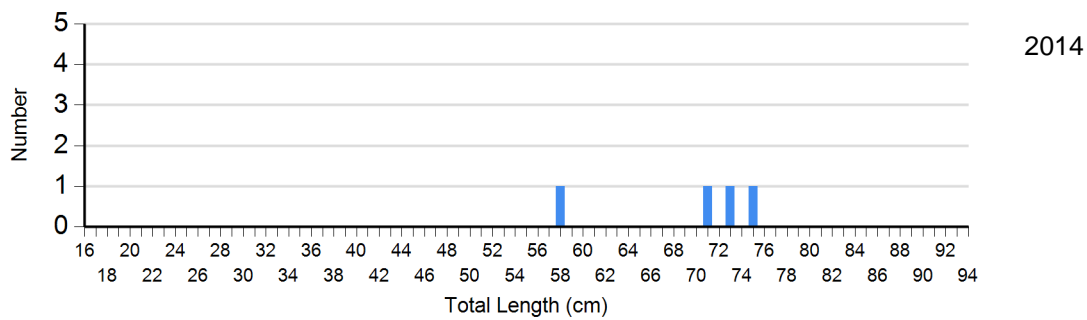
Species: Northern Pike

Gear: AFS std gill net

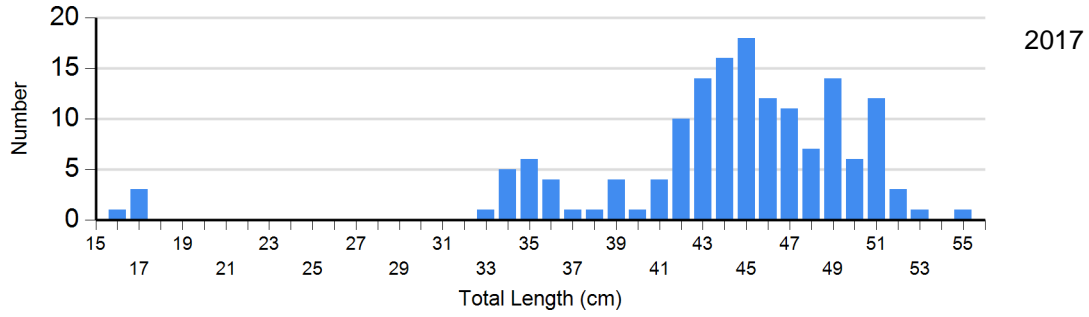


Species: Northern Pike

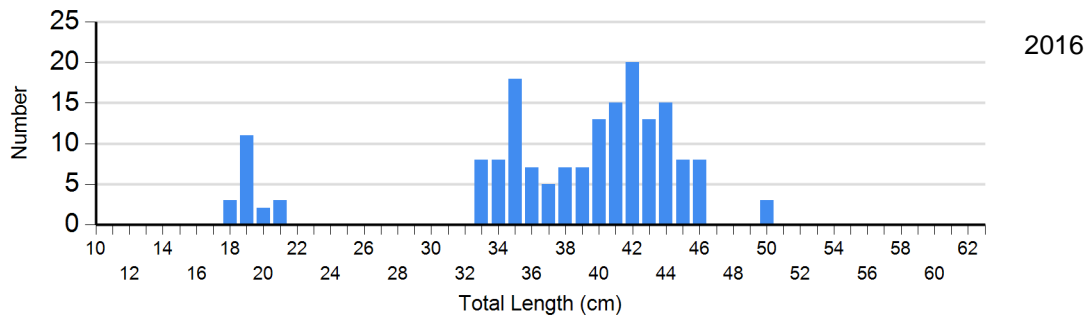
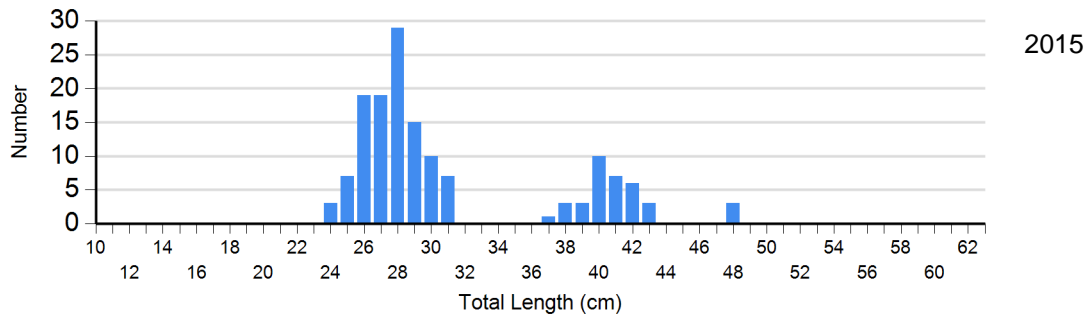
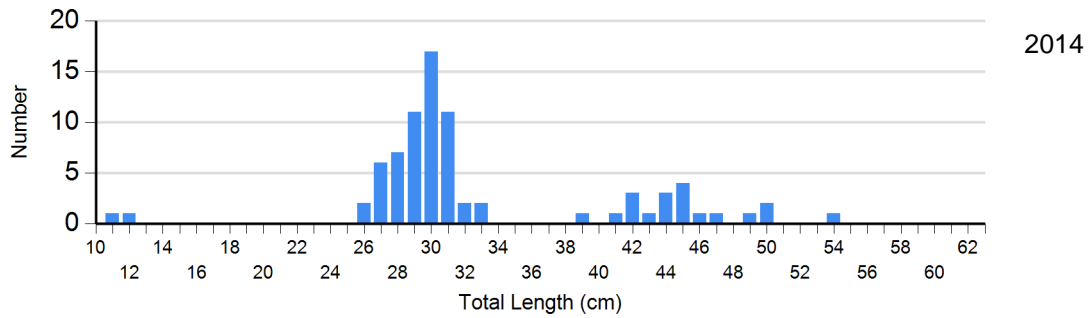
Gear: std exp gill net



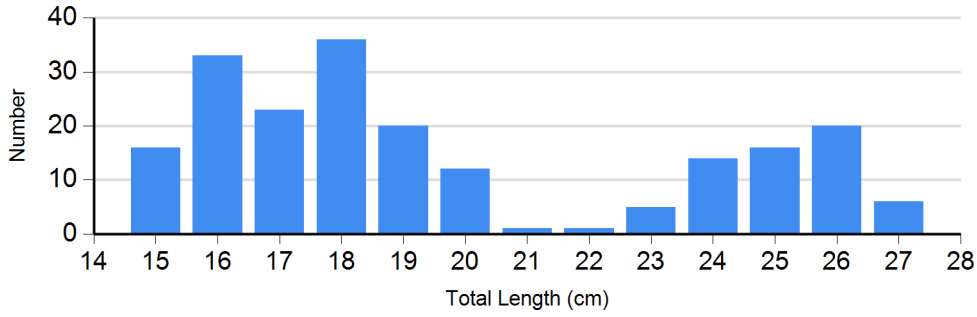
Species: Walleye
Gear: AFS std gill net



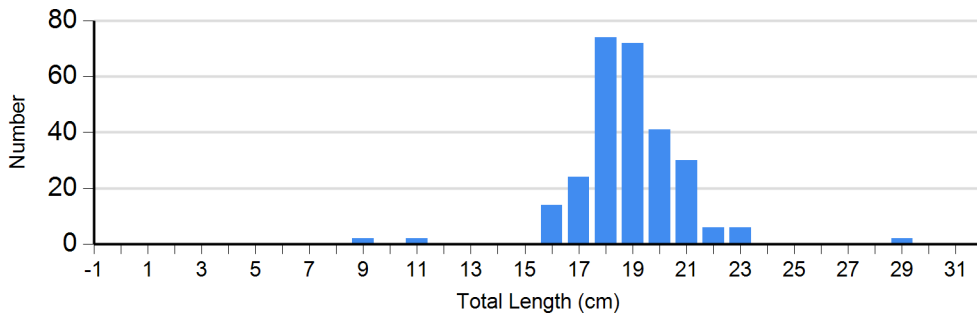
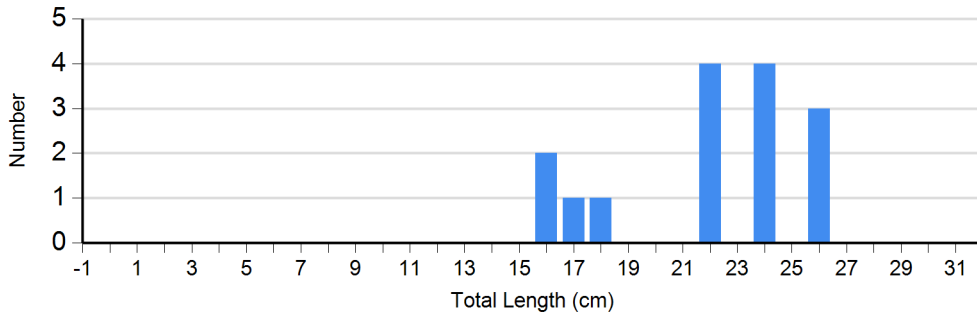
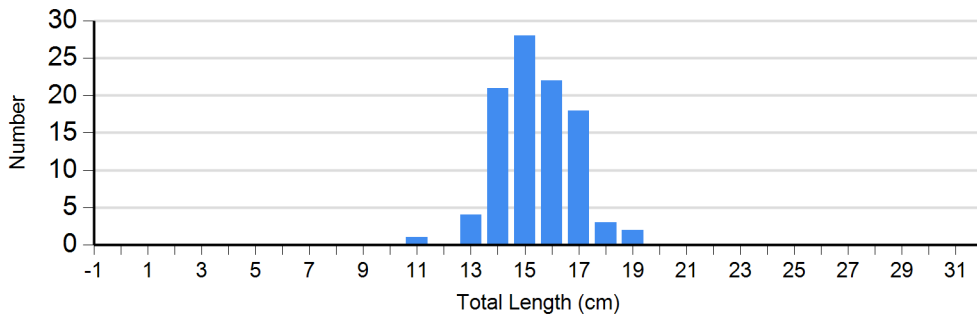
Species: Walleye
Gear: std exp gill net



Species: Yellow Perch
Gear: AFS std gill net



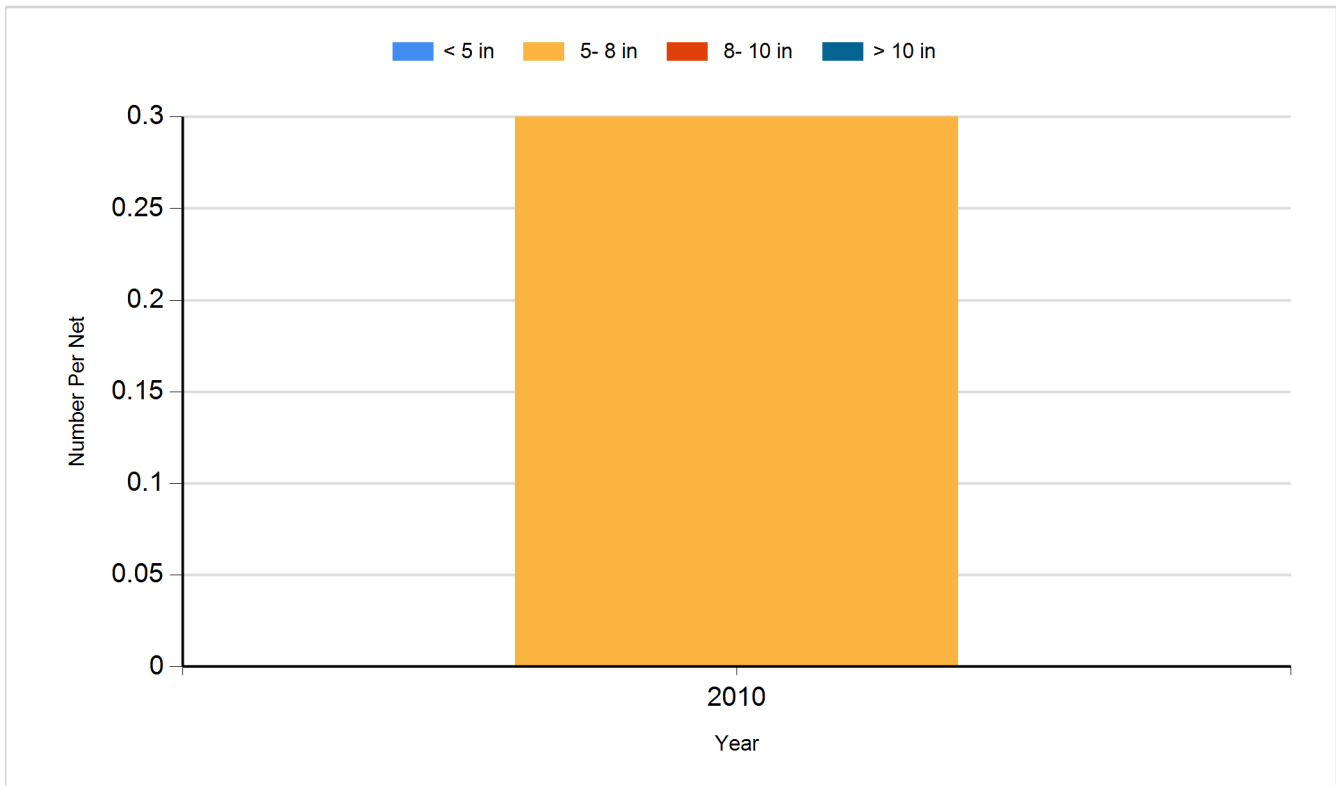
Species: Yellow Perch
Gear: std exp gill net



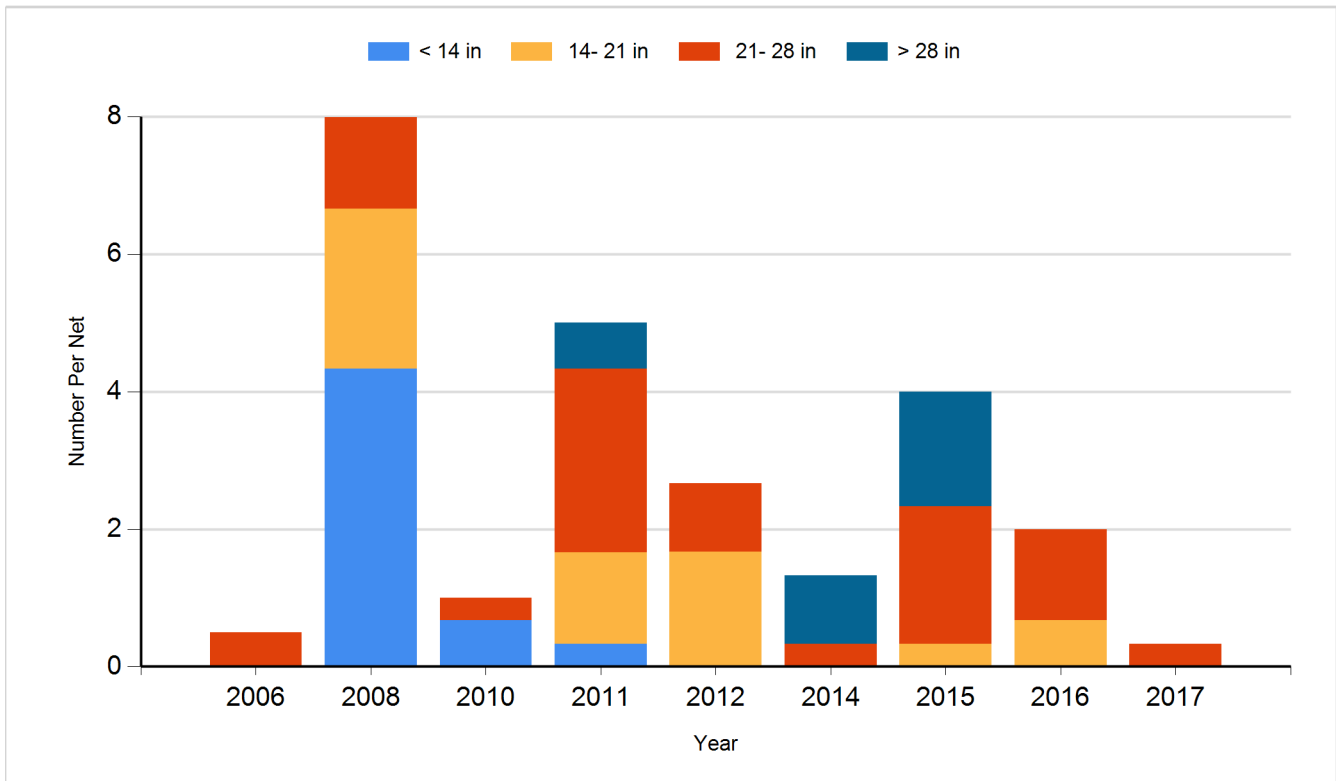
Historic Fish Sizes and Relative Abundance

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

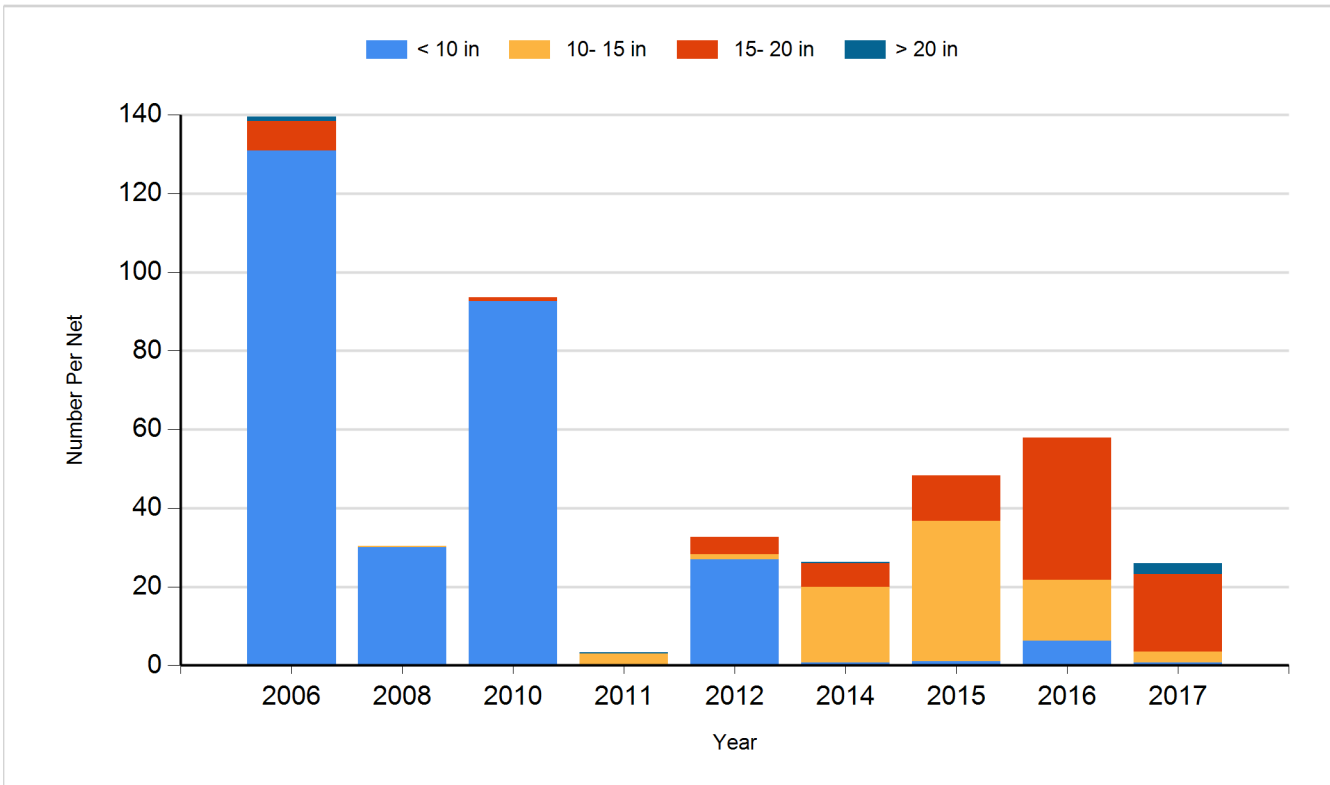
Species: Black Crappie
Gear: Frame Net



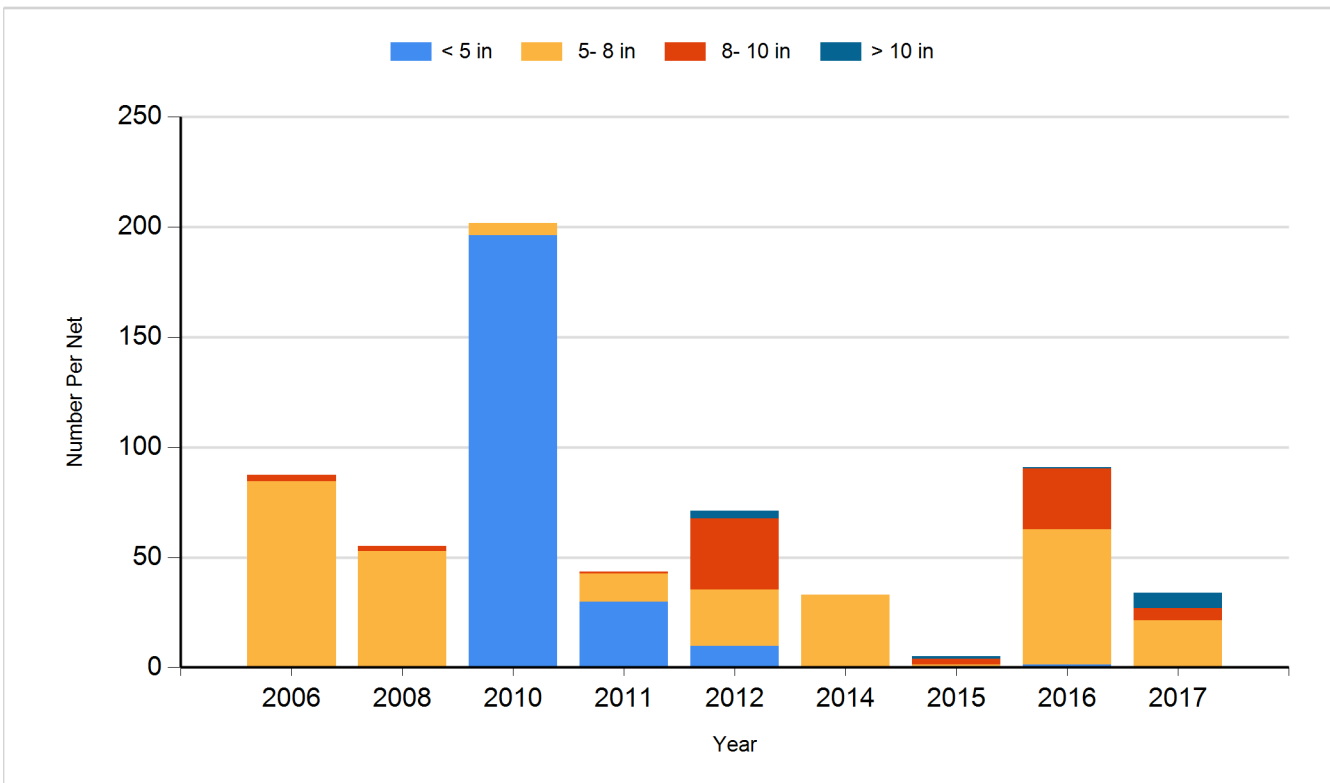
Species: Northern Pike
Gear: Gill Net



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
2006	Walleye	Fry	1,001,580
2008	Walleye	Fry	1,000,000
2010	Walleye	Fry	1,000,000
2012	Walleye	Fry	500,000
2013	Walleye	Fry	650,000
2014	Walleye	Fry	453,750