SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Louise, Hand County
TUR-Lake-155-000
2015

Lake Information

Name: Louise

County: Hand

Legal Description: T113-R69-S4

Surface Area: 163 Acres

Maximum Depth: 20 Feet

Mean Depth: 8 Feet

Surveys and Investigations

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

Gear	Date	Effort
boat shocker (night)	September 30, 2015	3600 seconds
frame net (std 3/4 in)	June 30, 2015	5 net-nights
frame net (std 3/4 in)	July 01, 2015	5 net-nights
std exp gill net	June 30, 2015	1 net-nights
std exp gill net	July 01, 2015	1 net-nights

Common Fish Species Present

Yellow Perch

Walleye

Largemouth Bass

Bluegill

Black Bullhead

Northern Pike

Common Carp

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	57.0	29.8	7		7		117	2
	Walleye	12.0	8.9	18		0		92	2
frame net (std 3/4 in)	Black Bullhead	7.0	4.7	94		0		100	2
	Bluegill	0.3	0.4	100		33		121	4
	Common Carp	0.3	0.3	0		0		122	10
	Yellow Perch	0.2	0.3	0		0		130	0
std exp gill net	Black Bullhead	30.5	50.8	93		0		110	2
	Northern Pike	0.5	1.5	100		100		92	
	Yellow Perch	14.5	26.2	0		0		110	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	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Avg
boat shocker (night)	Largemouth Bass		26.0		0.0	2.0	8.0	17.0	24.0		57.0	19.1
	Walleye					29.0		5.0			12.0	15.3
frame net (std 3/4 in)	Black Bullhead	0.5	4.3		10.0	10.3	3.7		9.9		7.0	6.5
	Bluegill	7.0	9.1		4.0	4.7	1.5		1.5		0.3	4.0
	Common Carp										0.3	0.3
	Largemouth Bass	0.1	0.1									0.1
	Northern Pike		0.5		0.0	0.6	0.6		0.8			0.5
	Walleye	0.2	0.1						0.1			0.1
	Yellow Perch	1.4	4.7		10.0	3.9	1.4		0.1		0.2	3.1
std exp gill net	Black Bullhead	0.0	3.5		4.0	32.0	0.0		52.5		30.5	17.5
	Bluegill	0.5										0.5
	Northern Pike		2.5			2.5	0.5		1.5		0.5	1.5
	Walleye	1.0	3.0						0.0			1.3
	Yellow Perch	5.5	17.5		4.5	4.5	15.0		7.0		14.5	9.8

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.

			Year								
Gear	Species	Index	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
boat shocker (night)	Walleye	PSD					14		80			18
		PSD-P					0		0			0
		Wr					92		103			92
frame net (std 3/4 in)	Northern Pike	PSD		40		0	0	50		38		
		PSD-P		20		0	0	0		0		
		Wr		93			85	91		80		
	Walleye	PSD	50	100						100		
		PSD-P	0	0						100		
		Wr	91	97						90		
	Yellow Perch	PSD	50	83		51	90	86		0		0
		PSD-P	7	66		2	3	14		0		0
		Wr	103	97		101	99	96				130
std exp gill net	Northern Pike	PSD		0			0	0		100		100
		PSD-P		0			0	0		33		100
		Wr		106			93	104		95		92
	Walleye	PSD	100	100						0		
		PSD-P	0	33						0		
		Wr	131	96								
	Yellow Perch	PSD	82	51		56	67	50		0		0
		PSD-P	27	40		0	11	0		0		0
		Wr	102	105		102	100	108		110		110

Back-Calculated Lengths

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

Species: Walleye

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2015	0	2										
2014	1	8	224 (6.7)									
2013	2	1	134	299								
2012	3	1	217	288	418							
Weighted Mean		12	214	294	418							

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2015	0	2										
2014	1	8										
2013	2	1										
2012	3	1										
Weighted Mean		12										

Species: Yellow Perch

Year Class	Age	N	Mean back-calculated length (SE) at age									
			1	2	3	4	5	6	7	8	9	10
2014	1	2	108 (2.8)									
2014	1	136	118 (.9)									
2013	2	24	91 (2.1)	151 (1)								
Weighted Mean		162	114	151								

Year Class	Age	N	11	12	13	14	15	16	17	18	19	20
2014	1	2										
2014	1	136										
2013	2	24										
Weighted Mean		162										

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+
2013	2		222 (2)								
2007	6			397 (2)					492 (2)		529 (2)
2006	2							429 (2)			

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	29	160 (25)	182 (4)								
2013	14		150 (8)	169 (2)	180 (3)		195 (1)				
2011	36	98 (4)	140 (12)	204 (14)	225 (4)	232 (2)					
2010	9		195 (5)	231 (3)	260 (1)						
2009	1			236 (1)							
2007	82	111 (71)	218 (1)	234 (2)	224 (1)	287 (6)	319 (1)				
2006	11		204 (8)		264 (2)		271 (1)				

Fish Condition

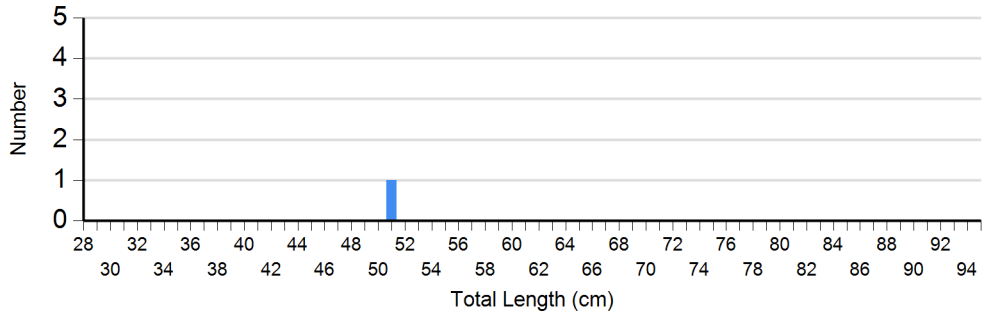
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2011	1	104	0		0		0	
	2013	0		2	98 (1.6)	1	90	0	
	2015	0		0		1	92	0	
Walleye Gill Net	2013	0		0		0		0	
Yellow Perch Gill Net	2011	15	111 (2.1)	15	104 (2.6)	0		0	
	2013	14	110 (2.5)	0		0		0	
	2015	29	110 (1.8)	0		0		0	

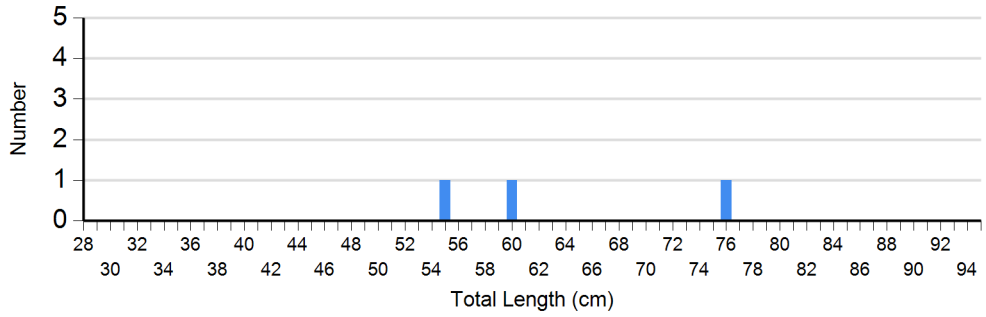
Length Frequency Distribution

Length frequency histogram of species sampled by year.

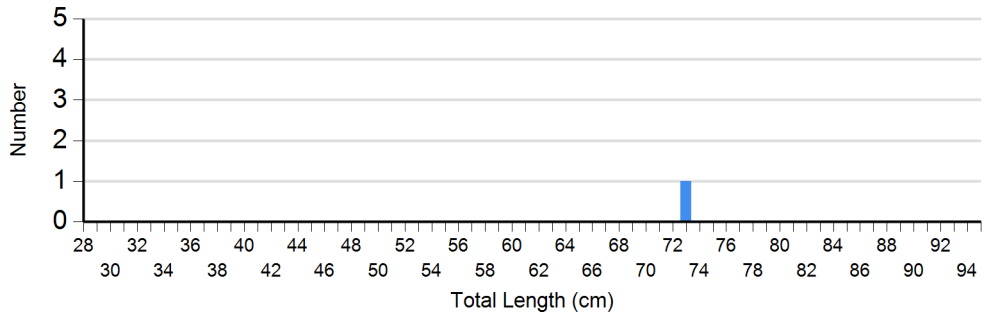
Species: Northern Pike
Gear: std exp gill net



2011

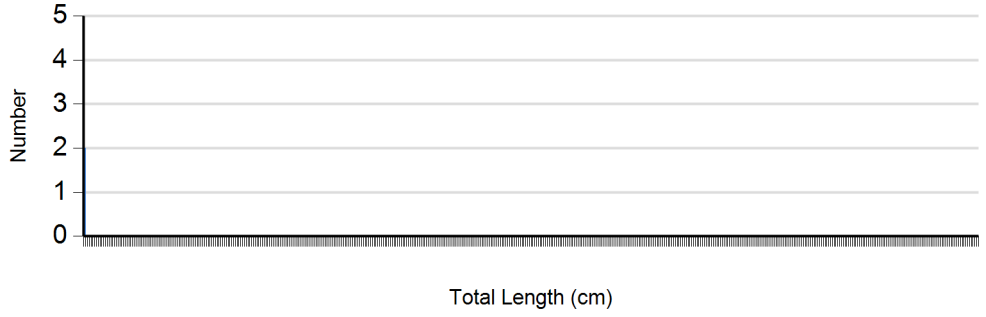


2013



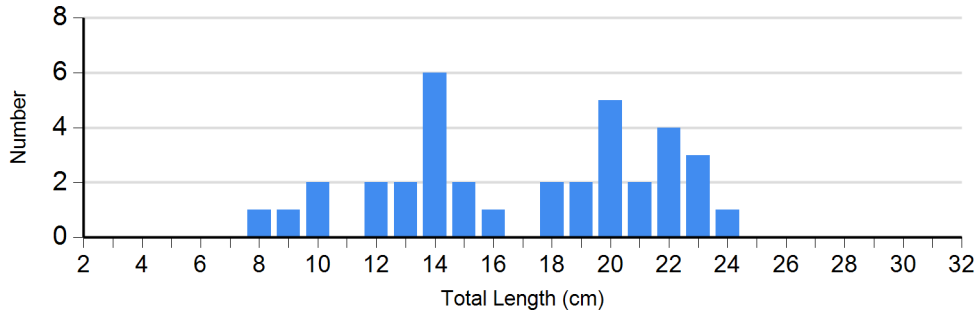
2015

Species: Walleye
Gear: std exp gill net

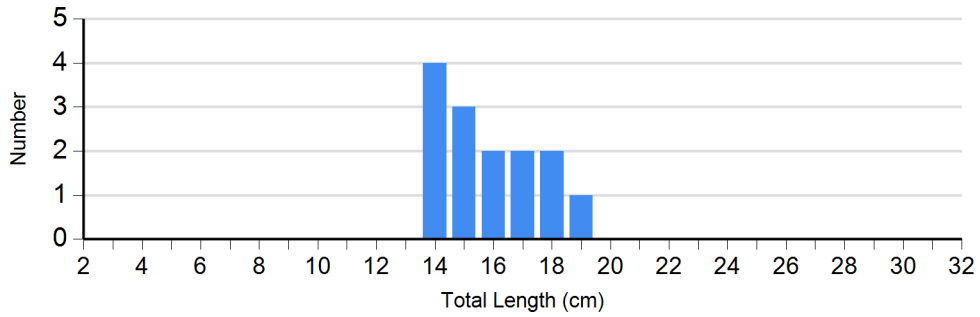


2013

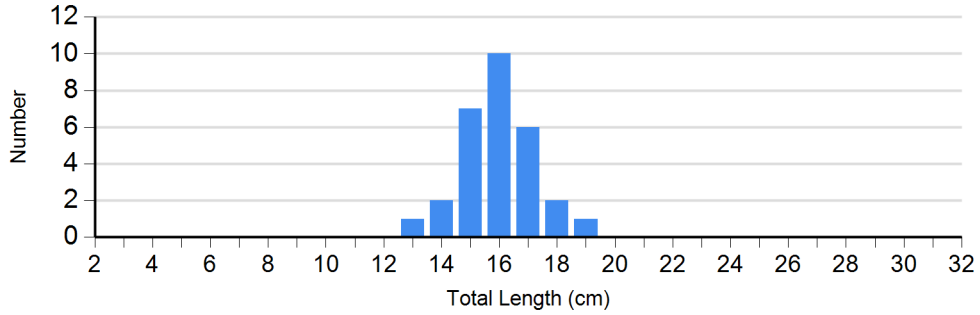
Species: Yellow Perch
Gear: std exp gill net



2011



2013

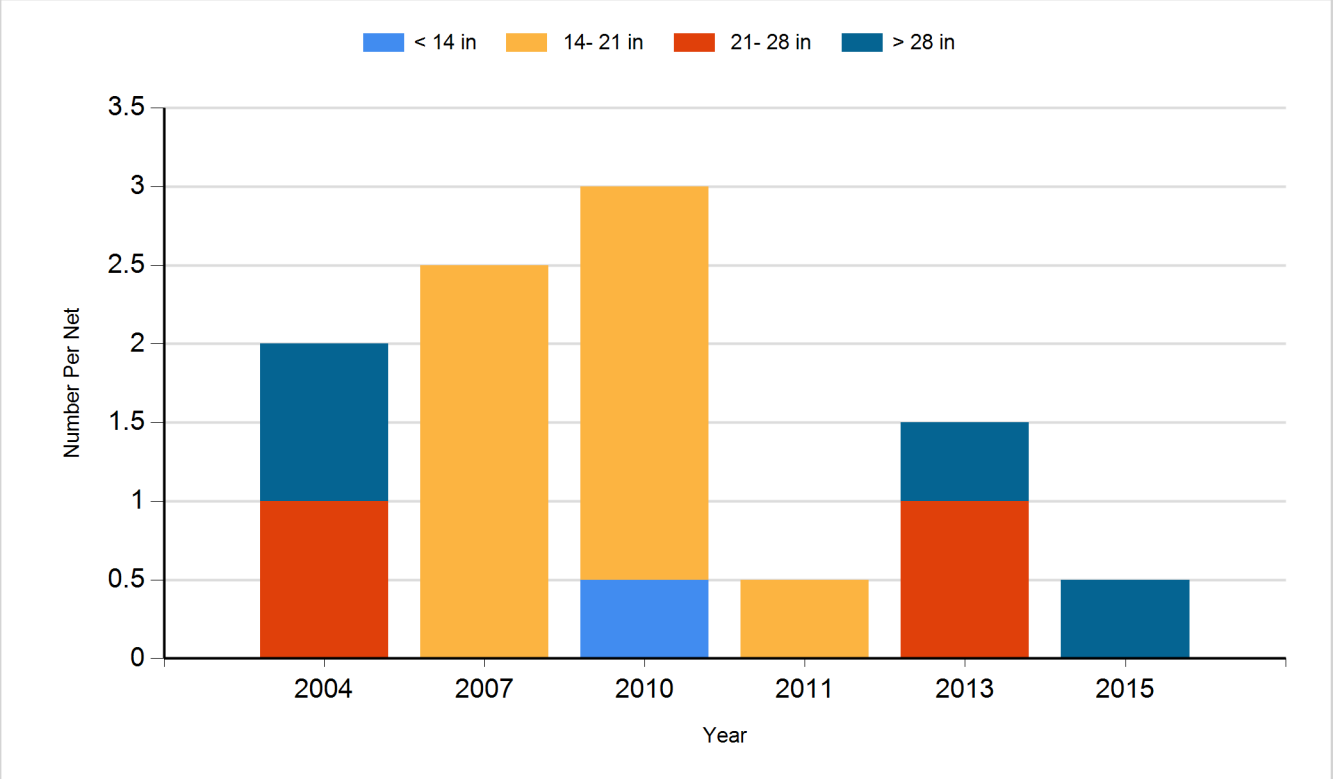


2015

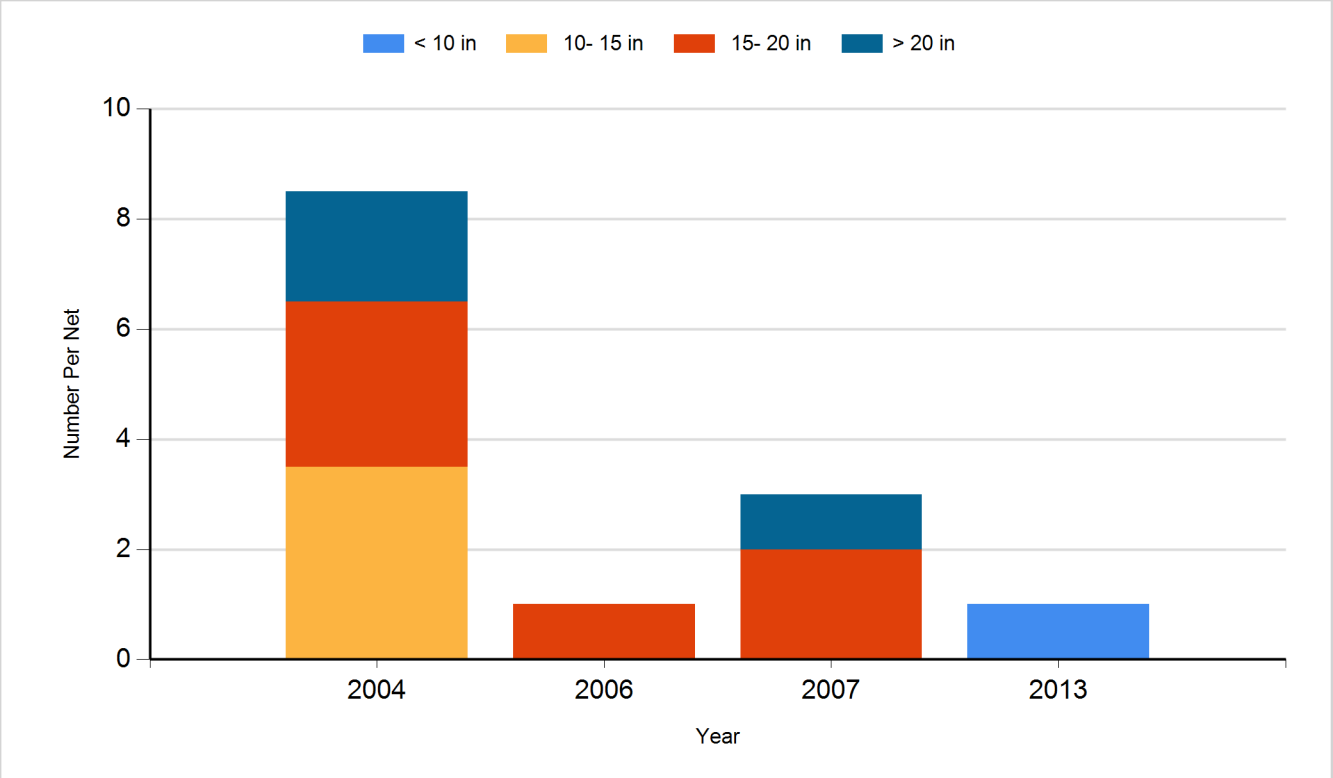
Historic Fish Sizes and Relative Abundance

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

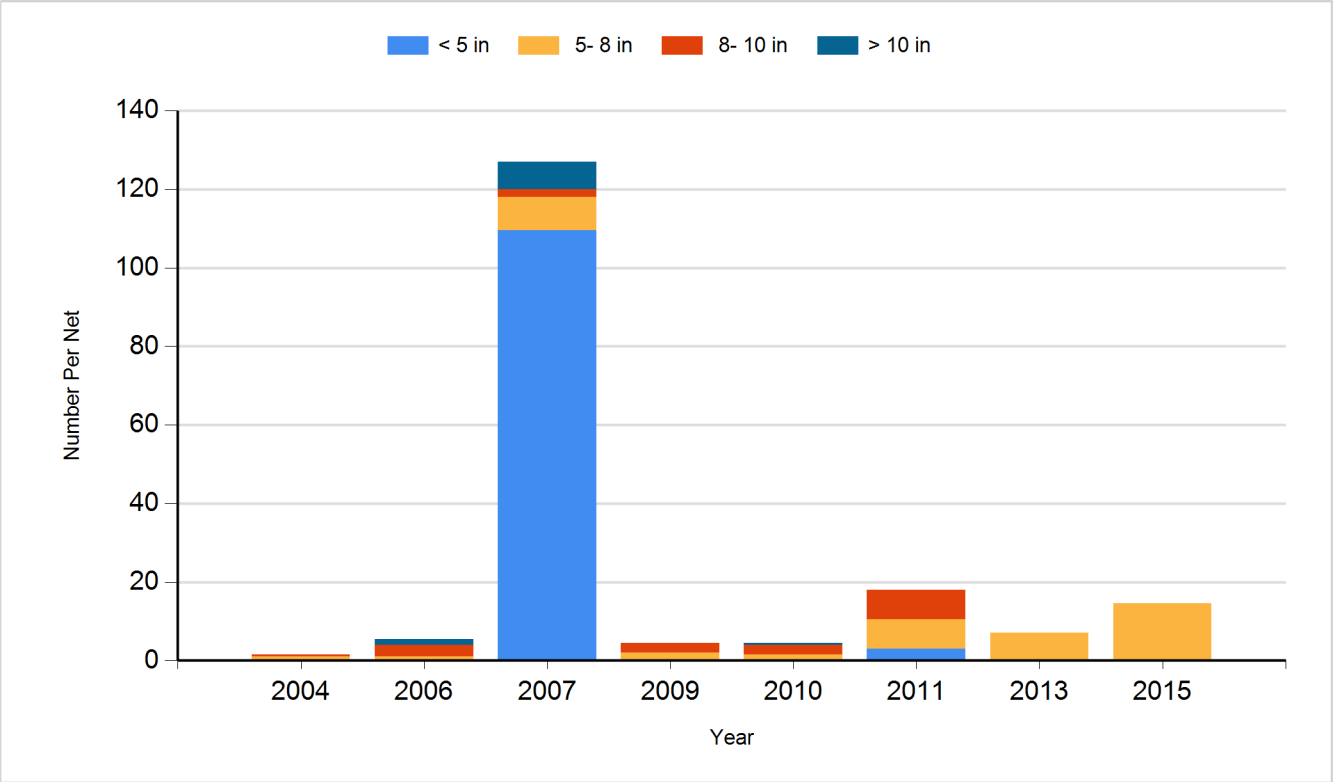
Species: Northern Pike
Gear: Gill Net



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	3,075
2006	Walleye	Large Fingerling	4,200
2010	Walleye	Small Fingerling	23,360
2012	Largemouth Bass	Fingerling	5,640
2012	Walleye	Large Fingerling	1,630
2014	Walleye	Large Fingerling	1,613