SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Hanson, Hanson County
LJA-Lake-425-000
2017

Lake Information

Name:	Hanson	**Maximum Depth:**	15 Feet
County:	Hanson	**Mean Depth:**	6 Feet
Legal Description:	T102-R58-Sec. 21		
Surface Area:	59 Acres		

Surveys and Investigations

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

Gear	Date	Effort
AFS std frame net	June 08, 2017	5 net-nights
AFS std gill net	June 08, 2017	2 net-nights

Common Fish Species Present

Walleye

Black Bullhead

Bluegill

Black Crappie

Gizzard Shad

White Crappie

Common Carp

Green Sunfish

Northern Pike

Channel Catfish

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
AFS std frame net	Black Bullhead	113.0	44.1	0		0			
	Black Crappie	6.6	8.6	76	12	9		85	1
	Bluegill	10.2	12.3	78	9	0		93	2
	Channel Catfish	0.0	0.0	0		0			
	Common Carp	0.4	0.6	50		0			
	Gizzard Shad	6.4	2.9	0					
	Green Sunfish	2.2	3.0	27		0			
	Largemouth Bass	0.2	0.3	100		100		91	
	Walleye	1.6	0.8	0		0		79	1
	White Crappie	4.8	3.3	75	14	4		81	2
	White Sucker	0.4	0.4	100		100			
AFS std gill net	Black Bullhead	22.0	24.6	0		0			
	Channel Catfish	0.5	1.5	0		0		99	
	Common Carp	4.0	3.1	13		0			
	Gizzard Shad	3.5	10.8	0					
	Northern Pike	1.5	1.5	100		100		105	1
	Walleye	3.5	1.5	29		0		84	2
	White Sucker	0.5	1.5	100		100			

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	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg
AFS std frame net	Black Bullhead										113.0	113.0
	Black Crappie										6.6	6.6
	Bluegill										10.2	10.2
	Channel Catfish										0.0	0.0
	Common Carp										0.4	0.4
	Gizzard Shad										6.4	6.4
	Green Sunfish										2.2	2.2
	Largemouth Bass										0.2	0.2
	Walleye										1.6	1.6
	White Crappie										4.8	4.8
	White Sucker										0.4	0.4
AFS std gill net	Black Bullhead										22.0	22.0
	Channel Catfish										0.5	0.5
	Common Carp										4.0	4.0
	Gizzard Shad										3.5	3.5
	Northern Pike										1.5	1.5
	Walleye										3.5	3.5
	White Sucker										0.5	0.5
boat shocker (night)	Black Bullhead					165.6						165.6
	Black Crappie					3.6						3.6
	Bluegill					159.6						159.6
	Channel Catfish					0.6						0.6
	Common Carp					51.6						51.6
	Largemouth Bass					12.0						12.0
	Northern Pike					21.6						21.6
	White Crappie					5.4						5.4
	Yellow Perch					12.6						12.6
large frame net	Black Bullhead			38.6								38.6
	Black Crappie	5.5		4.8								5.2
	Bluegill	3.3		5.0								4.2
	Channel Catfish	0.5		0.2								0.4
	Common Carp	1.5		0.8								1.2
	Largemouth Bass	0.3										0.3

		CPUE										
Gear	Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg
large frame net	Northern Pike	5.0		1.0								3.0
	White Crappie	2.0		17.2								9.6
	Yellow Perch	0.5		0.4								0.5
std exp gill net	Black Bullhead							2.0	0.0	5.3		2.4
	Black Crappie								1.3	1.0		1.2
	Bluegill							0.7				0.7
	Channel Catfish							0.3	0.7	0.3		0.4
	Common Carp							2.0	3.3	10.3		5.2
	Northern Pike							1.7	4.0	2.0		2.6
	White Crappie								0.3	1.0		0.7
	White Sucker							0.3	0.3			0.3
std frame net (3/8 inch)	Black Bullhead							30.8	70.4	42.2		47.8
	Black Crappie							1.4	4.4	4.6		3.5
	Bluegill							7.8	2.4	8.0		6.1
	Channel Catfish								0.0	0.0		0.0
	Common Carp							0.4	0.4			0.4
	Northern Pike							0.4	0.6	1.4		0.8
	Walleye									0.4		0.4
	White Crappie							1.2	0.6	13.4		5.1
	White Sucker									0.2		0.2
	Yellow Perch								0.8			0.8

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	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
AFS std frame net	Black Crappie	PSD										76
		PSD-P										9
		Wr										85
	Walleye	PSD										0
		PSD-P										0
		Wr										79
AFS std gill net	Northern Pike	PSD										100
		PSD-P										100
		Wr										105
	Walleye	PSD										29
		PSD-P										0
		Wr										84
boat shocker (night)	Black Crappie	PSD					50					
		PSD-P					17					
		Wr					108					
	Northern Pike	PSD					6					
		PSD-P					0					
		Wr					84					
	Yellow Perch	PSD					0					
		PSD-P					0					
		Wr					82					
large frame net	Black Crappie	PSD	100		38							
		PSD-P	55		29							
		Wr	107		93							
	Northern Pike	PSD	55		60							
		PSD-P	0		0							
		Wr	80		71							
	Yellow Perch	PSD	0		0							
		PSD-P	0		0							
		Wr	88		83							
std exp gill net	Black Crappie	PSD								0	0	

			Year									
Gear	Species	Index	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
std exp gill net	Black Crappie	PSD-P								0	0	
		Wr								83	92	
	Northern Pike	PSD							40	100	100	
		PSD-P							40	25	33	
		Wr							78	88	78	
std frame net (3/8 inch)	Black Crappie	PSD							14	41	9	
		PSD-P							14	18	9	
		Wr							87	89	96	
	Northern Pike	PSD							100	100	100	
		PSD-P							50	0	57	
		Wr							66	86	79	
	Walleye	PSD									0	
		PSD-P									0	
		Wr									86	
	Yellow Perch	PSD								100		
		PSD-P								0		
		Wr								73		

Fish Condition

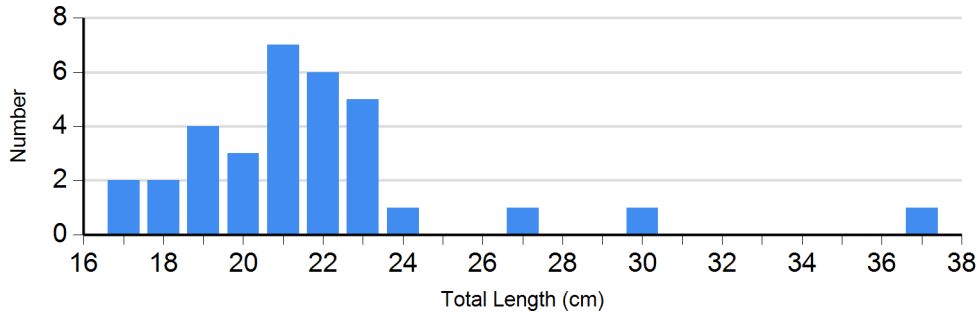
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2014	6	91 (4.4)	0		0		1	66
	2015	13	92 (1.3)	5	87 (3.4)	2	83 (1.8)	2	76 (1.7)
	2016	21	98 (1.3)	0		1	64	1	73
	2017	8	89 (1.4)	22	84 (0.9)	1	74	2	84 (0.0)
Northern Pike Gill Net	2014	3	70 (0.7)	0		2	89 (1.5)	0	
	2015	0		9	89 (4.7)	2	78 (5.7)	1	98
	2016	0		4	71 (3.1)	2	91 (4.7)	0	
	2017	0		0		1	106	2	104
Walleye Gill Net	2017	5	83 (1.8)	2	86 (2.0)	0		0	

Length Frequency Distribution

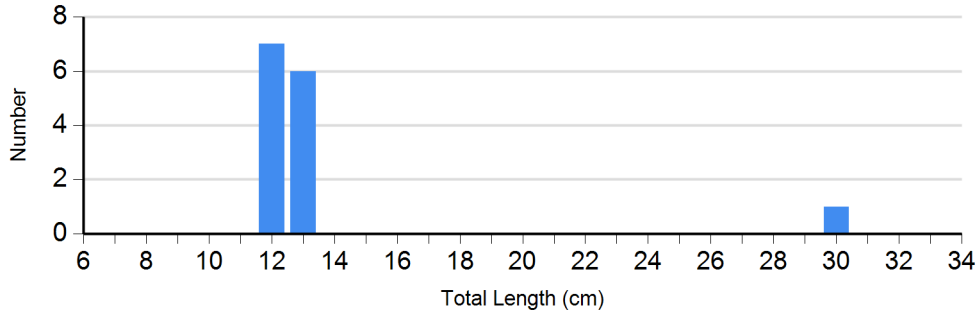
Length frequency histogram of species sampled by year.

Species: Black Crappie
Gear: AFS std frame net

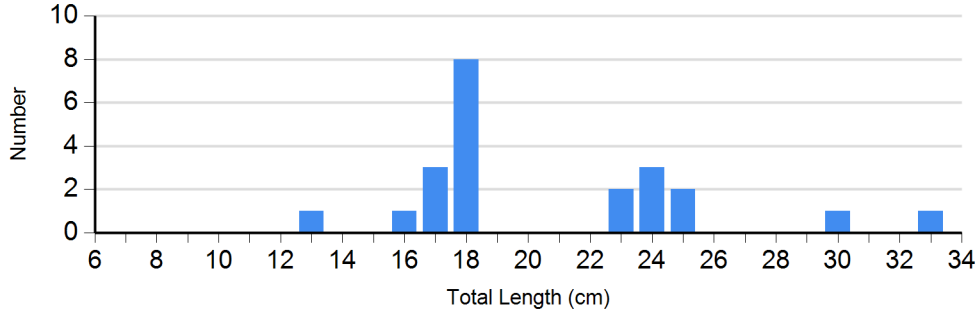


2017

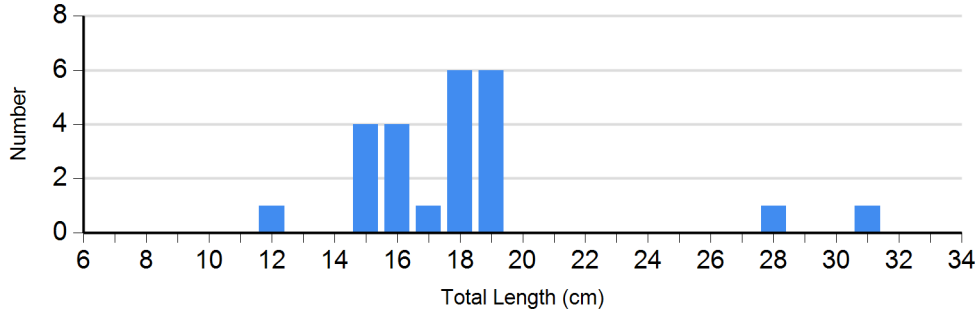
Species: Black Crappie
Gear: std frame net (3/8 inch)



2014

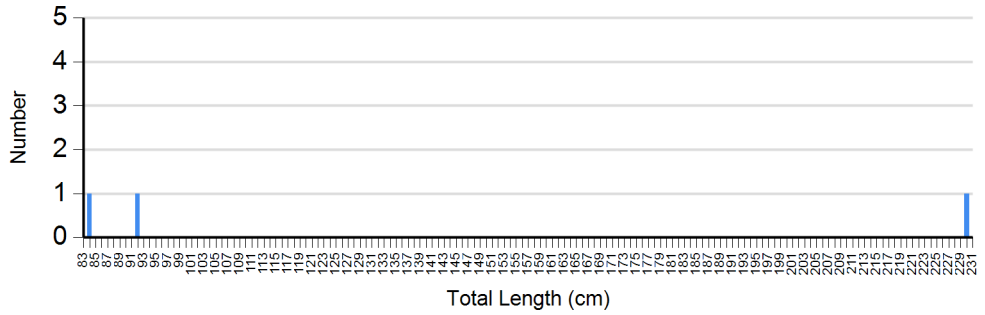


2015



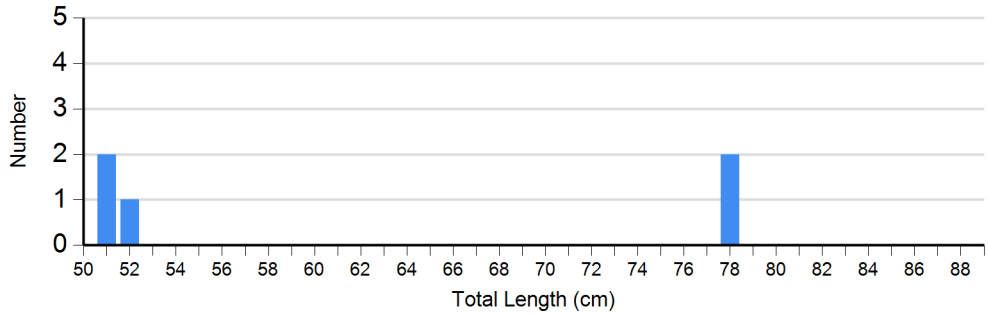
2016

Species: Northern Pike
Gear: AFS std gill net



2017

Species: Northern Pike
Gear: std exp gill net



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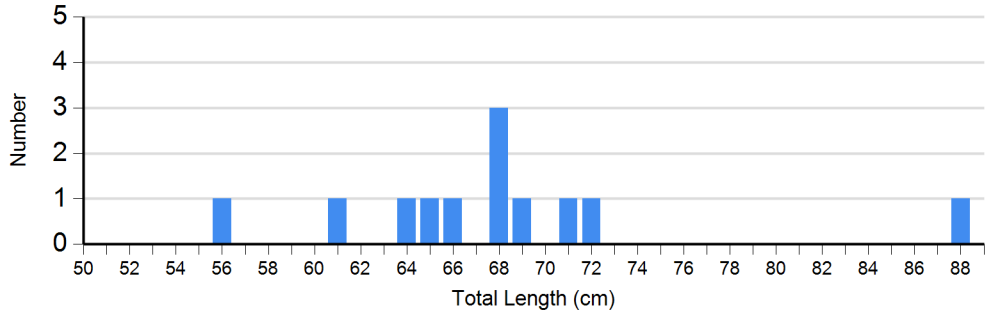

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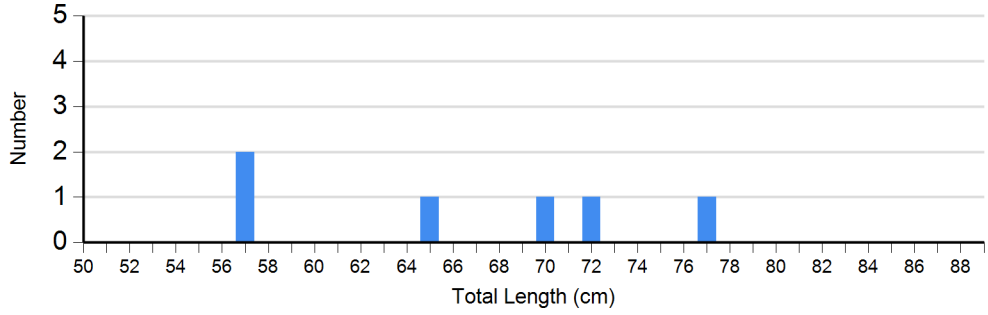
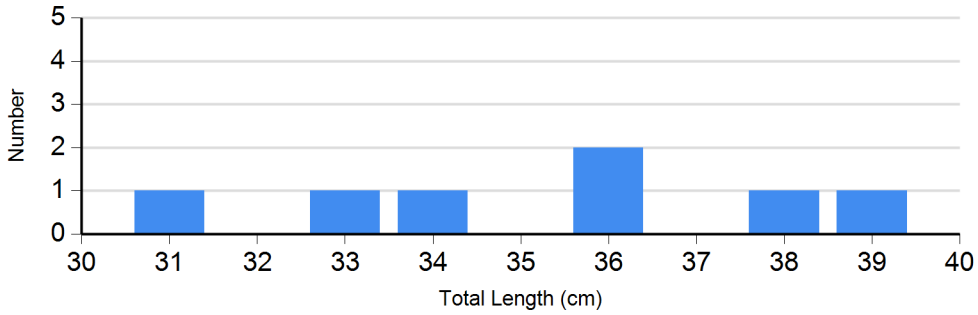


2016

Species: Walleye
Gear: AFS std gill net

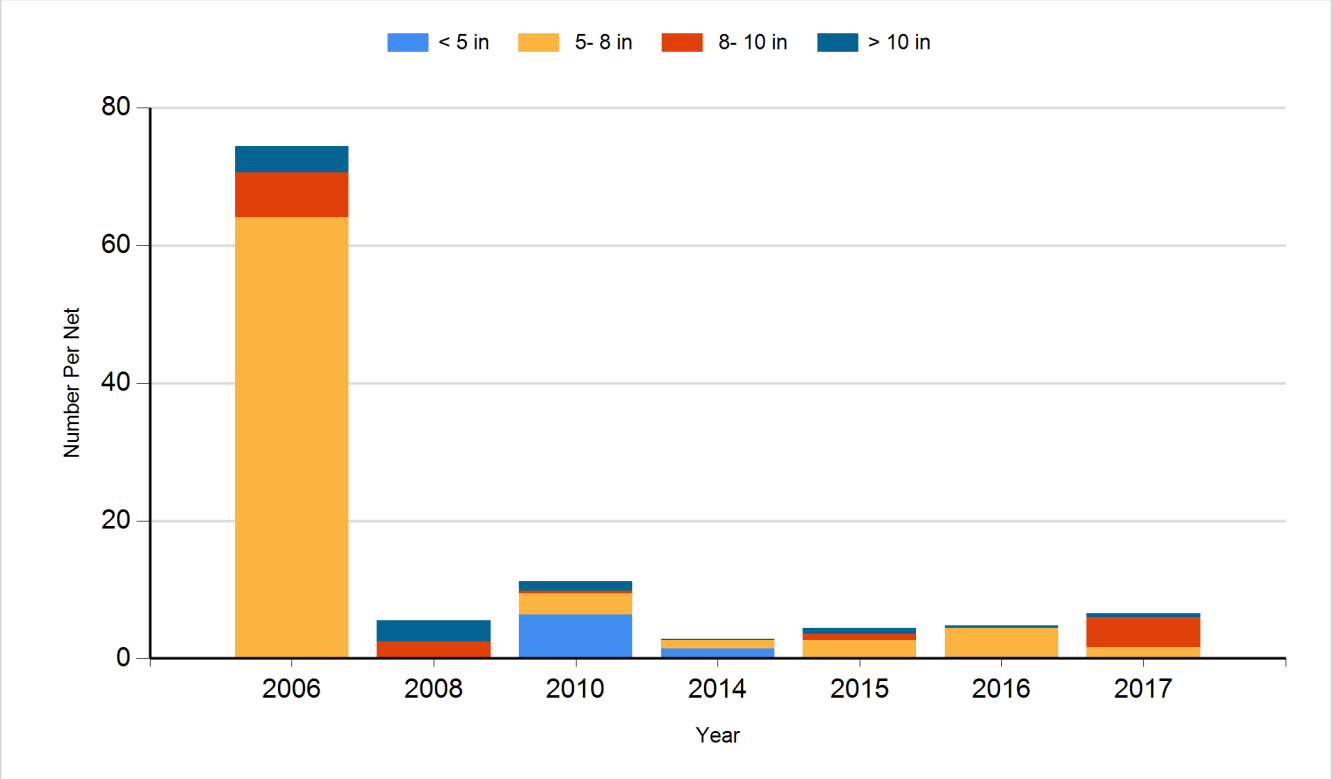


2017

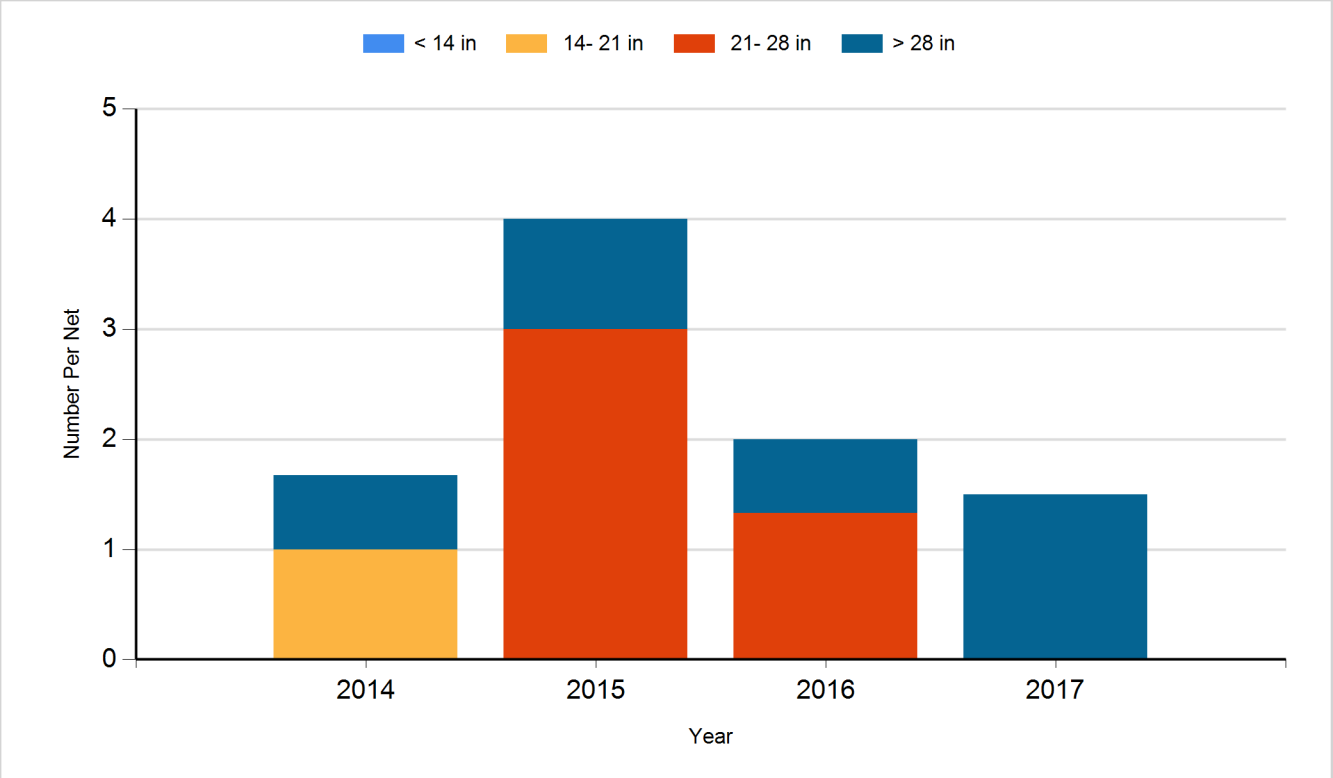
Historic Fish Sizes and Relative Abundance

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

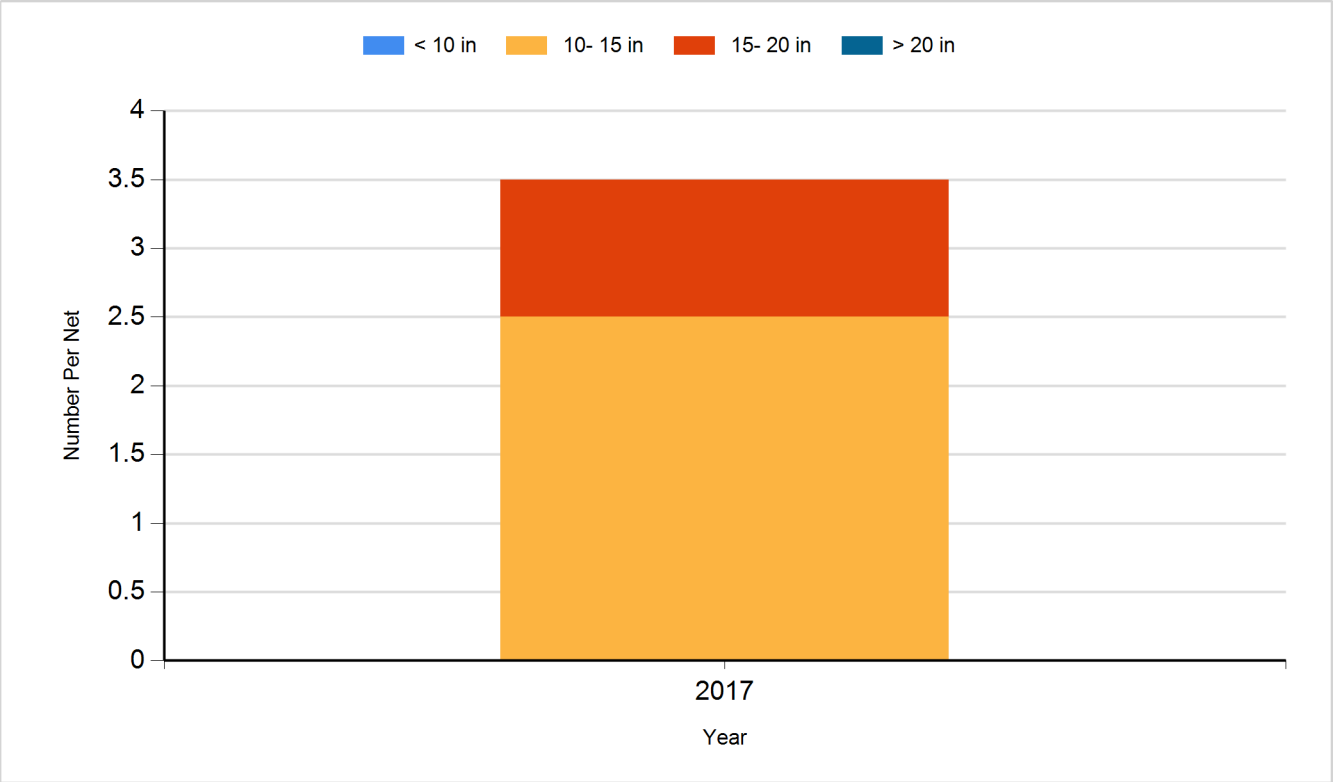
Species: Black Crappie
Gear: Frame Net



Species: Northern Pike
Gear: Gill Net



Species: Walleye
Gear: Gill Net



Fish Stocking

Number of fish stocked by year, species, and size.

Year	Species	Size	Number
2008	Bluegill	Fingerling	22,900
2008	Largemouth Bass	Fingerling	6,560
2014	Walleye	Fry	55,000
2015	Walleye	Small Fingerling	3,840
2016	Gizzard Shad	Adult	130
2016	Walleye	Juvenile	505