SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Cavour, Beadle County
MJA-Lake-532-000
2017

Lake Information

Name: Cavour

County: Beadle

Legal Description: T111N- R60W-Sec. 20-22

Surface Area: 528 Acres

Maximum Depth: 14 Feet

Mean Depth: 4 Feet

Surveys and Investigations

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

Gear	Date	Effort
AFS std frame net	August 22, 2017	5 net-nights
AFS std gill net	August 22, 2017	6 net-nights

Common Fish Species Present

Walleye

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

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
large frame net	Bigmouth Buffalo				0.1							0.1
	Black Bullhead	109.2		23.2	577.3		342.0					262.9
	Black Crappie	41.2		199.8	83.5		20.2					86.2
	Bluegill			0.4								0.4
	Common Carp	3.0		5.1	11.4		4.2					5.9
	Green Sunfish			0.1	0.6							0.4
	Northern Pike				0.3		0.2					0.3
	Saugeye	0.6										0.6
	Walleye	7.0		0.4	0.1							2.5
	White Sucker				0.9		0.8					0.9
	Yellow Bullhead	0.2			0.7							0.5
	Yellow Perch	0.6		0.3	0.5							0.5
std exp gill net	Bigmouth Buffalo								0.7			0.7
	Black Bullhead	3.3		32.7	62.7		30.7	170.7	56.0	50.0		58.0
	Black Crappie	2.7		34.0	15.7		0.3	1.3	6.0	6.3		9.5
	Channel Catfish									0.0		0.0
	Common Carp	6.7		12.7	15.7		10.0	11.3	20.7	18.7		13.7
	Freshwater Drum								0.3	0.7		0.5
	Northern Pike				0.7		1.7	1.0	0.3			0.9
	Saugeye	6.3										6.3
	Walleye	47.3		1.3	0.3		2.0	3.7	13.3	3.0		10.1
	White Sucker				0.3		0.7			0.7		0.6
	Yellow Bullhead				0.3				0.3			0.3
	Yellow Perch				0.3		2.3	1.7	2.3			1.7
std frame net (3/8 inch)	Black Bullhead							159.6	247.2	234.0		213.6
	Black Crappie							17.2	17.4	25.4		20.0
	Common Carp							0.2	4.0	8.2		4.1
	Freshwater Drum									0.0		0.0
	Green Sunfish								0.4			0.4
	Northern Pike							0.4	1.6	1.4		1.1
	Sunfish Hybrid								0.0	0.0		0.0
	Walleye							0.6	1.0	21.6		7.7
	White Sucker							0.8	1.6	2.2		1.5

		CPUE										
Gear	Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Avg
std frame net (3/8 inch)	Yellow Bullhead							1.4	5.2			3.3
	Yellow Perch							0.2	0.2	0.6		0.3

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
large frame net	Black Crappie	PSD	30		1	78		100				
		PSD-P	26		0	0		91				
		Wr	114		96	103		92				
	Northern Pike	PSD				100		100				
		PSD-P				33		100				
		Wr				88		97				
	Walleye	PSD	9		75	0						
		PSD-P	0		50	0						
		Wr	92		91	98						
	Yellow Perch	PSD	100		100	80						
		PSD-P	100		0	0						
		Wr	86		101	89						
std exp gill net	Black Crappie	PSD	25		2	89		100	0	44	68	
		PSD-P	25		0	0		100	0	0	0	
		Wr	86		104	104		89	119	111	99	
	Northern Pike	PSD				100		60	67	100		
		PSD-P				0		0	0	0		
		Wr				95		88	98	91		
	Walleye	PSD	0		25	100		67	45	83	100	
		PSD-P	0		0	0		0	0	3	0	
		Wr	87		102	96		79	99	92	74	
	Yellow Perch	PSD				100		43	100	71		
		PSD-P				0		14	80	0		
		Wr				104		81	92	98		
std frame net (3/8 inch)	Black Crappie	PSD							76	48	85	
		PSD-P							76	7	6	
		Wr							120	108	95	
	Northern Pike	PSD							50	88	100	
		PSD-P							0	25	57	
		Wr							105	92	93	
	Walleye	PSD							33	80	93	

			Year									
Gear	Species	Index	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
std frame net (3/8 inch)	Walleye	PSD-P							0	20	8	
		Wr							88	91	73	
	Yellow Perch	PSD							100	100	100	
		PSD-P							100	100	67	
		Wr							107	77	70	

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	1998			186 (1998)							

Species: Walleye

		Mean Length (expanded sample number) at capture by age									
Year	N	1	2	3	4	5	6	7	8	9	10+
2010	4	286 (1)		371 (3)							

Fish Condition

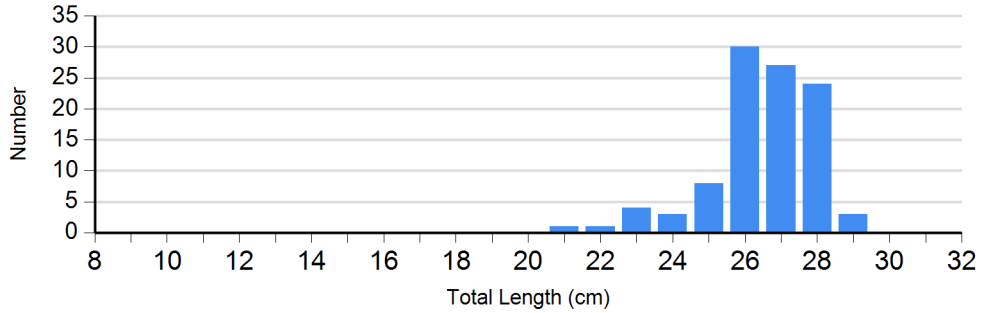
Mean relative weight (Wr) by sample size (N), length category stock to quality (S-Q), quality to preferred (Q-P), preferred to memorable (P-M), and memorable (M) for species collected across survey years with standard error (SE).

		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	2013	0		9	99 (2.6)	92	91 (0.7)	0	
	2014	21	160 (12.1)	0		34	114 (1.1)	31	112 (0.7)
	2015	45	108 (1.3)	36	110 (1.5)	0		6	99 (1.9)
	2016	19	102 (8.3)	101	94 (0.7)	3	78	4	72
Northern Pike Gill Net	2013	2	90 (11.5)	3	87 (2.1)	0		0	
	2014	1	102	2	96 (3.7)	0		0	
	2015	0		1	91	0		0	
Walleye Gill Net	2013	2	76 (1.0)	4	81 (5.3)	0		0	
	2014	6	98 (3.3)	5	99 (3.4)	0		0	
	2015	7	87 (2.2)	32	93 (1.1)	1	91	0	
	2016	0		9	74 (2.8)	0		0	
Yellow Perch Gill Net	2013	4	81 (3.8)	2	79 (19.7)	1	87	0	
	2014	0		1	87	4	94 (0.7)	0	
	2015	2	108 (6.3)	5	94 (2.6)	0		0	

Length Frequency Distribution

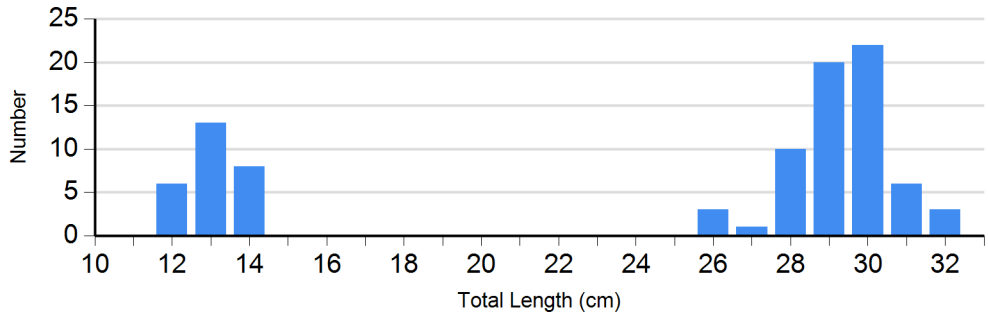
Length frequency histogram of species sampled by year.

Species: Black Crappie
Gear: large frame net

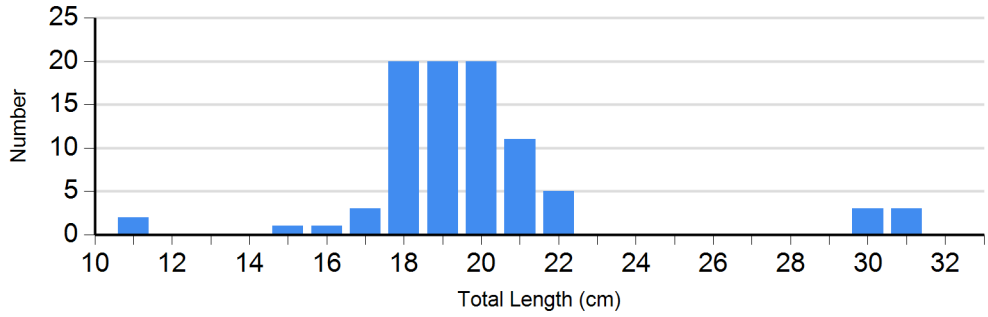


2013

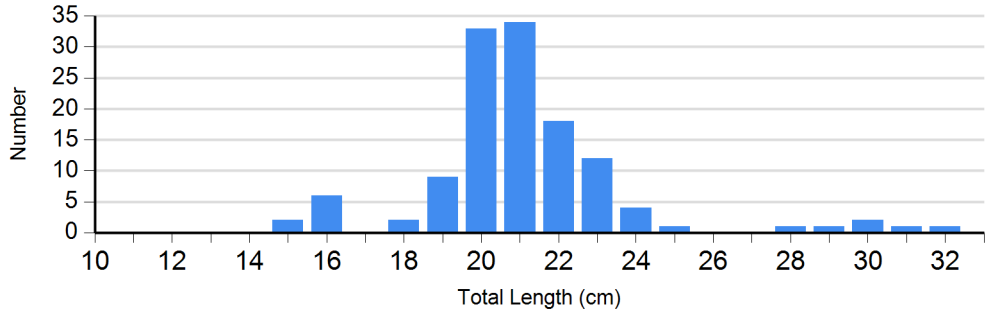
Species: Black Crappie
Gear: std frame net (3/8 inch)



2014

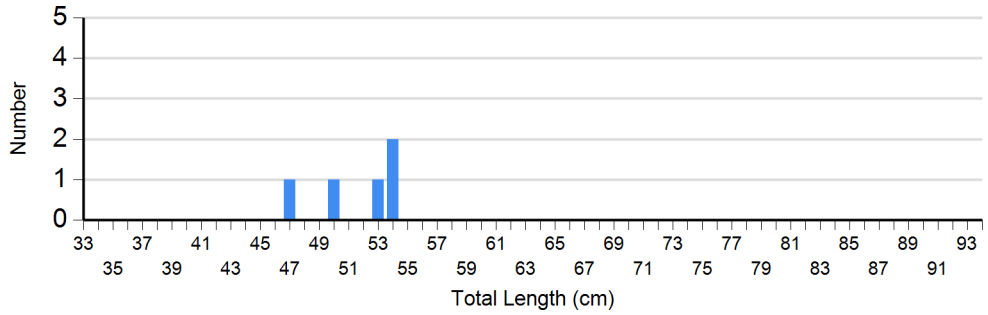


2015

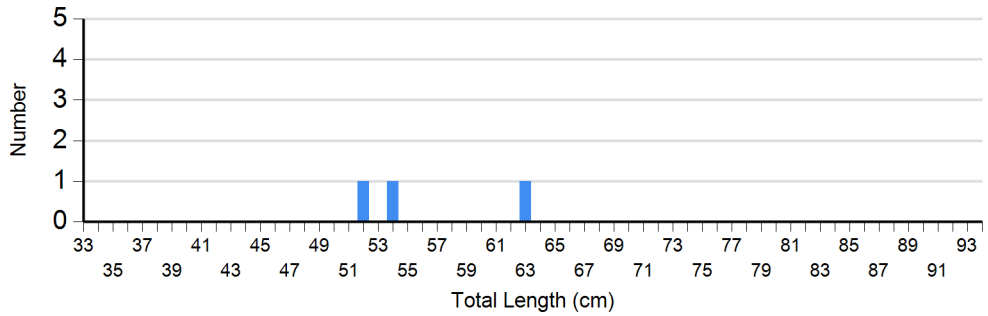


2016

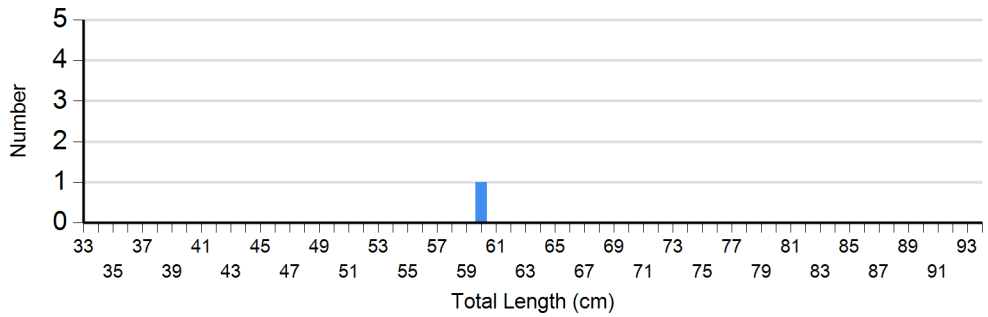
Species: Northern Pike
Gear: std exp gill net



2013

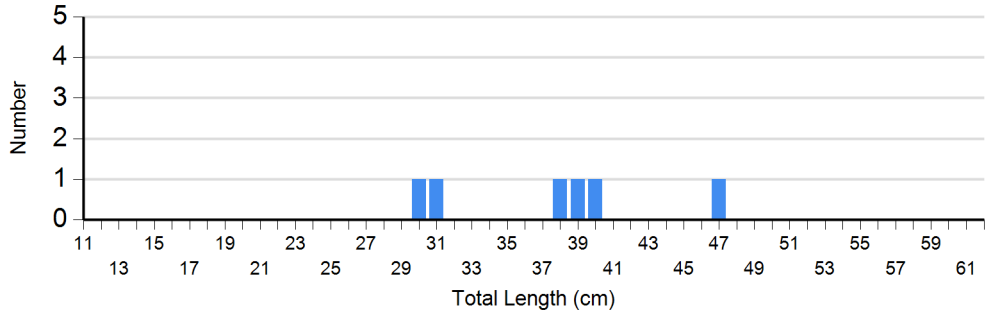


2014

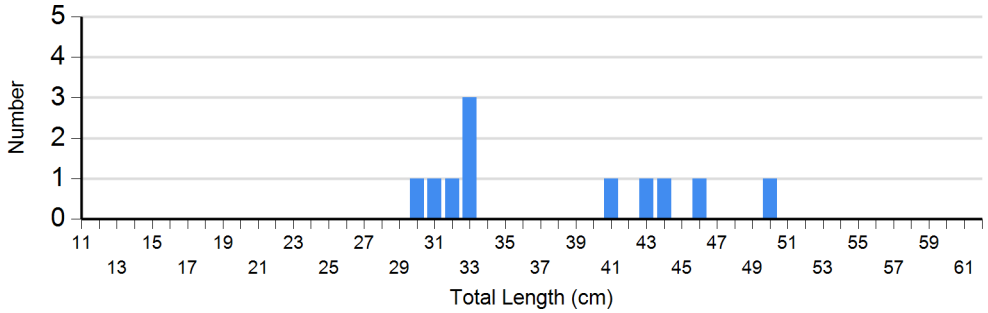


2015

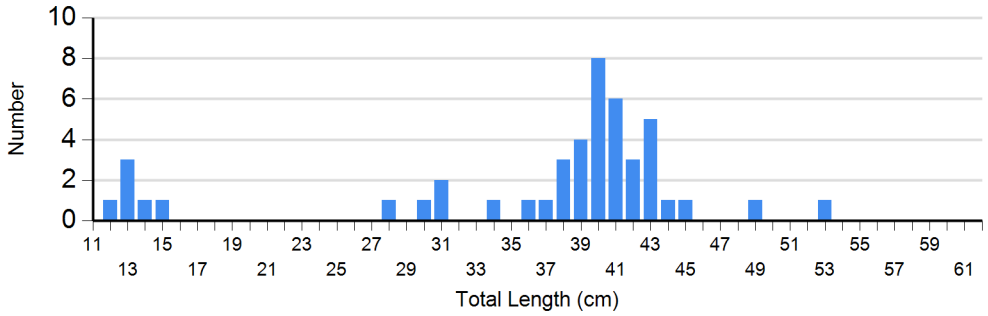
Species: Walleye
Gear: std exp gill net



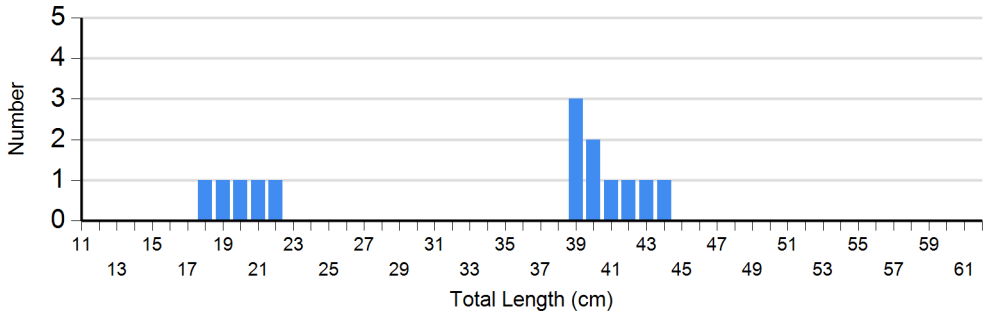
2013



2014

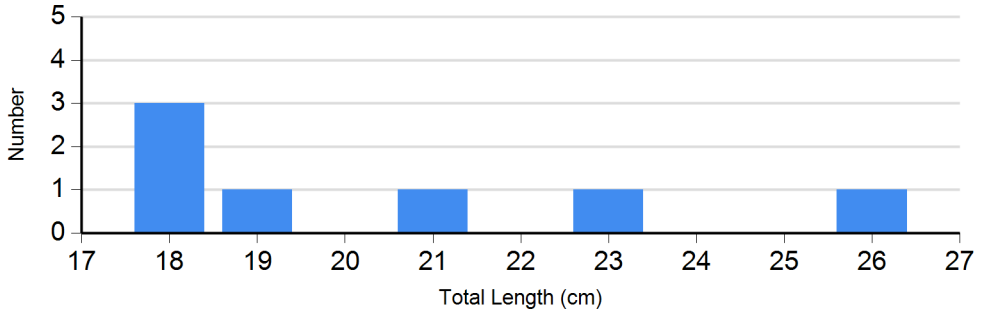


2015

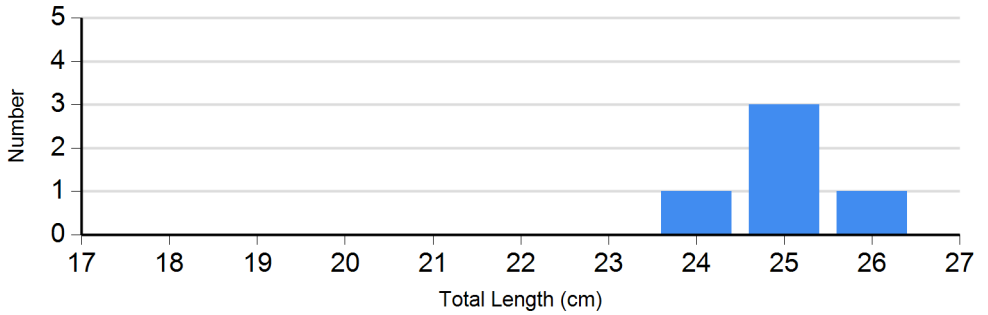


2016

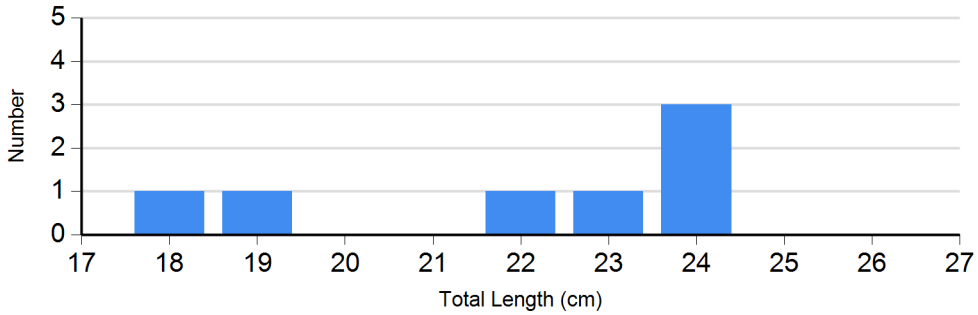
Species: Yellow Perch
Gear: std exp gill net



2013



2014

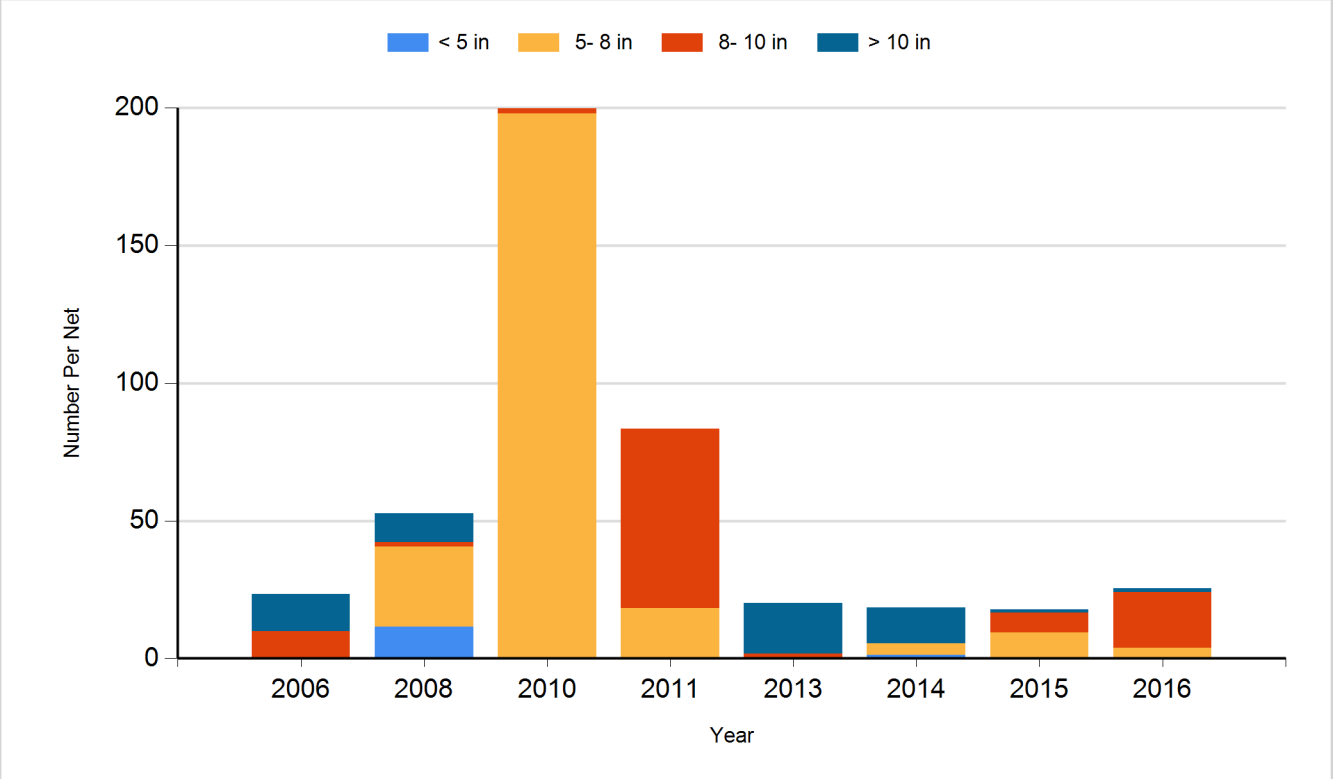


2015

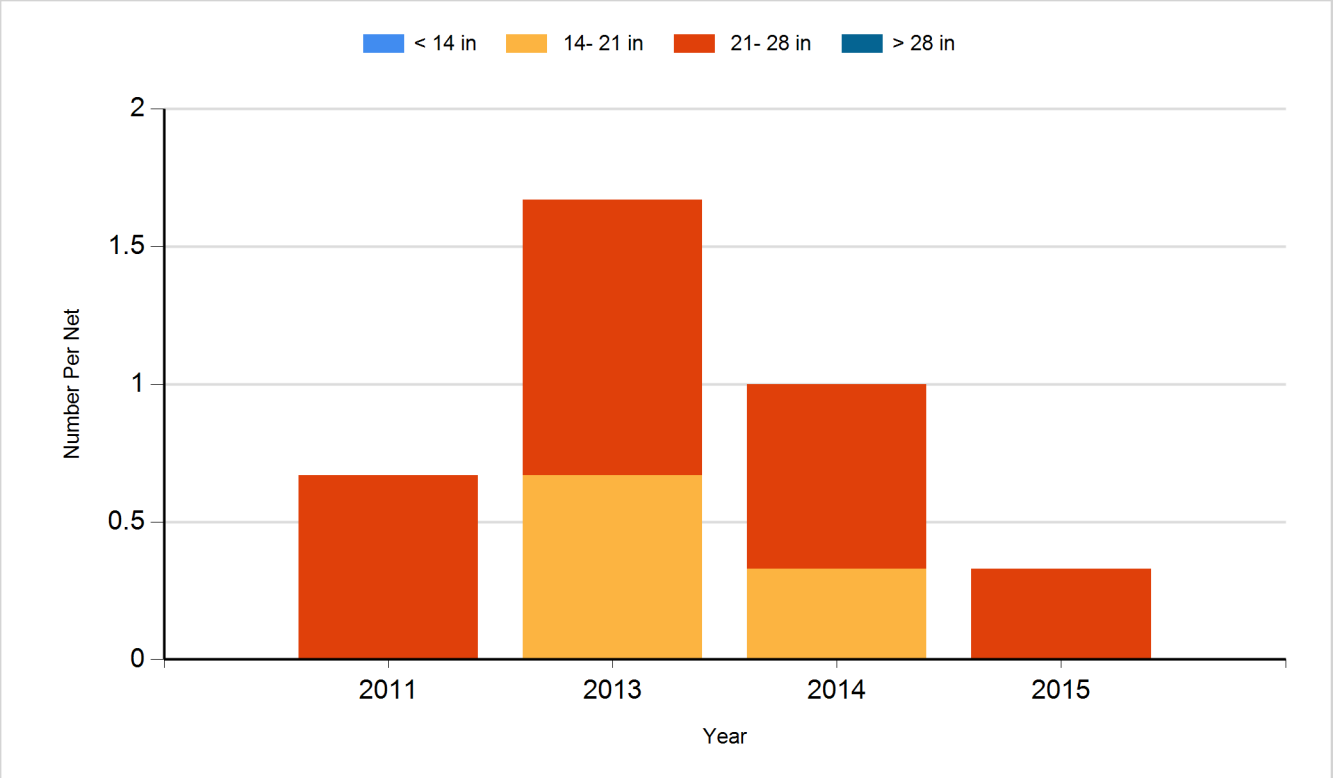
Historic Fish Sizes and Relative Abundance

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

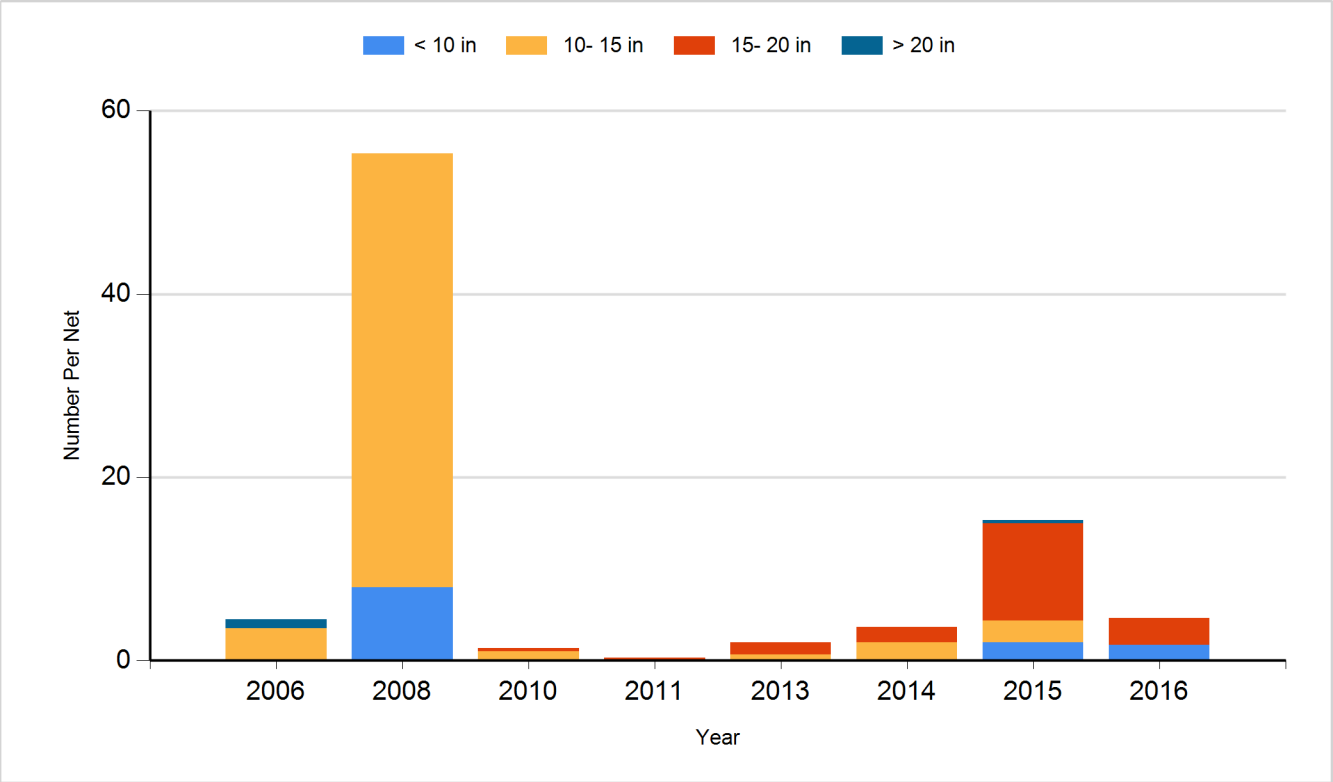
Species: Black Crappie
Gear: Frame Net



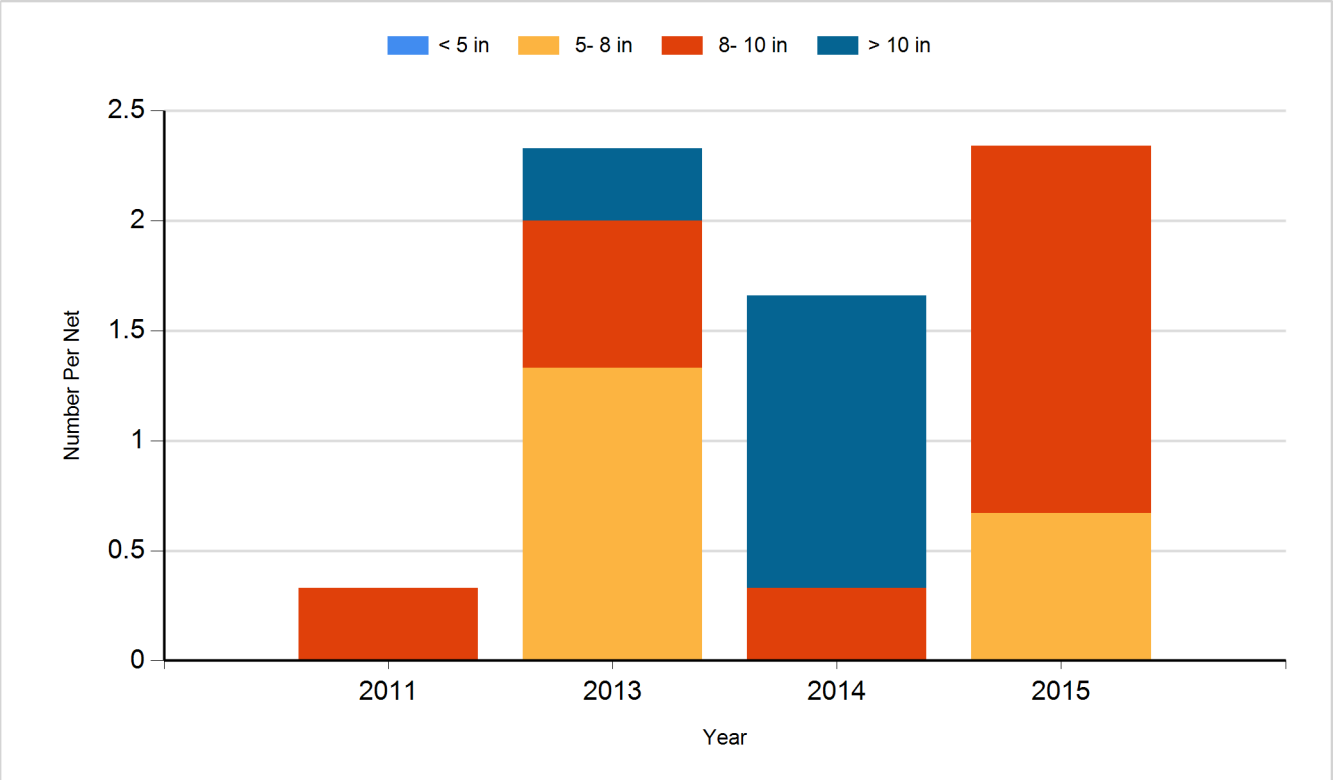
Species: Northern Pike
Gear: Gill Net



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
2007	Walleye	Small Fingerling	23,180
2011	Walleye	Small Fingerling	23,340
2012	Walleye	Small Fingerling	46,400
2014	Walleye	Fry	115,000
2015	Walleye	Small Fingerling	27,920
2017	Walleye	Fingerling	44,840