SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Wall, Minnehaha County
LBS-Lake-95-000
2016

Lake Information

Name:	Wall	**Maximum Depth:**	23 Feet
County:	Minnehaha	**Mean Depth:**	11 Feet
Legal Description:	T101N-R51W-Sec. 21 & 28	**OHWM Elevation:**	1,560
Surface Area:	222 Acres	**Outlet Elevation:**	1,559

Surveys and Investigations

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

Gear	Date	Effort
hoop net	June 14, 2016	3 net-nights
std exp gill net	June 14, 2016	3 net-nights
std frame net (3/8 inch)	June 14, 2016	5 net-nights

Common Fish Species Present

Walleye

Black Bullhead

Northern Pike

Yellow Perch

Channel Catfish

Pumpkinseed

Bigmouth Buffalo

Black Crappie

Green Sunfish

Sunfish Hybrid

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
hoop net	Black Bullhead	3.0	2.2	100		22			
	Green Sunfish	0.3	0.6	100		0		118	
	Pumpkinseed	3.7	3.5	91		9		131	17
	Sunfish Hybrid	0.0	0.0						
std exp gill net	Black Bullhead	4.3	0.6	77		8			
	Black Crappie	0.3	0.6	100		0		103	
	Channel Catfish	4.7	3.5	100		0		106	2
	Northern Pike	6.7	0.6	85		0		79	4
	Walleye	0.3	0.6	0		0		85	
	Yellow Perch	5.3	1.7	38	20	6		95	4
std frame net (3/8 inch)	Bigmouth Buffalo	0.8	0.9	100		25			
	Black Bullhead	24.6	13.4	100		28	6		
	Channel Catfish	0.6	0.6	100		0		103	6
	Pumpkinseed	2.6	2.2	77		23		106	3
	Sunfish Hybrid	0.0	0.0						
	Walleye	0.6	0.4	0		0		81	3
	Yellow Perch	1.8	1.2	33		0		101	5

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	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Avg
hoop net	Black Bullhead										3.0	3.0
	Green Sunfish										0.3	0.3
	Pumpkinseed										3.7	3.7
	Sunfish Hybrid										0.0	0.0
large frame net	Bigmouth Buffalo		0.8		4.1		0.7					1.9
	Black Bullhead		49.8		20.4		89.5					53.2
	Black Crappie		10.0		47.2		14.2					23.8
	Bluegill		13.2		93.4		115.9					74.2
	Channel Catfish		0.2		1.0		1.6					0.9
	Common Carp		0.5		0.3		7.4					2.7
	Green Sunfish				0.2		1.2					0.7
	Largemouth Bass				0.1							0.1
	Northern Pike				0.1		0.5					0.3
	Orangespotted Sunfish		0.0				0.0					0.0
	Pumpkinseed		17.7		5.0		4.1					8.9
	Sunfish Hybrid		0.0		0.0		0.0					0.0
	Walleye				0.5		1.2					0.9
	White Sucker		0.4		0.2							0.3
	Yellow Bullhead		2.3		0.1		1.3					1.2
	Yellow Perch		1.1		1.3							1.2
std exp gill net	Bigmouth Buffalo								0.7			0.7
	Black Bullhead		13.7		8.0		56.0		35.7	10.3	4.3	21.3
	Black Crappie		1.0		20.0		0.3				0.3	5.4
	Bluegill		0.0		2.3		0.7					1.0
	Channel Catfish		6.7		1.7		37.0		15.0	13.0	4.7	13.0
	Common Carp		1.0		5.3		9.7		1.0	3.3		4.1
	Northern Pike		0.7		3.7		1.3				6.7	3.1
	Orangespotted Sunfish		0.0									0.0
	Pumpkinseed		4.0		1.7		0.3			0.3		1.6
	Sunfish Hybrid						0.0					0.0
	Walleye		10.3		7.7		3.3		1.0	0.3	0.3	3.8
	White Sucker		2.7		1.0		1.3		0.7	0.3		1.2
	Yellow Perch		4.3		12.3		3.3		1.7	1.3	5.3	4.7

		CPUE										
Gear	Species	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Avg
std frame net (3/8 inch)	Bigmouth Buffalo								0.2	1.2	0.8	0.7
	Black Bullhead								210.8	80.8	24.6	105.4
	Black Crappie								4.6			4.6
	Bluegill								0.4	0.4		0.4
	Channel Catfish								6.8	3.4	0.6	3.6
	Common Carp								0.6	0.6		0.6
	Northern Pike									0.4		0.4
	Pumpkinseed								1.4	12.4	2.6	5.5
	Sunfish Hybrid								0.0		0.0	0.0
	Walleye								0.6	0.8	0.6	0.7
	White Crappie									0.0		0.0
	White Sucker								0.2	0.2		0.2
	Yellow Bullhead									1.0		1.0
	Yellow Perch										1.8	1.8

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	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
large frame net	Black Crappie	PSD		94		1		99				
		PSD-P		1		0		0				
		Wr		102		92		97				
	Northern Pike	PSD				100		100				
		PSD-P				0		0				
		Wr				77		93				
	Walleye	PSD				60		17				
		PSD-P				60		0				
		Wr				81		76				
	Yellow Perch	PSD		55		0						
		PSD-P		27		0						
		Wr		109		82						
std exp gill net	Black Crappie	PSD		33		0		100				100
		PSD-P		0		0		0				0
		Wr		99		94		96				103
	Northern Pike	PSD		50		82		75				85
		PSD-P		50		0		0				0
		Wr		94		81		94				79
	Walleye	PSD		97		43		0		0	0	0
		PSD-P		13		39		0		0	0	0
		Wr		99		82		73		77	77	85
	Yellow Perch	PSD		31		0		90		80	100	38
		PSD-P		8		0		0		0	0	6
		Wr		92		92		95		102	111	95
std frame net (3/8 inch)	Black Crappie	PSD								87		
		PSD-P								70		
		Wr								95		
	Northern Pike	PSD									100	
		PSD-P									50	
		Wr									95	
	Walleye	PSD								33	25	0

			Year									
Gear	Species	Index	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
std frame net (3/8 inch)	Walleye	PSD-P								0	25	0
		Wr								82	76	81
	Yellow Perch	PSD										33
		PSD-P										0
		Wr										101

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+
2010	472		148 (8)	177 (426)	184 (38)						

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2010	28	221 (5)	336 (13)		547 (2)	546 (4)	653 (1)	604 (3)			

Species: Yellow Perch

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2010	37		146 (37)								

Fish Condition

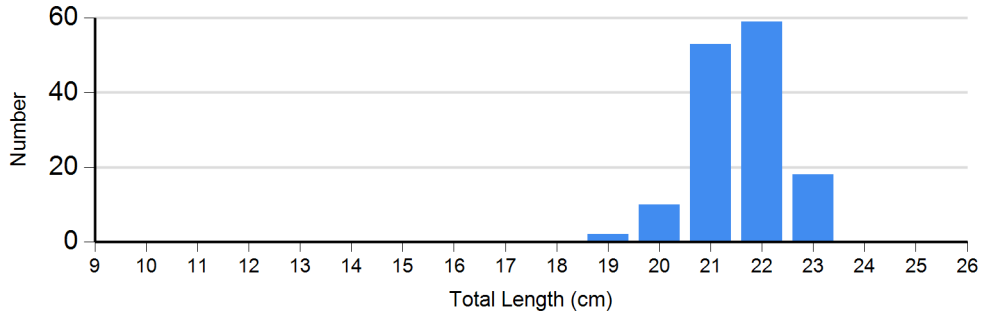
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2012	2	103	140	97 (0.5)	0		0	
	2014	3	108 (2.2)	4	105 (0.9)	16	90 (1.4)	0	
Northern Pike Gill Net	2012	1	93	3	95 (1.7)	0		0	
	2016	3	78 (4.8)	17	79 (3.2)	0		0	
Walleye Gill Net	2012	10	73 (1.3)	0		0		0	
	2014	3	77 (1.9)	0		0		0	
	2015	1	77	0		0		0	
	2016	1	85	0		0		0	
Yellow Perch Gill Net	2012	1	98	9	95 (3.6)	0		0	
	2014	1	97	4	103 (4.2)	0		0	
	2015	0		4	111 (6.1)	0		0	
	2016	10	96 (3.7)	5	90 (7.7)	1	101	0	

Length Frequency Distribution

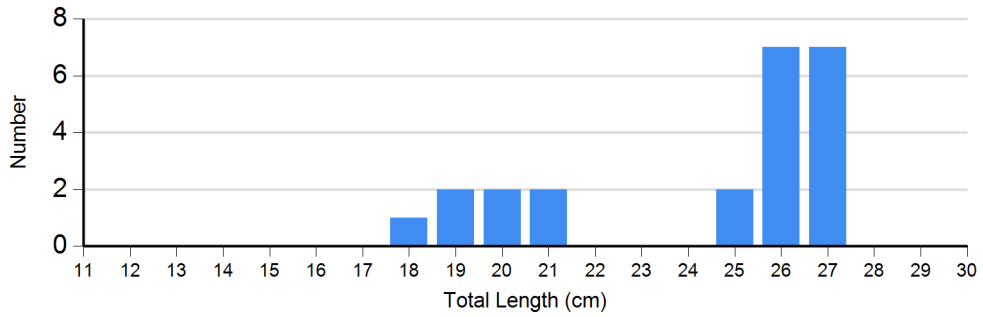
Length frequency histogram of species sampled by year.

Species: Black Crappie
Gear: large frame net



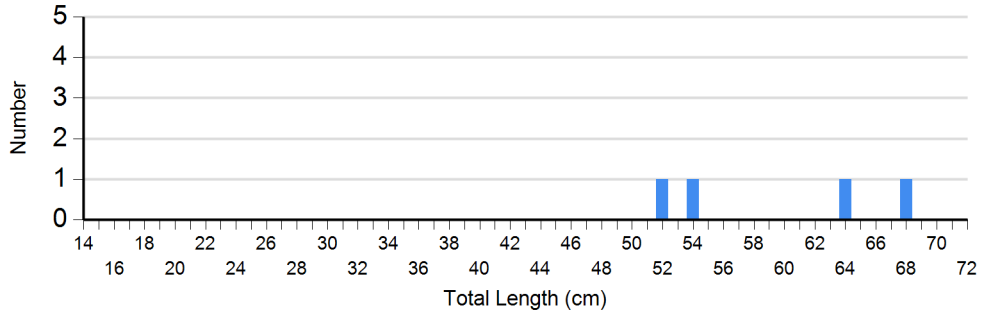
2012

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

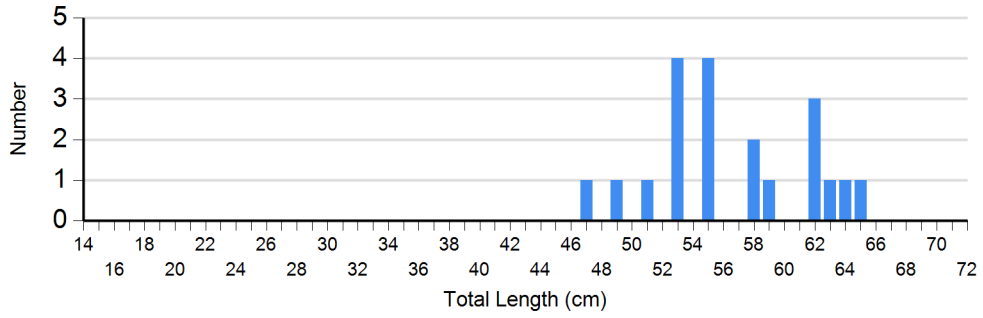


2014

Species: Northern Pike
Gear: std exp gill net

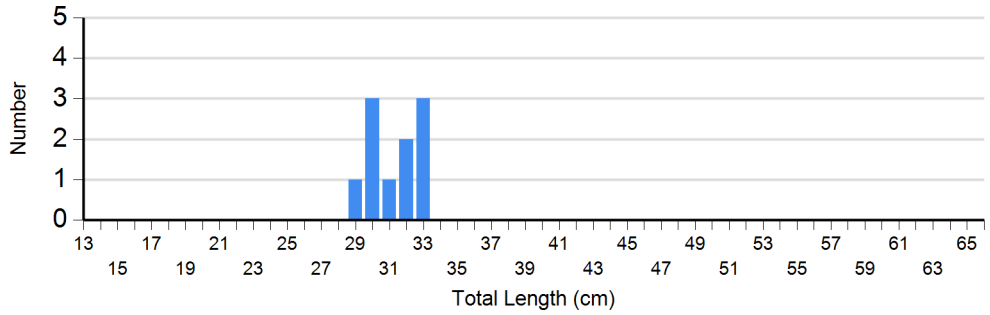


2012

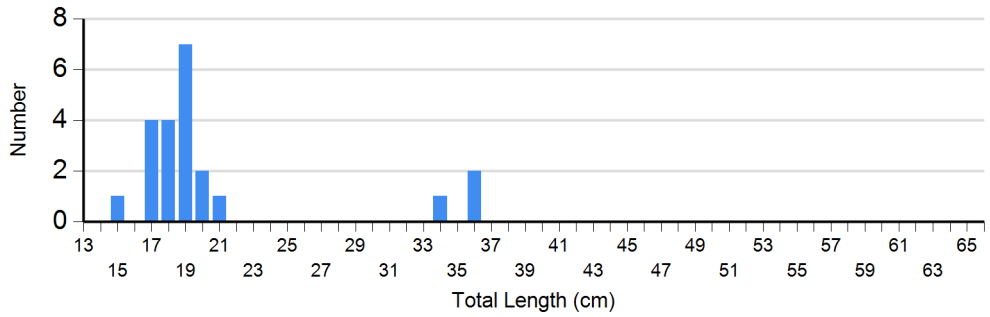


2016

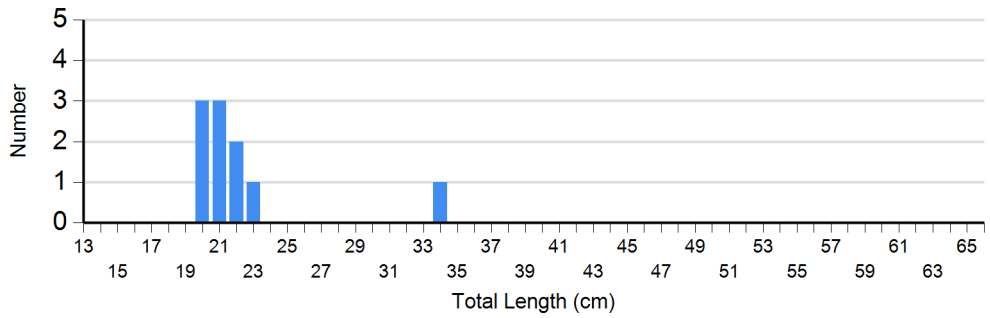
Species: Walleye
Gear: std exp gill net



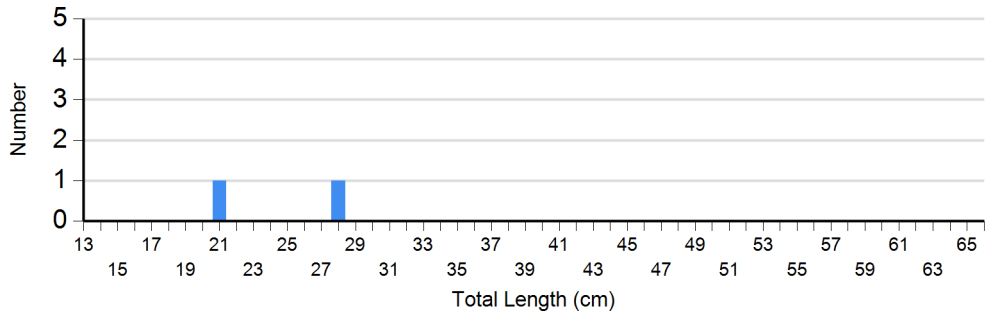
2012



2014

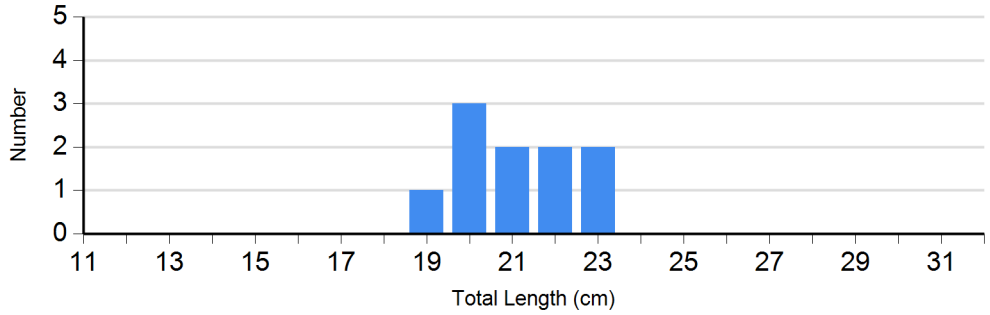


2015

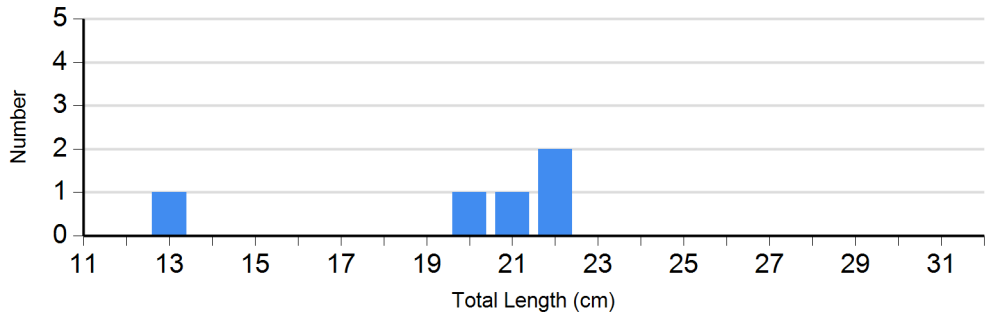


2016

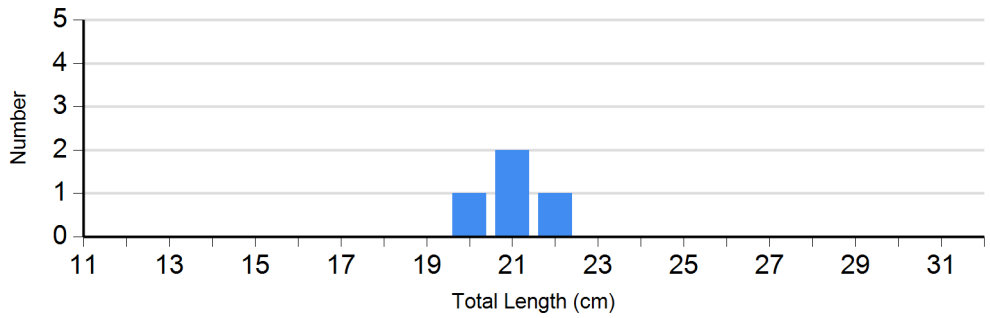
Species: Yellow Perch
Gear: std exp gill net



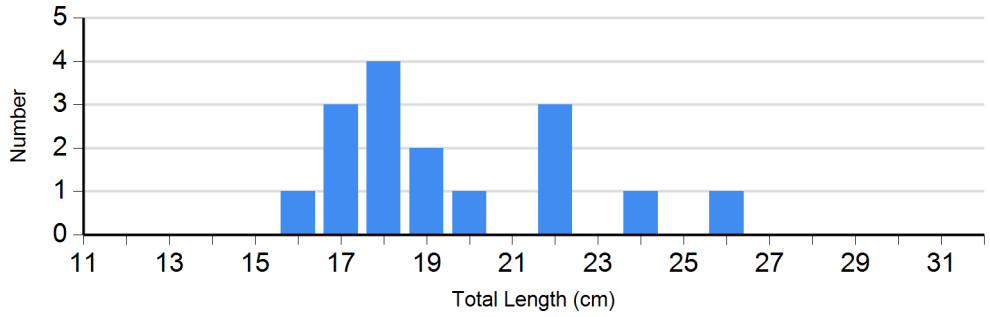
2012



2014



2015

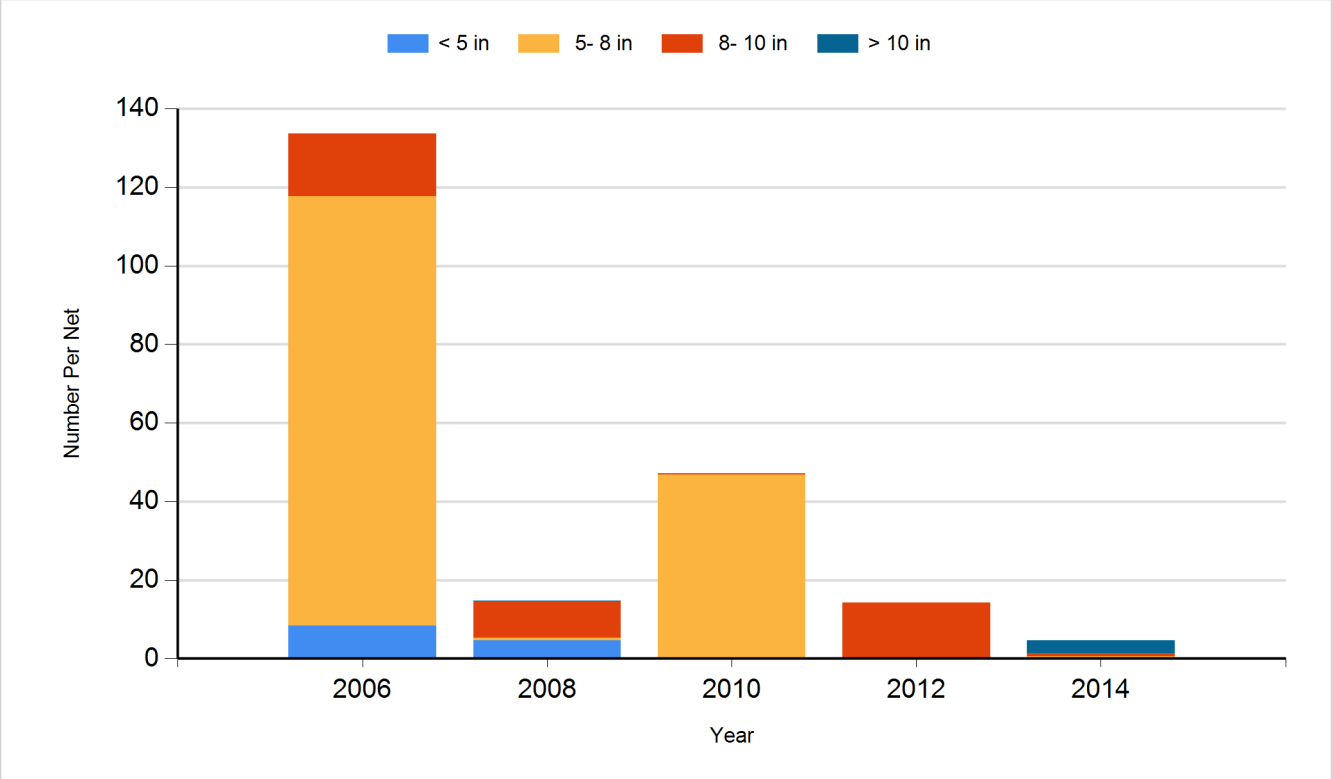


2016

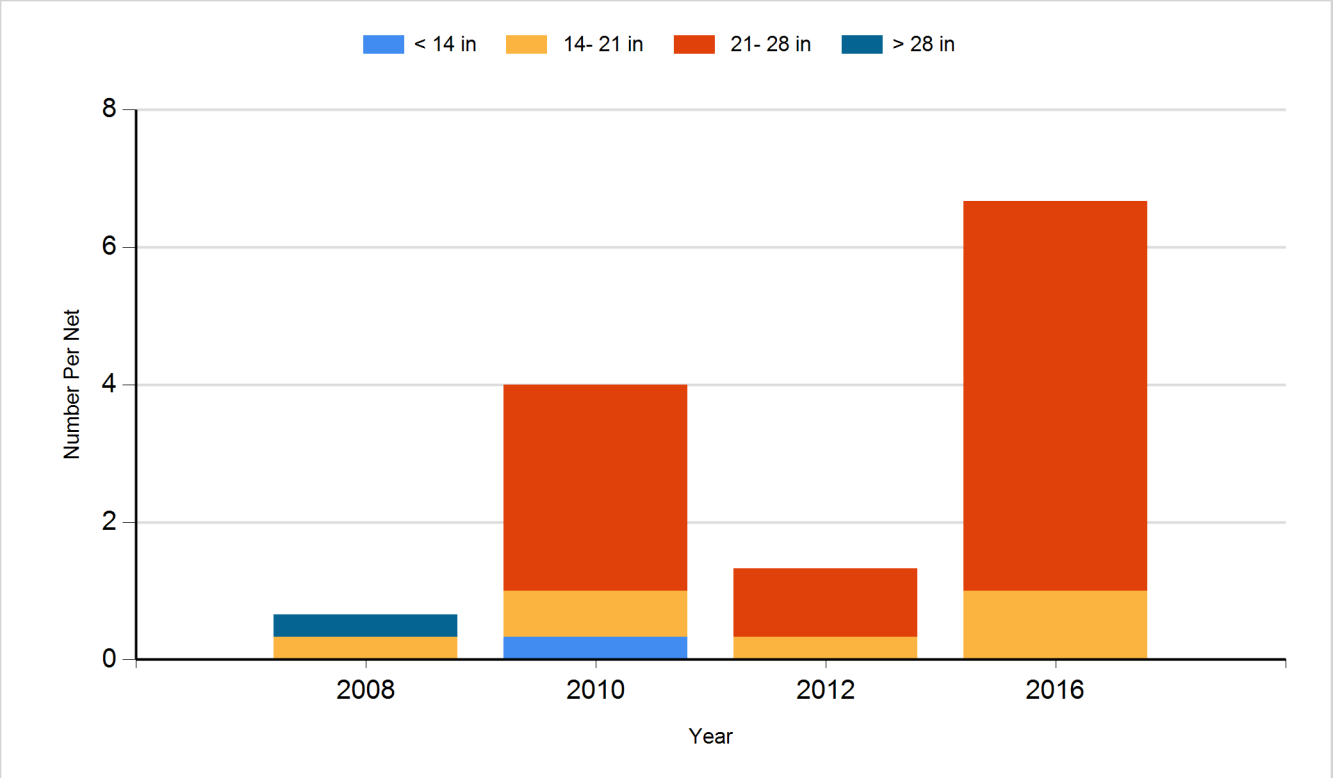
Historic Fish Sizes and Relative Abundance

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

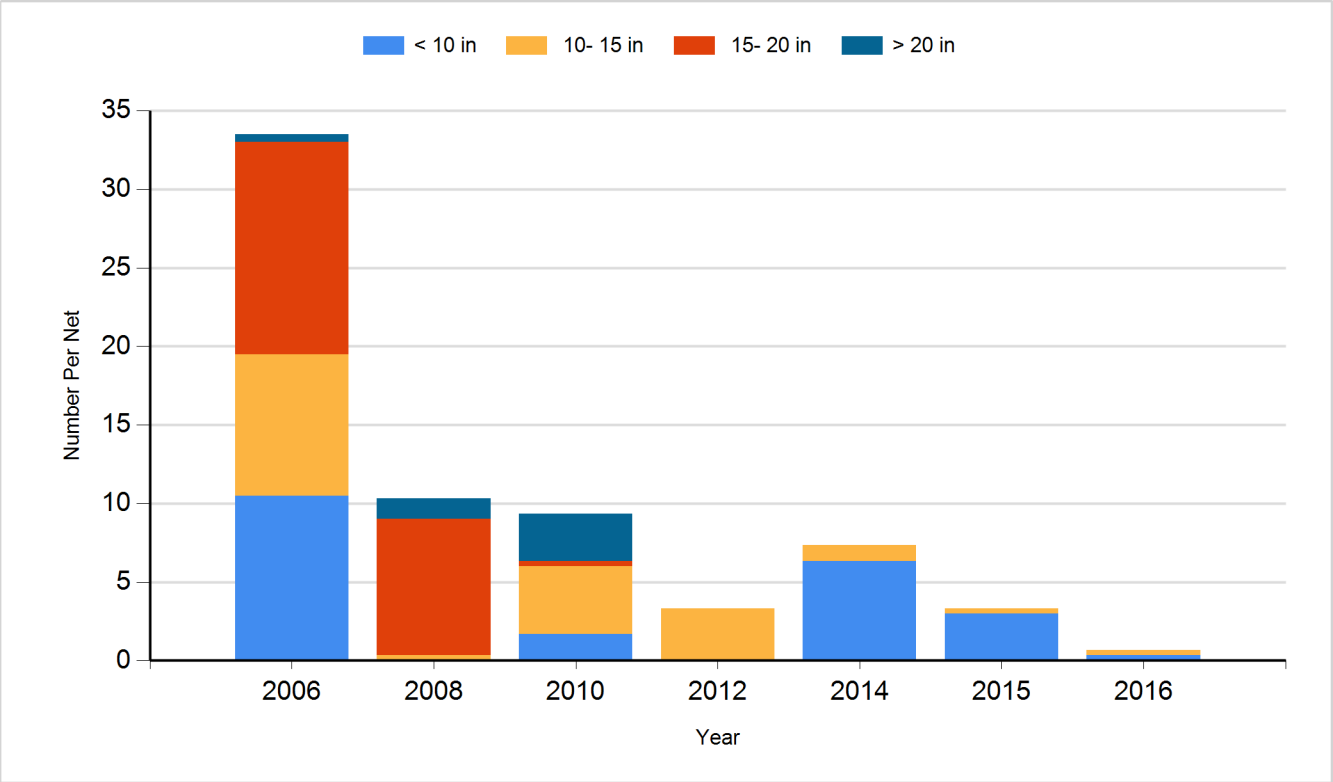
Species: Black Crappie
Gear: Frame Net



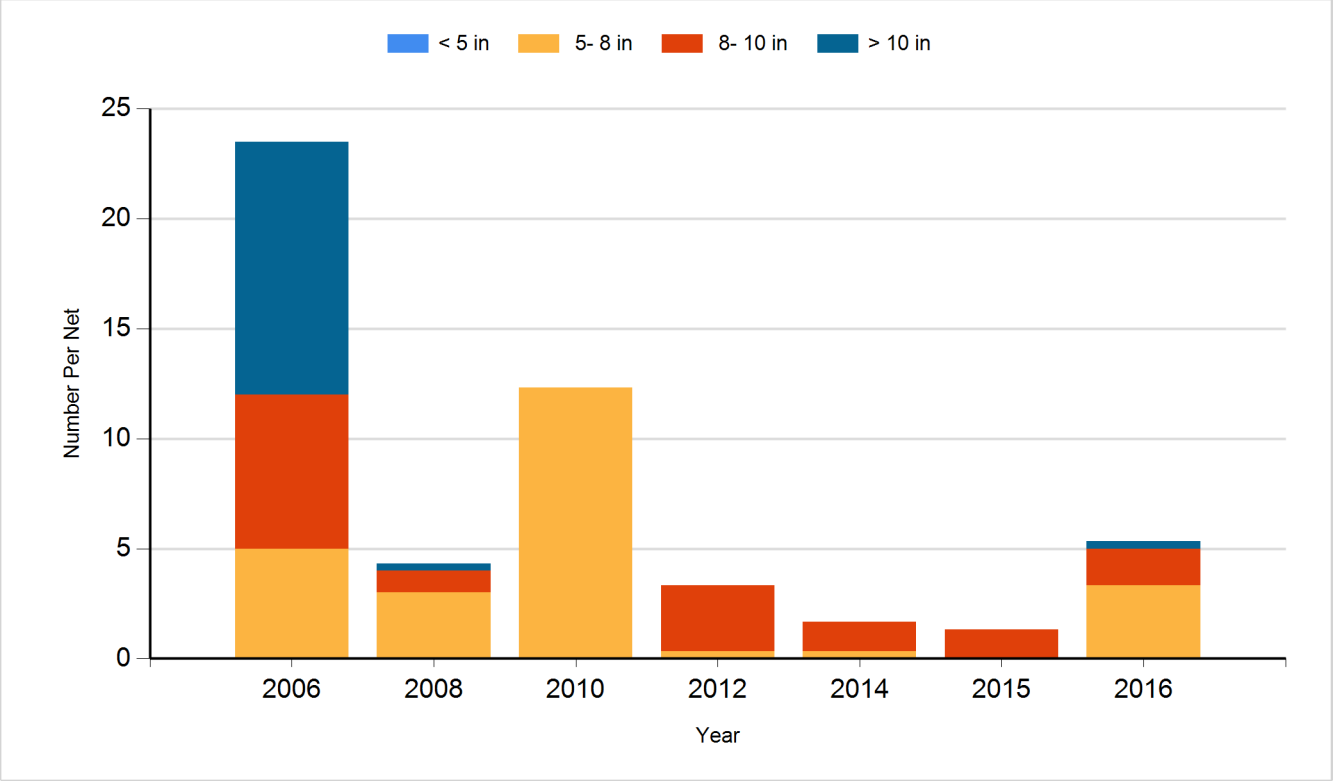
Species: Northern Pike
Gear: Gill Net



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	Channel Catfish	Adult	359
2005	Walleye	Fingerling	7,680
2005	Yellow Perch	Adult	1,034
2006	Black Crappie	Adult	3,568
2006	Bluegill	Adult	26
2006	Channel Catfish	Adult	400
2008	Walleye	Large Fingerling	2,472
2009	Walleye	Adult	292
2009	Walleye	Large Fingerling	1,800
2010	Walleye	Fingerling	1,345
2010	Walleye	Large Fingerling	2,100
2010	Walleye	Small Fingerling	20,340
2010	Yellow Perch	Adult	870
2011	Walleye	Small Fingerling	20,800
2011	Yellow Perch	Adult	2,124
2012	Northern Pike	Adult	6
2012	Walleye	Adult	724
2012	Walleye	Large Fingerling	178
2012	Yellow Perch	Adult	133
2013	Walleye	Small Fingerling	14,850
2014	Walleye	Small Fingerling	20,900
2015	Northern Pike	Adult	862
2015	Walleye	Fingerling	457
2015	Walleye	Small Fingerling	15,120
2016	Walleye	Juvenile	1,135
2016	Walleye	Small Fingerling	15,120
2016	Yellow Perch	Adult	10,350