

**SOUTH DAKOTA STATEWIDE FISHERIES SURVEY**  
**Clear, Marshall County**  
**UJA-Lake-917-001**  
**2015**

**Lake Information**

<b>Name:</b>	Clear	<b>Maximum Depth:</b>	20 Feet
<b>County:</b>	Marshall	<b>Mean Depth:</b>	12 Feet
		<b>OHWM Elevation:</b>	1,824
<b>Surface Area:</b>	1,217 Acres	<b>Outlet Elevation:</b>	1,823

**Surveys and Investigations**

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

Gear	Date	Effort
boat shocker (night)	June 05, 2015	3569 seconds
boat shocker (night)	September 29, 2015	3600 seconds
std exp gill net	July 14, 2015	3 net-nights
std exp gill net	July 15, 2015	3 net-nights

## **Common Fish Species Present**

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Yellow Perch

Walleye

Smallmouth Bass

Northern Pike

Largemouth Bass

Bluegill

Black Crappie

Black Bullhead

White Sucker

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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
boat shocker (night)	Smallmouth Bass	18.7	7.8	71	13	50	15	102	3
	Walleye	5.7	4.7	0		0		92	2
std exp gill net	Black Bullhead	10.3	1.7	97		15	7	99	2
	Black Crappie	1.5	1.7	100		100		100	2
	Bluegill	1.5	0.8	44		22		113	4
	Northern Pike	5.5	2.4	55	13	3		84	1
	Smallmouth Bass	3.0	1.9	89		72	18	97	2
	Walleye	10.8	4.0	37	9	5		88	1
	White Sucker	1.3	0.5	100		63		99	3
	Yellow Perch	7.0	1.7	24	10	0		93	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.

Gear	Species	CPUE										Avg
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	
boat shocker (night)	Largemouth Bass		22.0									22.0
	Smallmouth Bass	57.9	163.0	74.4	44.8		41.5		20.7		18.7	60.1
	Walleye	349.7	109.6	1.7	180.9	21.0	170.4	13.5	17.0	3.0	5.7	87.3
boat shocker (night, AC	Largemouth Bass			37.6	58.5		54.0		92.0			60.5
frame net (std 3/4 in)	Black Bullhead	4.0	7.4	5.2	0.6	0.6		7.2	29.7	26.4		10.1
	Black Crappie	1.1	3.4	0.8	0.0	0.3		5.2	10.7	2.4		3.0
	Bluegill	24.8	36.6	35.6	4.8	13.1		18.6	39.0	22.9		24.4
	Common Carp	0.1	0.1					0.1				0.1
	Green Sunfish	0.1		0.1								0.1
	Largemouth Bass	0.0	0.0			0.0		0.0	0.1	0.0		0.0
	Northern Pike	0.7	0.7	0.7	0.4	0.2		1.8	0.6	1.1		0.8
	Smallmouth Bass	1.9	1.4	2.0	0.8	5.1		3.4	2.4	1.1		2.3
	Walleye	0.7	0.3	0.5	0.2	0.2		0.2	0.4	0.5		0.4
	Western Painted Turtle		0.0									0.0
	White Sucker	0.1	0.1	0.1	0.5	0.2		0.1	0.1			0.2
	Yellow Perch	14.6	17.7	1.4	2.5	16.5		10.4	3.9	1.8		8.6
std exp gill net	Bigmouth Buffalo									0.2		0.2
	Black Bullhead	2.2	6.5	4.8	0.1		0.1	7.5	20.3	21.7	10.3	8.2
	Black Crappie	0.0	0.0				0.3	14.0	6.2	11.7	1.5	4.8
	Bluegill	2.2	0.8	1.3		0.2		1.0	0.3	2.5	1.5	1.2
	Common Carp	2.7	2.0	0.3	0.1		0.1					1.0
	Northern Pike	1.5	5.3	2.2	0.2	0.4	0.9	3.3	3.8	6.0	5.5	2.9
	Smallmouth Bass	2.8	1.2	2.0	1.3	2.6	0.8	2.0	4.3	3.3	3.0	2.3
	Walleye	6.0	6.8	6.2	2.0	1.6	2.3	4.2	10.7	9.2	10.8	6.0
	White Sucker	1.2	1.2	1.0	0.6	1.1	1.1	5.2	1.3	2.2	1.3	1.6
Yellow Perch	39.5	117.2	20.8	5.0	27.6	40.8	84.8	40.5	25.5	7.0	40.9	

## 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	0	0	0	0	0	0	0	0	0	0	0
		PSD-P	0	0	0	0	0	0	0	0	0	0	0
		Wr	84	95	93	88	83	94		97	94	92	
frame net (std 3/4 in)	Black Crappie	PSD	5	11	57	0	0		80	99	100		
		PSD-P	0	0	43	0	0		0	58	100		
		Wr	109	113	108		116		110	102	100		
	Northern Pike	PSD	25	69	62	100	67		56	64	50		
		PSD-P	0	15	23	0	33		25	36	0		
		Wr	109	88	83	85	87		87	86	87		
	Walleye	PSD	15	40	33	75	100		75	75	22		
		PSD-P	0	20	11	50	25		0	25	0		
		Wr	82	87	89	87	92		81	84	91		
	Yellow Perch	PSD	22	20	16	0	1		21	32	41		
		PSD-P	0	3	4	0	0		0	0	0		
		Wr	93	89	90	93	94		91	85	91		
	std exp gill net	Black Crappie	PSD	0	0				0	64	100	97	100
			PSD-P	0	0				0	0	76	96	100
			Wr						185	116	106	101	100
Northern Pike		PSD	56	91	85	75	63	69	35	52	50	55	
		PSD-P	0	16	15	50	13	13	10	9	8	3	
		Wr	87	86	85	90	96	89	88	87	87	84	
Walleye		PSD	61	41	24	53	72	32	32	22	15	37	
		PSD-P	33	15	8	11	14	10	16	3	2	5	
		Wr	89	91	89	94	91	88	90	89	86	88	
Yellow Perch		PSD	30	15	10	0	0	0	14	32	36	24	
		PSD-P	1	1	1	0	0	0	0	0	2	0	
		Wr	99	101	100	101	105	99	99	95	92	93	

## Length at Capture

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

Species: Walleye

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2015	70	149 (1)	241 (5)	324 (7)	373 (52)	420 (1)	481 (3)	575 (1)			
2014	60	187 (5)		345 (51)	394 (1)	461 (2)				589 (1)	
2013	67		279 (42)	359 (5)	394 (17)		481 (1)				652 (2)
2012	29	194 (4)	313 (3)	348 (15)		472 (1)		561 (3)	483 (1)		573 (2)
2011	45	190 (1)	272 (31)	429 (2)	461 (4)		514 (6)	481 (1)			
2010	38	195 (11)	306 (2)	383 (11)		470 (9)			500 (1)	615 (1)	577 (3)
2009	37		289 (16)		409 (15)	459 (2)			555 (1)		623 (3)
2008	38	168 (1)		317 (28)	444 (2)	480 (2)		488 (2)			577 (3)
2007	49		257 (29)	378 (7)	438 (4)		470 (2)			590 (3)	608 (4)
2006	42	182 (5)	277 (10)	360 (6)	373 (1)	477 (5)	459 (2)		584 (2)	573 (5)	592 (6)

Species: Yellow Perch

Mean Length (expanded sample number) at capture by age											
Year	N	1	2	3	4	5	6	7	8	9	10+
2015	114	93 (3)	115 (72)	151 (27)		210 (11)	237 (1)				
2014	233	98 (13)	125 (101)	159 (14)	192 (53)	208 (28)	230 (18)	221 (7)			
2013	345	99 (81)	123 (34)	166 (93)	188 (59)	216 (77)					
2012	576	102 (67)	148 (243)	178 (110)	193 (158)						
2011	1176	98 (419)	142 (342)	164 (415)							
2010	747	100 (161)	139 (563)	164 (24)							
2009	932	97 (842)	138 (90)								



## Fish Condition

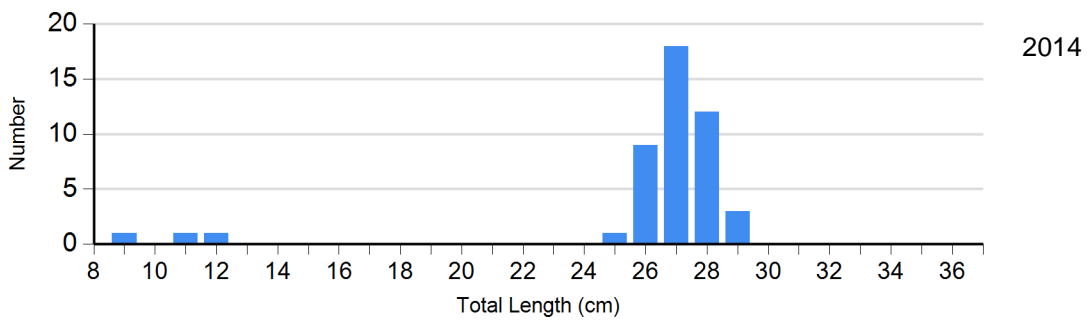
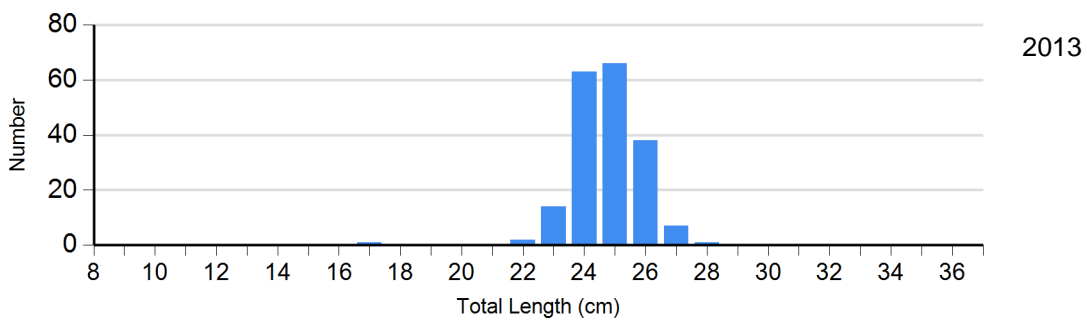
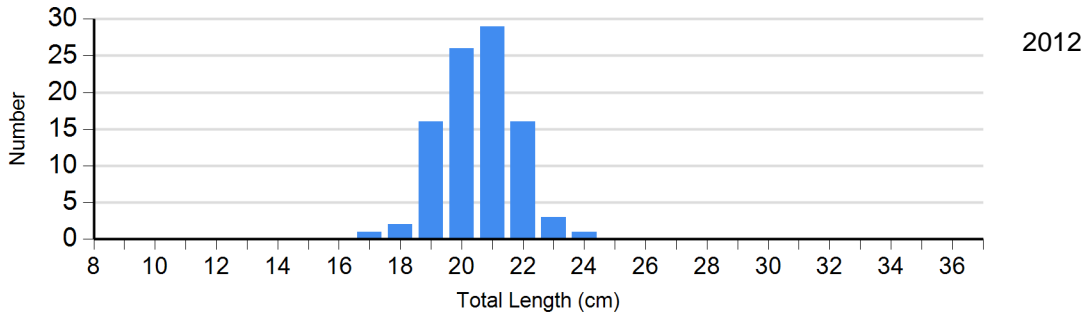
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

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	2012	19	112 (2.0)	75	109 (1.0)	0		0	
	2013	1	105	79	104 (0.9)	112	100 (0.6)	0	
	2014	0		0		43	100 (0.9)	0	
Northern Pike Gill Net	2011	5	90 (0.8)	9	90 (2.2)	2	84 (0.1)	0	
	2012	13	87 (1.4)	5	92 (2.6)	2	87 (2.9)	0	
	2013	11	90 (1.2)	10	84 (1.0)	1	83	1	86
	2014	18	89 (1.1)	15	85 (0.8)	3	80 (4.1)	0	
	2015	15	86 (1.3)	17	82 (1.2)	1	82	0	
Walleye Gill Net	2011	28	87 (0.7)	9	91 (1.4)	4	90 (2.3)	0	
	2012	17	89 (1.1)	4	94 (3.5)	4	90 (0.7)	0	
	2013	50	89 (0.7)	12	85 (1.1)	1	101	1	81
	2014	47	86 (1.8)	7	84 (2.3)	1	103	0	
	2015	41	87 (0.6)	21	89 (0.9)	3	96 (8.7)	0	
Yellow Perch Gill Net	2011	734	99 (0.4)	0		0		0	
	2012	438	100 (0.3)	71	94 (0.7)	0		0	
	2013	165	96 (0.5)	78	92 (0.7)	0		0	
	2014	98	94 (0.8)	52	90 (0.8)	3	85 (2.1)	0	
	2015	32	94 (1.4)	10	89 (1.7)	0		0	

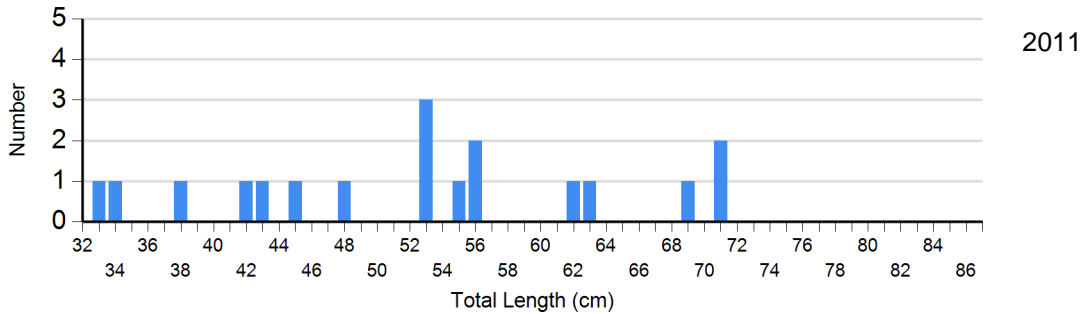
## Length Frequency Distribution

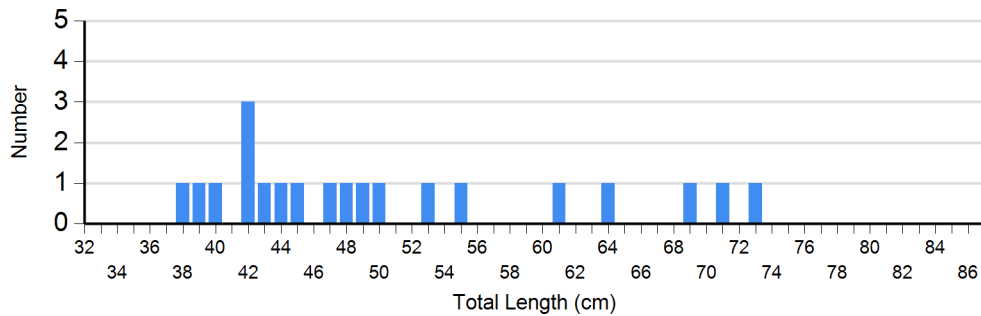
Length frequency histogram of species sampled by year.

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

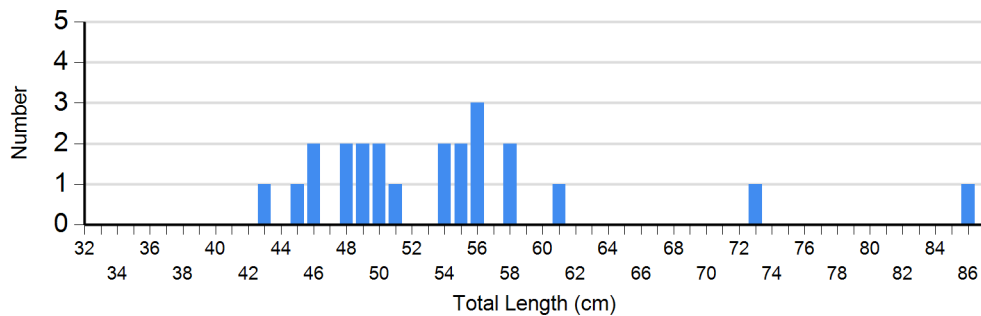


Species: Northern Pike  
Gear: std exp gill net

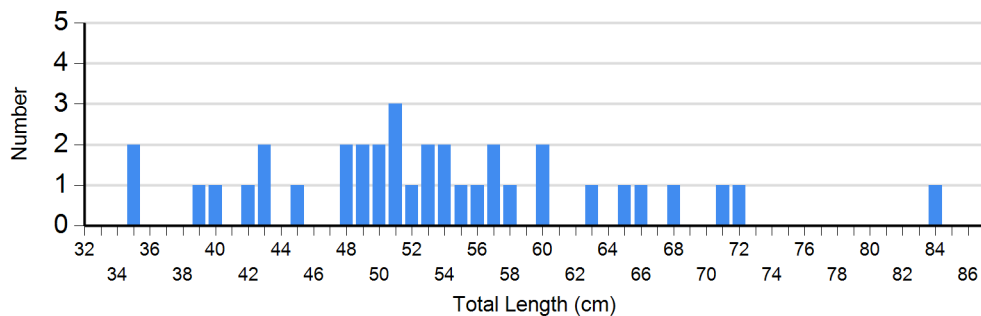




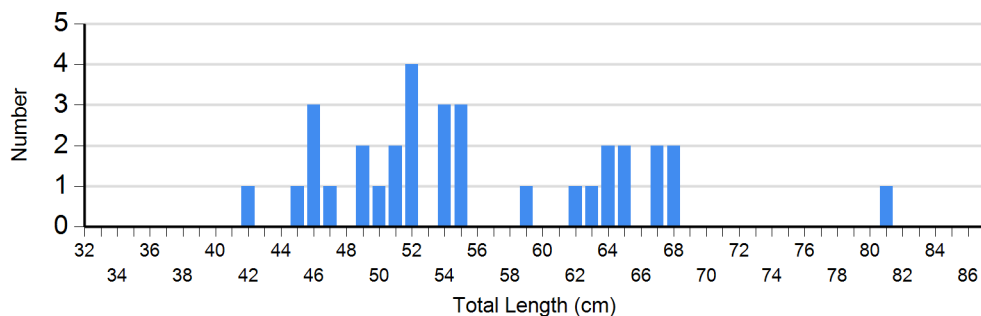
2012



2013

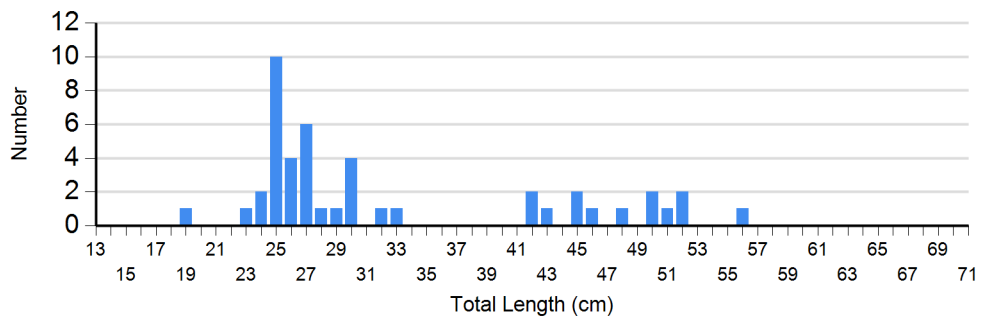


2014

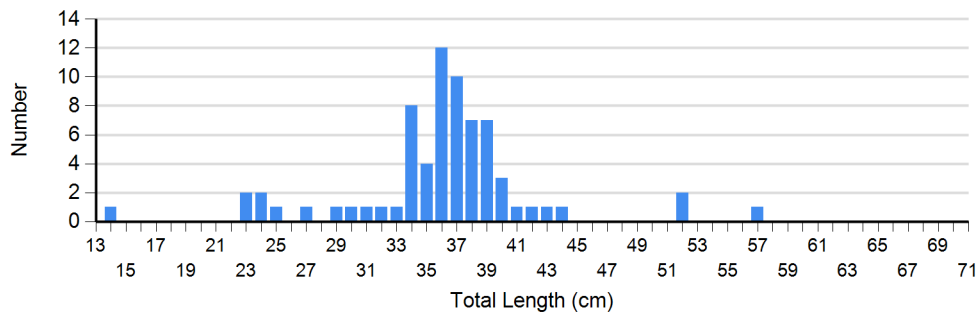
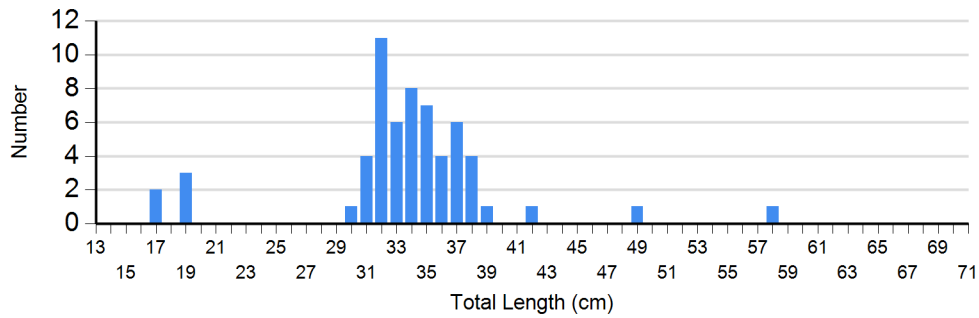
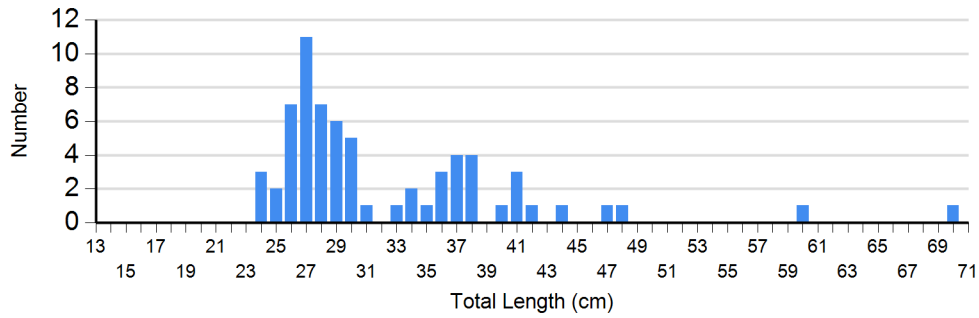
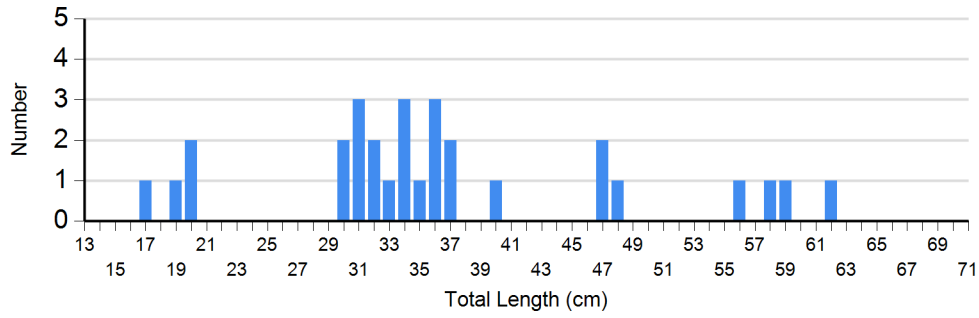


2015

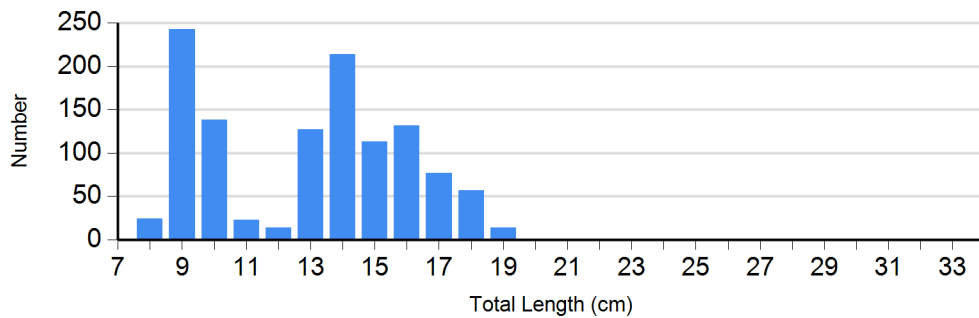
Species: Walleye  
Gear: std exp gill net

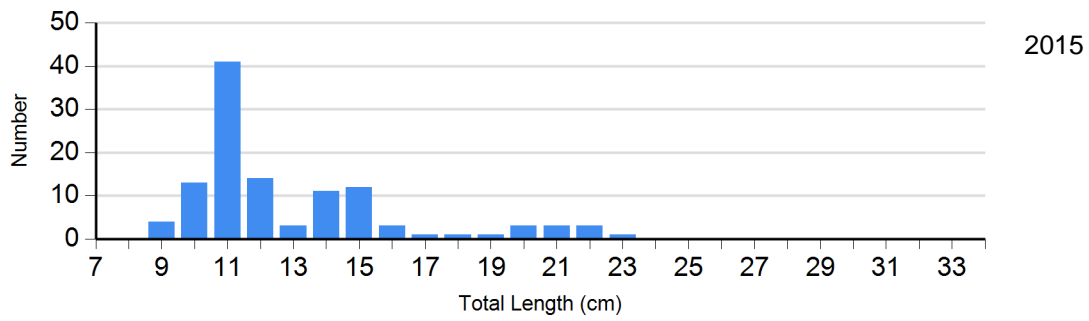
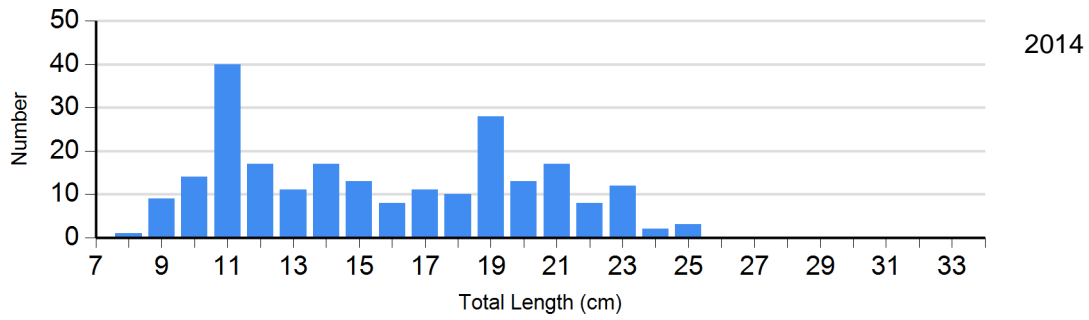
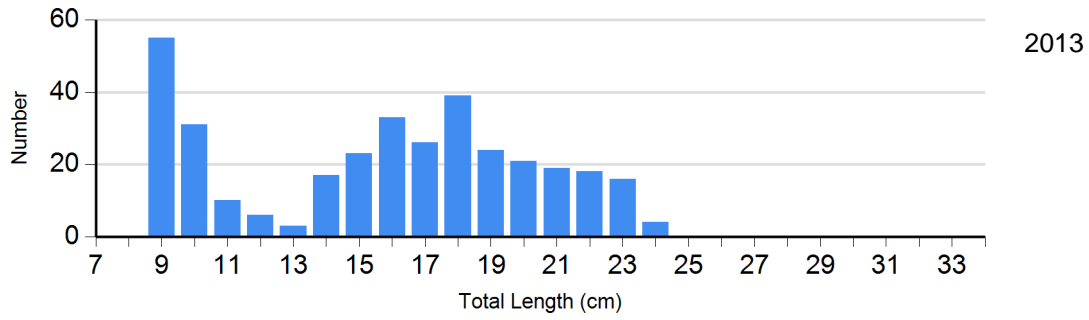
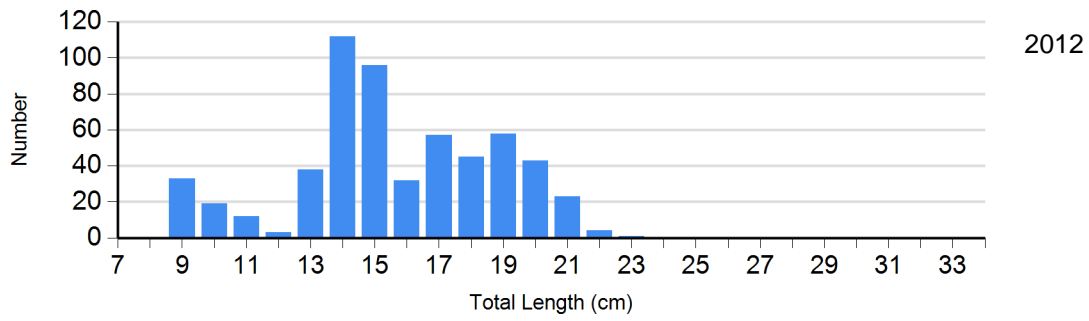


2011



Species: Yellow Perch  
 Gear: std exp gill net

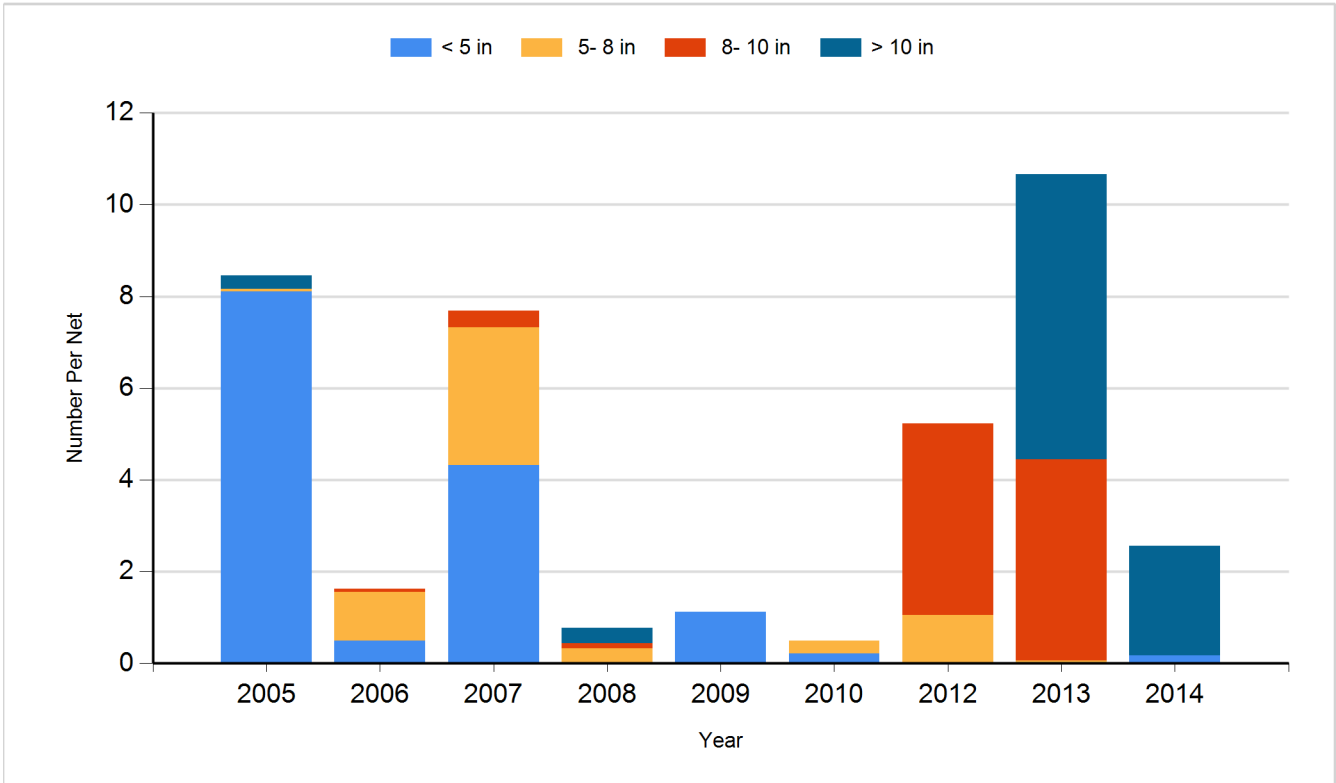




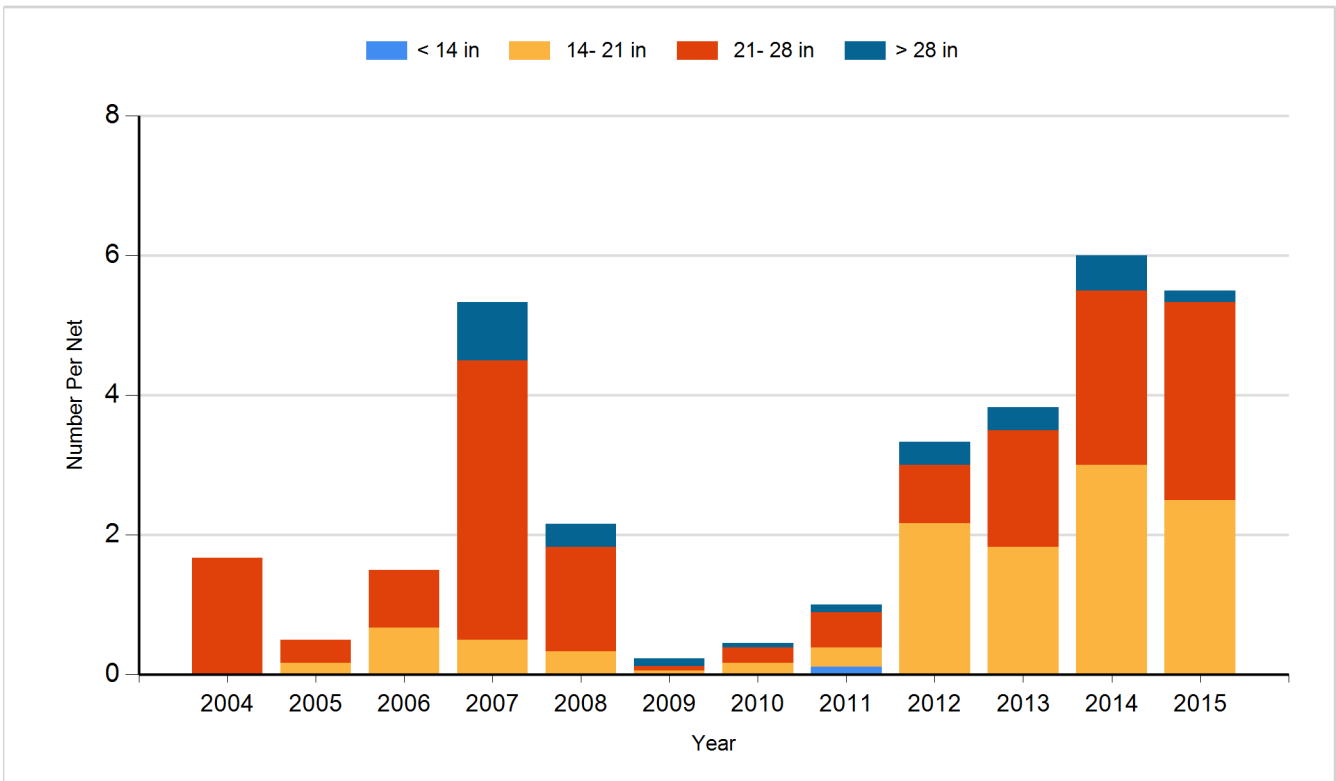
## Historic Fish Sizes and Relative Abundance

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

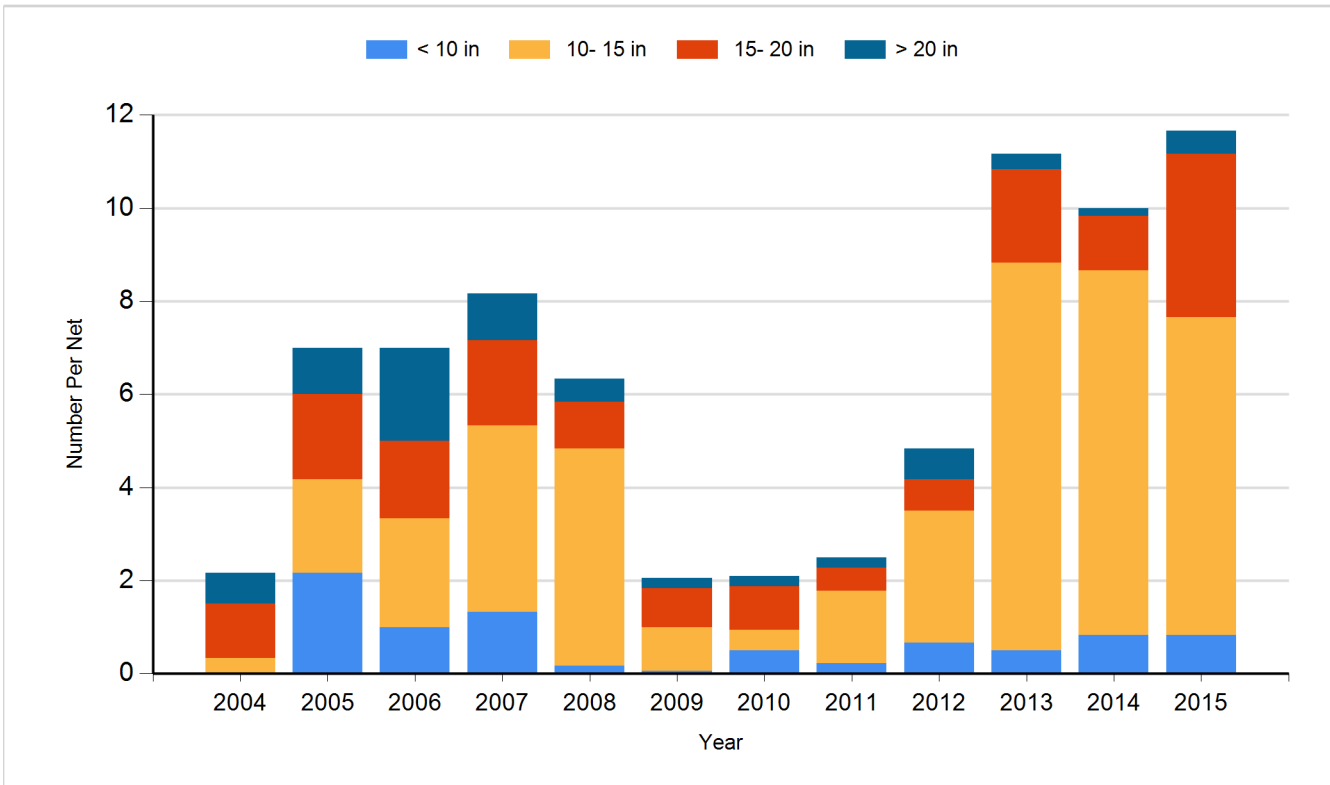
Species: Black Crappie  
Gear: Frame Net



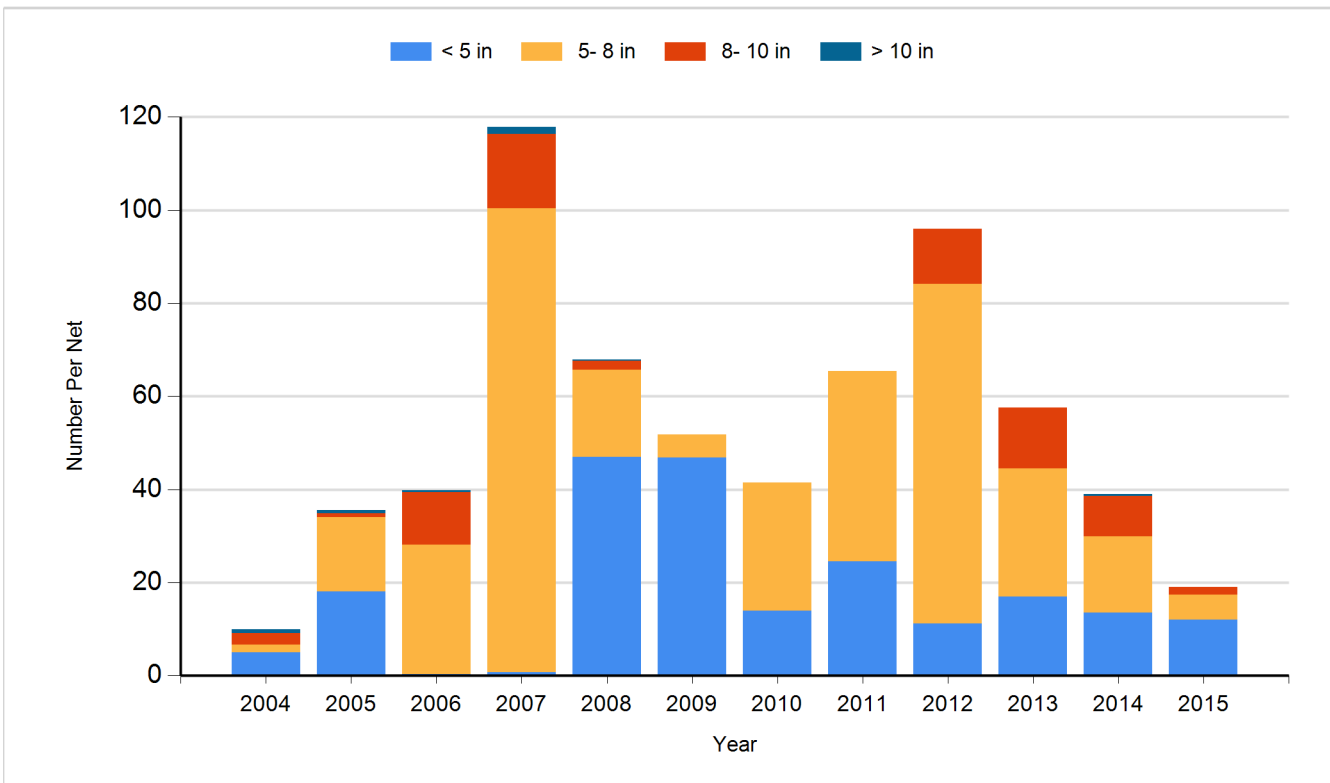
Species: Northern Pike  
Gear: Gill Net



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
2004	Walleye	Fingerling	67,299
2005	Walleye	Fry	600,000
2009	Walleye	Fry	600,000
2011	Walleye	Fry	600,000
2012	Walleye	Fry	600,000
2013	Walleye	Fry	600,000
2014	Walleye	Fry	542,000
2014	Walleye	Large Fingerling	24,879
2015	Walleye	Fry	550,000